

ARTC

INLAND  
RAIL   
An Australian Government Initiative



# Narromine to Narrabri

Preferred Infrastructure/  
Amendment Report Summary

A faint, light grey topographic map of a region, showing contour lines, roads, and various markers like 'X' and 'Q'. The map is positioned in the upper left and center of the page, with the text to its right.

## 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.

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Project visualisations in this document 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.

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**Front cover:** Existing Walgett rail branch, Narrabri, NSW

**Back cover:** Box Ridge Road, Mount Tenandra, NSW

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# Narromine to Narrabri Project



**306km new single standard gauge 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 safely



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



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



Map not to scale



**49 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



**will connect with**  
Parkes to Narromine and Narrabri to North Star projects

**LEGEND**

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

# Introduction

The Narromine to Narrabri section of the Inland Rail Program is being assessed under the *Environmental Planning and Assessment Act 1979 (NSW)*. As part of this, a Preferred Infrastructure/Amendment Report has been developed to support the Project's Environmental Impact Statement (EIS) and the formal submissions received.

This document is intended to be a summary of the Preferred Infrastructure/Amendment Report. It provides an overview of the proposed amendments to the Project since EIS exhibition and further information on hydrology and route selection assessments undertaken to date. Importantly, this document also provides quick reference links to the relevant sections of the mentioned EIS reports, where more detailed information can be found.

**This document is intended to be a summary of the Preferred Infrastructure/Amendment Report.**



# The Inland Rail Program

Connecting Melbourne and Brisbane via regional Victoria, New South Wales and Queensland, Inland Rail will complete Australia's national freight network – better connecting producers to markets and creating new opportunities for businesses, industries and regional communities.

Inland Rail means freight can be delivered faster and more reliably to Australia's growing population, and beyond to global markets. It also means safer, less congested roads and fewer carbon emissions.

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

- Upgrading or enhancing more than 1,100 kilometres of existing interstate rail line through NSW and Victoria
- Constructing about 600 kilometres of new track in NSW and south-east Queensland.

Work on Australia's largest freight rail infrastructure project – a priority infrastructure project for the Australian Government – is well underway. The Parkes to Narromine section was commissioned in late 2020 and more than 102 kilometres of track upgrades were completed on the Narrabri to North Star (Phase 1) section by August 2022.

Further information on the Inland Rail Program can be found at [inlandrail.artc.com.au](http://inlandrail.artc.com.au)

## Narromine to Narrabri section

The Narromine to Narrabri (N2N) section (the Project) is one of 13 sections which comprise the Inland Rail Program. The N2N section under assessment includes 306 kilometres of new single-track standard gauge railway and associated rail infrastructure to be established within a new rail corridor. It will enable trains to connect with other sections of Inland Rail to the north and south and will accommodate double-stacked freight trains up to 1,800 metres long and 6.5 metres high.

The Project is the largest 'greenfield' section on the Inland Rail Program and traverses five Local Government Areas: Narromine, Gilgandra, Coonamble, Warrumbungle and Narrabri.

*Image opposite: Artist impression of proposed bridge across the Macquarie River, Narromine*

# Inland Rail Program objectives

The Inland Rail Program has undergone three major route development and selection studies since 2006. Since 2015, Inland Rail has been optimising and finalising the rail corridor for the remaining sections of new track, including the N2N Project.

Inland Rail has also consulted closely with freight customers, rail users and other key stakeholders to develop a service offering that supports a road competitive service based on reliability, transit time, price and availability.

To ensure the success of Inland Rail, the following service offering prerequisites need to be met along the entire alignment between Melbourne and Brisbane.



## TRANSIT TIME

Requires a transit time between Melbourne and Brisbane of less than 24 hours and an express capability that is competitive with road



## RELIABILITY

Requires 98% reliability for freight customers



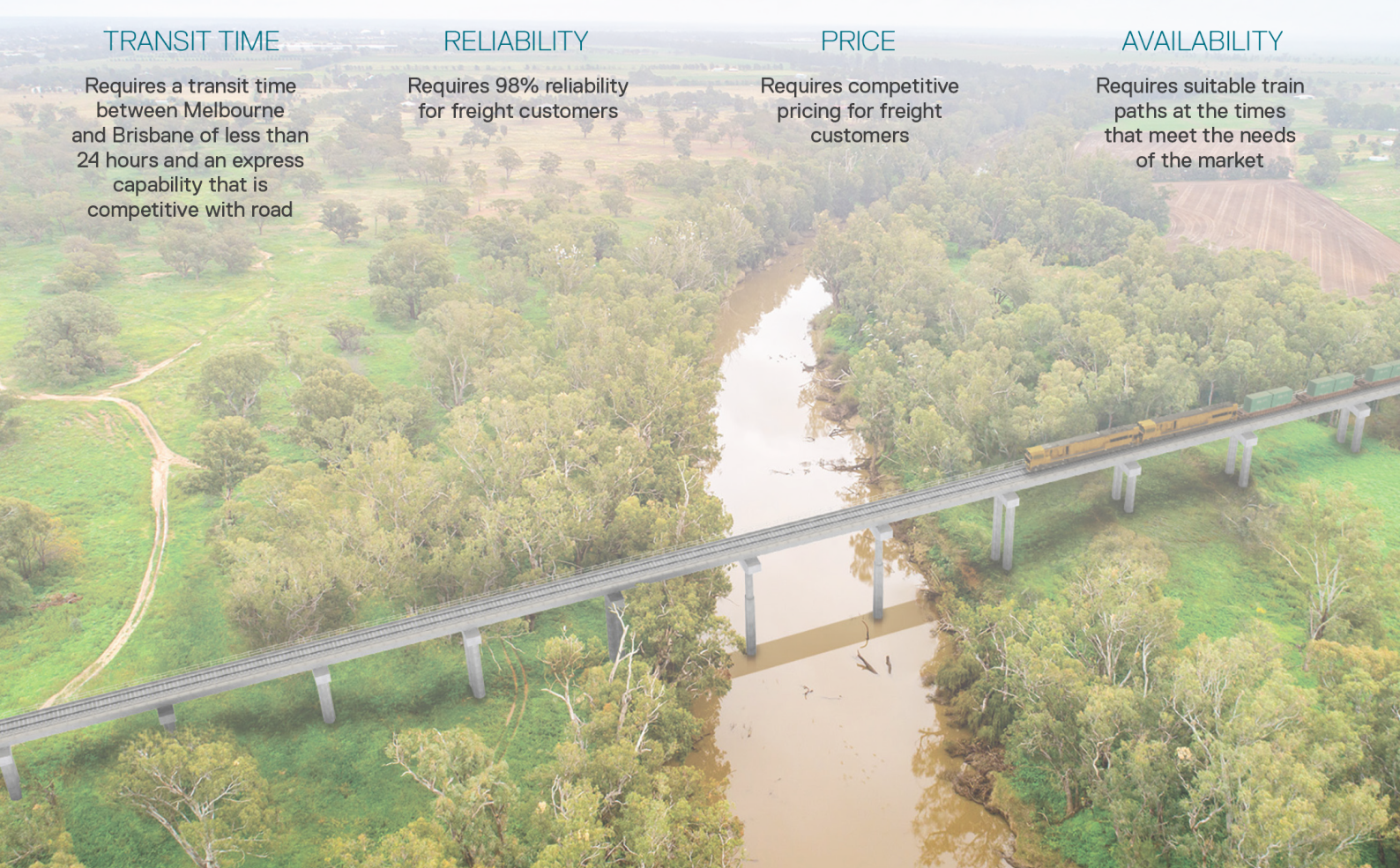
## PRICE

Requires competitive pricing for freight customers



## AVAILABILITY

Requires suitable train paths at the times that meet the needs of the market



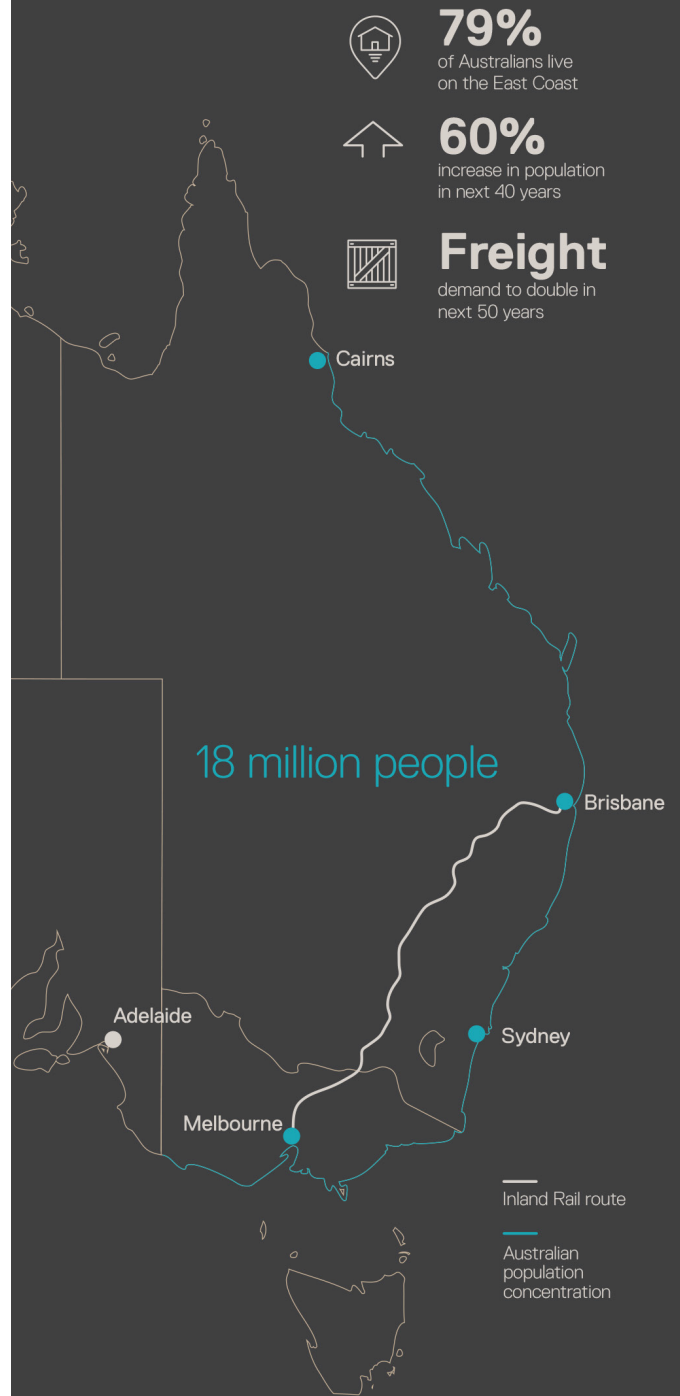
# Benefits of Inland Rail

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. Over the next 40 years, Australia's population is expected to reach 45 million and industry forecasts suggest the volume of freight required to satisfy this growing demand will double over the next 50 years. This is why Inland Rail is important:

- **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 service levels
- **Safety improvements:** up to 15 serious crashes involving fatalities and serious injuries will be avoided every year
- **Boost to the Australian economy:** Inland Rail is expected to increase Australia's GDP by \$18 billion during its construction and first 50 years of operation
- **Job creation:** Inland Rail is expected to create more than 21,000 new jobs at the peak of construction, with an additional 700 long-term jobs once it is operational
- **Improved sustainability and carbon emissions:** 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)
- **Reduced rail costs:** reduced costs for inter-capital freight travelling between Melbourne and Brisbane by \$10 per tonne
- **Reduced distances travelled:** when Inland Rail is fully operational it will result in a 200 kilometre reduction in rail distance between Melbourne and Brisbane, and a 500 kilometre reduction between both Brisbane and Perth and Brisbane and Adelaide.



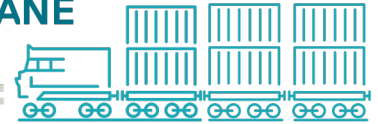


# The benefits of Inland Rail

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



**BRISBANE**



**MAKING OUR PRODUCERS GLOBALLY COMPETITIVE**

**LESS THAN 24 HOURS RAIL TRANSIT TIME**



**FASTER, SAFER, MORE RELIABLE FREIGHT**

**REDUCING SUPPLY CHAIN COSTS**



Reduces rail freight costs by \$10 per tonne



Reducing congestion and creating capacity for Sydney road and rail

**IMPROVING ACCESS TO AND FROM REGIONAL MARKETS**



9 million tonnes of agricultural freight including 2 million tonnes attracted from road



**CREATING JOBS**

Creating 21,500 jobs at the peak of construction



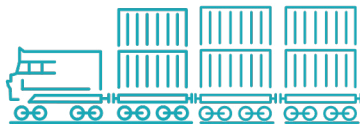
750,000 FEWER TONNES OF CARBON AND 1/3 OF THE FUEL OF ROAD

Enhancing the national rail freight network

**IMPROVING LINKAGES**



**IMPROVING SUSTAINABILITY**



**PERTH, ADELAIDE**

**BETTER CONNECTING CITIES AND FARMS TO MARKETS**



**REDUCING BURDEN ON ROADS AND IMPROVING ROAD SAFETY**

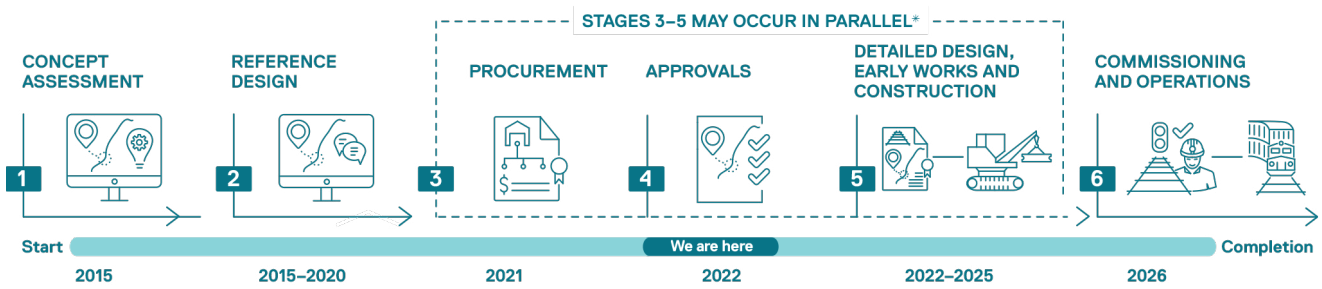
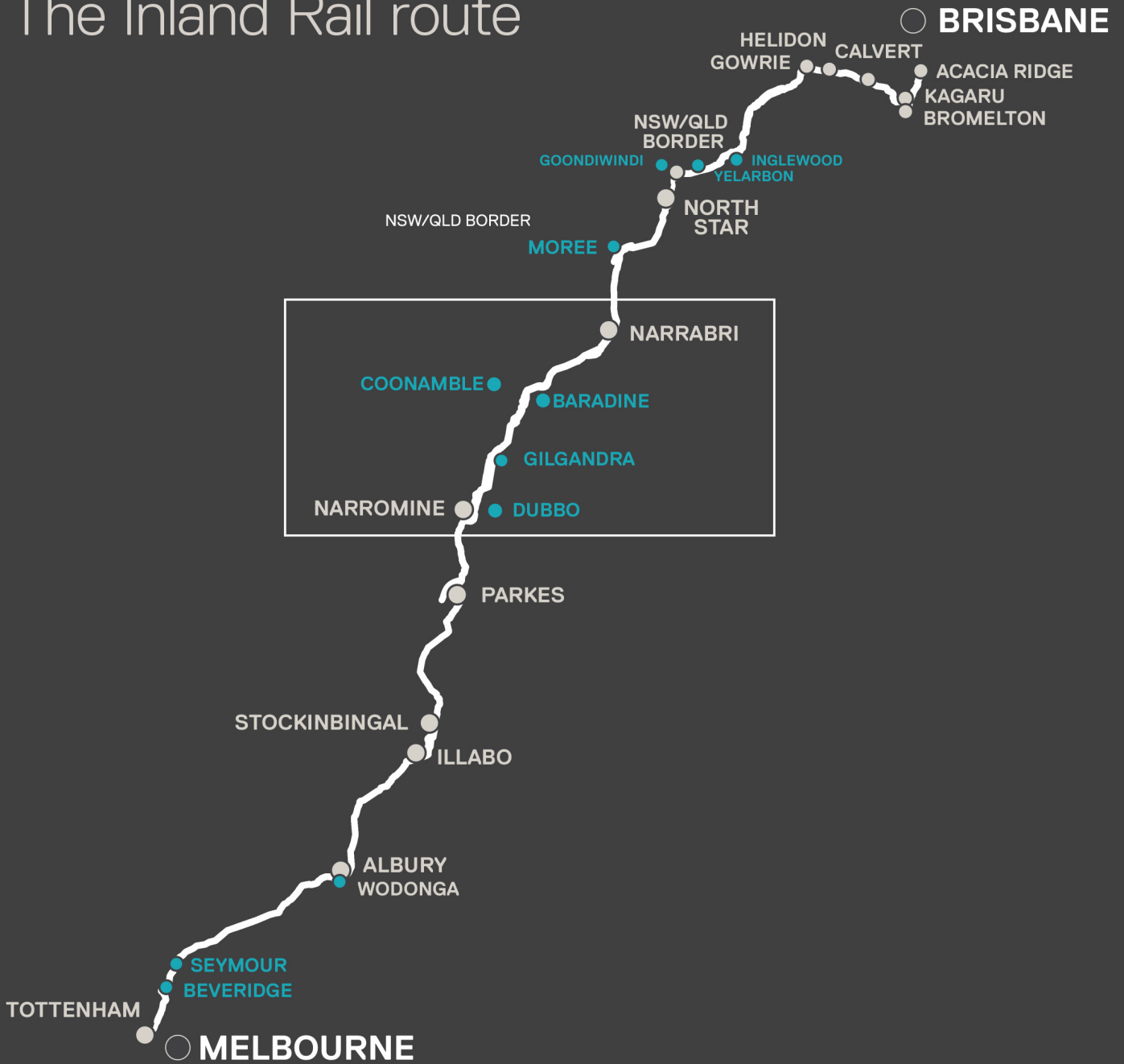
200,000 fewer trucks per annum from 2050



**MELBOURNE**



# The Inland Rail route



\*Major construction won't start until statutory approvals are received.

\*Timeframes are indicative and are subject to change



*Existing Dubbo to Coonamble line in Curban*

# Consulting with the community

## Working with the community and stakeholders

Since the announcement of the Project's Study Area in November 2017, Inland Rail has been working closely with the community to ensure we deliver the best possible outcomes for landowners and the region.

This has included meeting face-to-face and online with affected landowners and interested community members, holding local in-person and online information sessions, engaging with state and local government authorities, and establishing Community Consultative Committees. Feedback received has been incorporated into the Project's EIS and ongoing refinement of the design.

## Consultation for the EIS

The Narramine to Narrabri EIS was publicly exhibited for 62 days from 8 December 2020 to 7 February 2021. During this time, the EIS was accessible electronically on the Department of Planning and Environment's (DPE) Major Projects website.

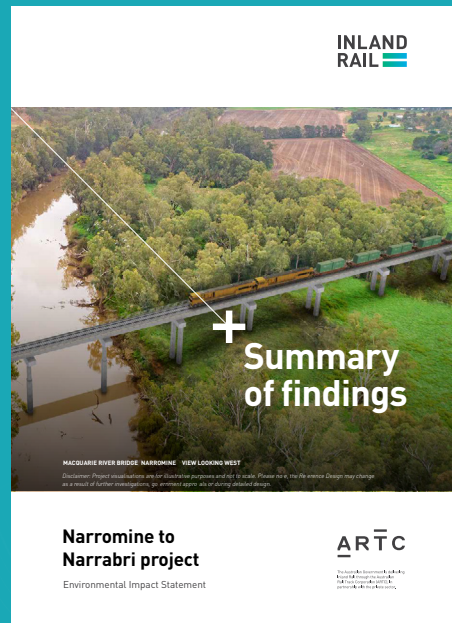
Inland Rail also completed a broad range of engagement activities to support the public exhibition of the EIS. The primary aim of this engagement was to ensure affected landowners, government authorities, and interested community members could provide informed feedback on the documentation.

## EIS Summary of Findings

An EIS 'Summary of Findings' document was distributed to key stakeholders across the Project alignment.

This document presented a clear and concise overview of the Project, including information on the planning approvals process, an overview of engagement activities, a summary of key environmental and social impacts and proposed mitigation measures.

Importantly, the document also showed key stakeholders where in the EIS they could find further information, allowing everyone to provide informed feedback.





*Inland Rail information stand at the Narrabri Show in 2021*

## Engagement activities



### LANDOWNERS

More than 240 letters sent to landowners and key stakeholders. A letter was sent to each affected landowner in the rail corridor and landowners likely to be impacted by construction activity two weeks prior to public exhibition of the EIS.

Following public exhibition of the EIS, a complete copy of the EIS on a USB, and a hard-copy version of the Project's EIS 'Summary of Findings' document was sent to all 197 affected landowners.



### EMAIL

54 emails were sent to key stakeholders, elected representatives and local councils advising them of the release of the EIS, ongoing consultation activities, and formal submission process. An e-newsletter was sent to 925 stakeholders.



### NEWSPAPER

A total of 28 advertisements were placed in eight local newspapers across the region noting this important Project milestone and inviting community submissions.



### WEBSITE

The Project website was updated to advise local communities about the EIS public exhibition and invite submissions. An alignment fly-through video was created which assisted in visually communicating the Project's reference design.



### SOCIAL MEDIA

Inland Rail utilised social media channels to advise of the public release of the EIS, including the process for formal submissions and information on proposed engagement activities.

“ **Stakeholder feedback** plays an important part in ensuring the community is heard and all issues are appropriately identified and considered during the planning process. ”

**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



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 First Nations stakeholders

# Letting everyone know about the EIS



## Static public displays

Inland Rail installed 11 displays at key locations on the Project alignment, which provided information related to the EIS public exhibition as well as links to both the Project and DPE website.



## Community information sessions

Inland Rail hosted seven face-to-face community information sessions across the Project alignment offering 86 interested community members the opportunity to better understand the Project's reference design and EIS.



## Pop up sessions

Inland Rail held six in-person and four online 'pop-up' sessions at key locations across the Project alignment. The 'pop-up' sessions provided a flexible, 'on-the-ground' approach to engagement, allowing Inland Rail to reach a broader group of stakeholders.



Inland Rail recognises the important role **Community Consultative Committees** play in the planning approval and engagement process. Accordingly, Inland Rail held three sessions – under direction by the Independent Chair – to inform and engage community representatives on key issues of interest, such as project developments, flooding and hydrology matters, and the property acquisition process.

## What we heard

Following the exhibition of the Project's EIS, Inland Rail was required to formally respond to public submissions received. Responses were captured in a document called the Response to Submissions Report.

As part of this EIS process, DPE received 116 submissions from the public, public authorities and organisations interested in the Project. The responses covered a broad range of issues, including the Project scope; procedural matters; potential environmental, social and economic impacts and mitigation measures; project evaluation; and issues beyond the Project's scope.

The **Response to Submissions Report** gives due consideration to concerns raised and, where applicable, highlights any additional work completed to address such concerns.

The responses provided by Inland Rail are considered by DPE during its assessment of the Project.

The N2N Response to Submissions Report has been published on the DPE's Major Project website alongside the Preferred Infrastructure/Amendment Report.

## Top submission themes



# Preferred Infrastructure/ Amendment Report

This document is intended to be a summary of the Preferred Infrastructure/Amendment Report. It provides an overview of the following:

- Proposed Project amendments
- Route Selection Summary Report
- Updated Flooding and Hydrology Assessment Report.

The N2N section of the Inland Rail Program is being assessed under the *Environmental Planning and Assessment Act 1979 (NSW)* before construction of the Project can begin.

As part of this, a Preferred Infrastructure/Amendment Report has been developed to support the Project's EIS, which was on public exhibition from 8 December 2020 to 7 February 2021, and respond to submissions received as part of the EIS.

The EIS considered the potential environmental, social and economic impacts of the Project and identified mitigation measures to avoid and minimise impacts wherever possible. Inland Rail has also undertaken further investigations and is proposing several amendments to the Project.

The aim of these amendments is to further reduce the impacts identified in the EIS. The changes also consider feedback from consultation with the community, key stakeholders and from the submissions received.

## Want to know more?

See following sections of the Preferred Infrastructure/Amendment Report:

**Section 1:** Introduction

**Section 2:** Statutory and strategic context

**Section 3:** Community and stakeholder engagement



*The Macquarie River near Narromine*





## What is the Preferred Infrastructure Report about?



On 30 April 2021, the Planning Secretary directed Inland Rail in accordance with section 5.17(b) of the *Environmental Planning and Assessment Act 1979 (NSW)* to provide a Preferred Infrastructure Report which:

- Addressed the hydrology and flooding impacts of the Project, as raised in submissions and by the independent review of hydrology undertaken by Bewsher Consulting in March 2021
- Provided appropriate justification and information on the design of the Project and alternative rail alignments considered, particularly near the towns of Narromine and Narrabri, and how these alternatives were analysed to inform the selection of the preferred route
- Provided design alternatives to demonstrate how residual flooding impacts can be reduced.

The request to provide additional information on the route options near the towns of Narromine and Narrabri is a result of landowner concerns in relation to potential flooding impacts at these locations.

The Preferred Infrastructure Report, supported by the updated Flooding and Hydrology Assessment Report and the Route Selection Summary Report has been prepared to address these concerns.








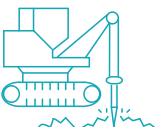
## Project development stages

Stages		Status
<b>Concept Assessment</b>	– Prepare State Significant Infrastructure Application Report	✓
	– Lodge State Significant Infrastructure Application Report	✓
<b>Reference Design and EIS</b>	– Receive Secretary’s Environmental Assessment Requirements (SEARS)	✓
	– Corridor refinements (Study Area, Focused Area and Rail Corridor)	✓
	– Prepare EIS	✓
<b>Project Assessment</b>	– Exhibit EIS	✓
	– Lodge Response to Submissions Report	– We are here
	– Lodge Preferred Infrastructure/Amendment Report	– We are here
	– DPE assessment and determination	– Ongoing
<b>Project approval</b>	– Receive planning approval	– Late 2022
<b>Construction</b>	– Start early works, followed by major civil construction and rail and signalling work	– Late 2022–2025
<b>Operation</b>	– Inland Rail Melbourne to Brisbane freight network to become operational	– From 2027*

\*N2N section is expected to commence operation in 2026, however dates are indicative only and subject to change due to ongoing design development and community consultation

# Summary of proposed amendments

The aim of these amendments is to minimise the potential impacts of the Project where practicable, particularly with respect to land use and property, traffic and access, and hydrology and flooding.

PROPOSED FEATURE	PROPOSED AMENDMENT
 <b>Crossing loops</b>	<p>Relocation of seven crossing loops to new locations to minimise overall impacts.</p>
 <b>Public level crossings</b>	<p>Changes to public level crossing numbers, locations and treatments due to updated traffic data and refinement of sight distances.</p>
 <b>Public road closures</b>	<p>Reduction in the number of public roads and access tracks that would need to be closed, mainly as a result of crossing loop relocations.</p>
 <b>Public road realignments</b>	<p>Changes to public roads requiring realignment to minimise property impacts.</p>
 <b>Temporary workforce accommodation</b>	<p>Changes to the locations of the Narromine North and Baradine temporary workforce accommodation facilities based on consultation with key stakeholders.</p> <p>Mobile accommodation facilities are now proposed be provided within some of the general compounds for improved workplace flexibility.</p>
 <b>Construction and operation footprints</b>	<p>Adjustments to the construction and operational footprints to accommodate the above amendments and other proposed design refinements, and to minimise the amount of disturbance and inconvenience where possible.</p> <p>In addition, drainage control areas have been added at a number of drainage structures to provide additional space outside the rail corridor in which to manage exceedances of the quantitative design limits during detailed design and construction.</p>



# Additional environmental assessment

Additional biodiversity, flooding and hydrology, noise and vibration, Aboriginal cultural heritage and social assessments have been undertaken since EIS exhibition. The assessments have:

- Considered and responded to issues raised in submissions and during consultation with stakeholders
- Assessed the impacts of the proposed amendments
- Further progressed commitments made in the EIS
- Responded to the request of the Planning Secretary in relation to flooding and hydrology.

The associated technical reports prepared to support the EIS have been updated based on the additional assessments, and the following reports are provided separately:

- Updated Biodiversity Development Assessment Report
- Updated Flooding and Hydrology Assessment Report
- Updated Noise and Vibration Assessment
  - Construction and Other Operations Report
- Updated Noise and Vibration Assessment – Operational Rail Report
- Addendum Aboriginal Cultural Heritage Assessment Report
- Addendum Social Assessment Report.

*Cumbil Road, Baradine looking north*

## Want to know more?

See following sections of the Preferred Infrastructure/Amendment Report:

**Section 4:** Additional environmental assessment

**Section 6:** Description of the amendments

**Section 7:** Assessment of impacts

**Section 8:** Evaluation and conclusion

# Route Selection Summary Report

A Route Selection Summary Report has been prepared to support the broader Preferred Infrastructure/Amendment Report.

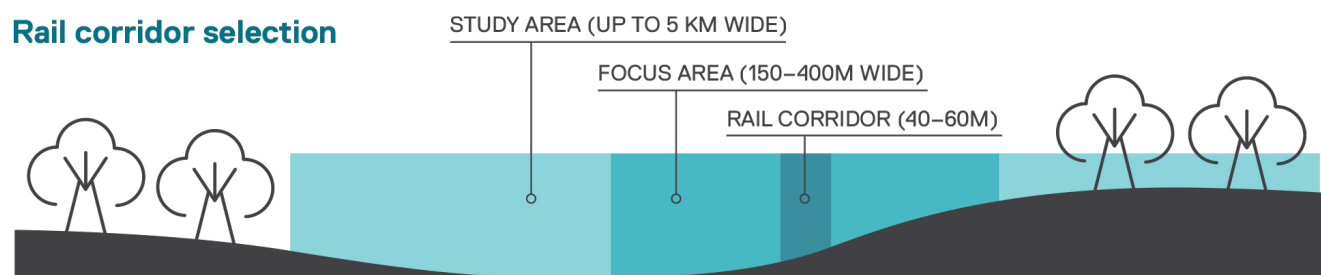
The report provides a summary of key considerations, assessment processes and developments, as well as outcomes associated with route selection analysis for the N2N Project. It describes the considerations that shaped the Project from 2006 onwards, with a focus on the evaluation of a broad range of alignment options between 2016 and 2020.

The report also includes information on how hydrology and flooding considerations informed the ongoing refinement of the N2N alignment, including the consideration of community feedback.

## Route selection process

Phase	Timing	Purpose/Outcome
<b>Phase 1</b> Confirming the study area and identifying a concept alignment	2016–2017	<ul style="list-style-type: none"> <li>– Detailed review of the Narromine to Narrabri section based on the route selected in the alignment study (the base case) and endorsed (with certain variations and recommendations) by the Inland Rail Implementation Group</li> <li>– Identification of the study area and concept alignment, and announcement of the study area on 18 November 2017 by the Australian Government Minister for Transport.</li> </ul>
<b>Phase 2</b> Reference design option assessment	2018–2020	<ul style="list-style-type: none"> <li>– Narrowing of the study area to a focused area of investigation for detailed investigations and further targeted consultation with directly affected landholders</li> <li>– Finalising the preferred alignment and developing the reference design (as described in the EIS) for approval.</li> </ul>

## Rail corridor selection



### Want to know more?

See following sections of the Preferred Infrastructure/Amendment Report to learn more about how the N2N alignment was determined.

**Appendix B, Section 2:** Background confirming the study area for route selection development

**Section 5:** Additional information on route selection and alternatives

## Capturing community feedback

Over the years, considerable community feedback has shaped the N2N Project alignment design. A summary of key issues raised in the EIS submissions about the route selection process is outlined below:



Location of the proposed alignment and exploration of alternate routes, such as using existing rail lines in the area



Consideration of floodplains when identifying routes



Analysis of the assessment criteria for determining routes



Property and business impacts associated with the final rail alignment



Environmental and cultural heritage concerns over the final rail alignment

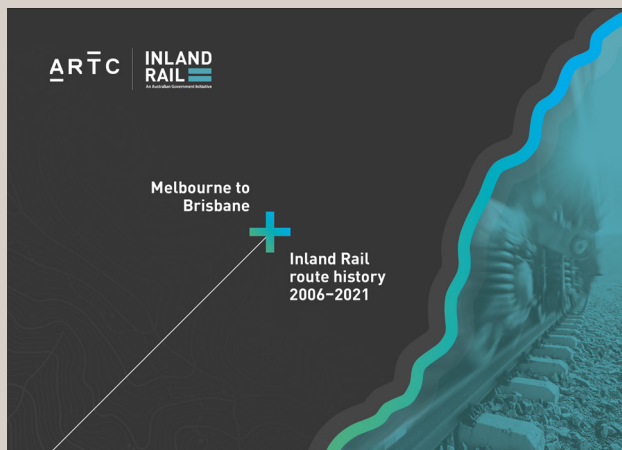
### Documenting our design decisions

Inland Rail is committed to open and ongoing engagement and we have worked hard to ensure that key design documents are made publicly available. This includes historic Multi-Criteria Analysis (MCA) reports and route selection documents that capture the Program's extensive history.

We have also ensured that community feedback, sourced from hosting community information sessions and meetings, continues to inform our design refinement process.

Throughout this process, we have always sought to engage closely with a broad range of stakeholders, including affected landowners, community members and business groups.

A key document that highlights Inland Rail's history, including the design of the N2N Project, is the **'Melbourne to Brisbane: Inland Rail Route History 2006–2021'** document which is available on the Inland Rail website.



# Route analysis

The final rail alignment for the N2N Project builds on years of community engagement, engineering and environmental site and field investigations and design refinements.

Since the end of 2016, the development of the Inland Rail route has been determined by a combination of inputs:

- Comparative construction costs
- The impact (positive or negative) of a route option on the Inland Rail Service Offering
- Results of any MCA undertaken on a route option.

MCA is an evaluation tool for complex problems that provides a logical, structured process to consider a broad range of criteria in the evaluation process. The purpose of an MCA is to permit a comparative assessment of route options, resulting in an indication as to which option/s warrant further consideration.

An MCA is not the sole framework for determining which route option is superior to others.

## Process to refine the route

### Is a route viable?

MULTI-CRITERIA \*  
ANALYSIS



#### Technical viability (17%)

Considers the alignment, impact on public utilities, geotechnical conditions, impacts on existing road and rail networks, flood immunity and hydrology and future proofing.



#### Safety assessment (16.5%)

Considers construction safety, operational safety, public safety, road safety interfaces and emergency response.



#### Constructability and schedule (12.5%)

Considers construction duration, access and complexity, resources, interface with operational railway and staging opportunities.

### Does it enhance the service offering?



#### Transit time

Requires a transit time from Melbourne to Brisbane of less than 24 hours.



#### Reliability

Requires 98% reliability for freight customers.

\* The criteria are weighted to reflect relative importance in decision making. However, different MCAs can have slightly different weightings reflecting the specifics of the options under assessment and taking into account any previous MCA results or other assessments undertaken in respect of the options being considered.

## Is it value for money?



### Environmental impacts (12.5%)

Considers ecological impacts (flora, fauna and habitats), visual impacts, noise and vibration impacts, flooding and waterway impacts and effects on air quality and greenhouse gas emissions.



### Operational approach (16.5%)

Considers impacts on travel time, reliability and availability, and network interoperability and connectivity including interfaces with rail terminals and network.



### Community and property impacts (12.5%)

Considers property impacts, Indigenous and non-Indigenous heritage, impact on community, community response and current and future land use and links to economic impacts.



### Approvals and stakeholder engagement (12.5%)

Considers planning and approval requirements, consultation with Federal and State agencies and local governments, other statutory and regulatory approvals and service authority interfaces, such as utilities etc.

A broad range of qualitative and quantitative criteria is considered as part of the Multi-Criteria Analysis (MCA). The MCA process is recognised as an industry standard and is widely used on complex infrastructure projects in Australia and internationally.

## ALTERNATIVES ARE BASED ON THEIR ABILITY TO MEET THE SERVICE OFFERING



### Competitive pricing

Requires competitive pricing for freight customers.



### Availability

Requires train paths at the times suitable to market needs.

This is the minimum level of service required by rail operators and freight customers.

## ALTERNATIVES ARE COMPARED ON THE BASIS OF COST



### Construction estimate



### Operating costs

This is the construction estimate, and track maintenance and train operating costs for customers.

The final step in the process is that ARTC makes a recommendation to the Federal Minister for Infrastructure and Transport through the Inland Rail Sponsors Group (Previously the Inland Rail Steering Committee).

# Route selection


Several MCA workshops and investigations were completed in parallel with community consultation during Phases 1 and 2 of the Project development process (see page 13). Outcomes of these activities contributed to the selection and refinement of the N2N final route. The following key route decisions were considered:

Route options	Outcome
<b>East or west of Narromine</b>	– The decision to go east of Narromine was taken based on the amount of track needed, flooding and improved safety and community outcomes.
<b>Through or around Gilgandra</b>	– The decision to traverse farmland further west of Gilgandra was taken based on shorter distances, lower construction costs, fewer operational interface issues and a reduction in noise and vibration impacts on the community.
<b>West via Coonamble or North towards Baradine</b>	– The decision not to use the existing Dubbo to Coonamble line north of Curban (via Coonamble or Gulargambone) was based on longer distances, higher construction costs and increased flooding issues.
<b>Through or around the Pilliga State Forest</b>	– The decision to go through the Pilliga State Forest was taken based on shorter distances, lower construction costs and reduced property impacts.
<b>East or west of Narrabri</b>	– The decision to go to the west of Narrabri (the final route) was chosen based on reduced property impacts. In addition, the alignment crosses the narrowest point of the 1 in 100-year flood zone requiring shorter bridges and reducing the flood risk to the railway and surrounding properties.

**Want to know more?**

See following sections of the Preferred Infrastructure/Amendment Report:

**Appendix B:** Route selection summary report











# Route options through Narromine and Narrabri

## Narrabri route options

LEGEND

-  Final alignment
-  Options considered
-  Existing rail line
-  Roads
-  1 in 100-year flood zone
-  Watercourse

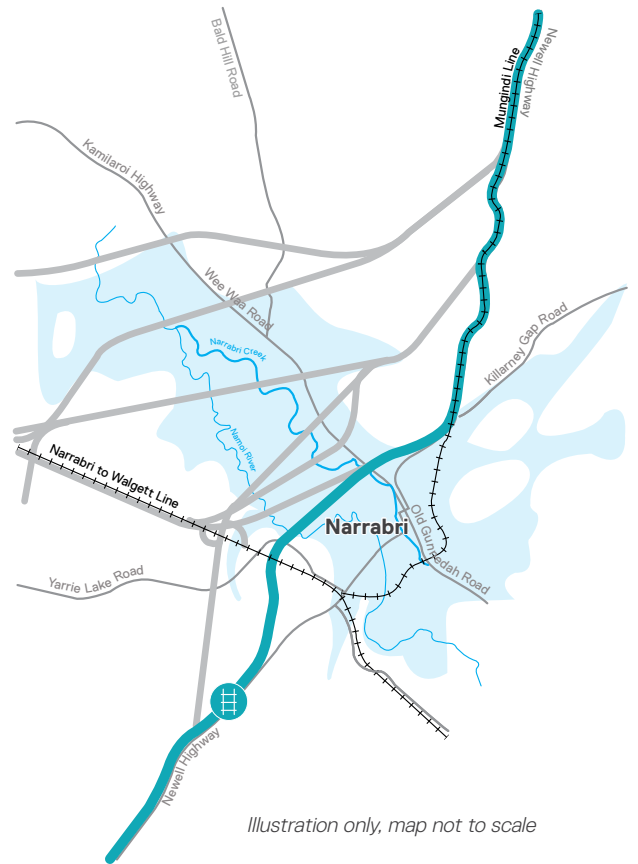
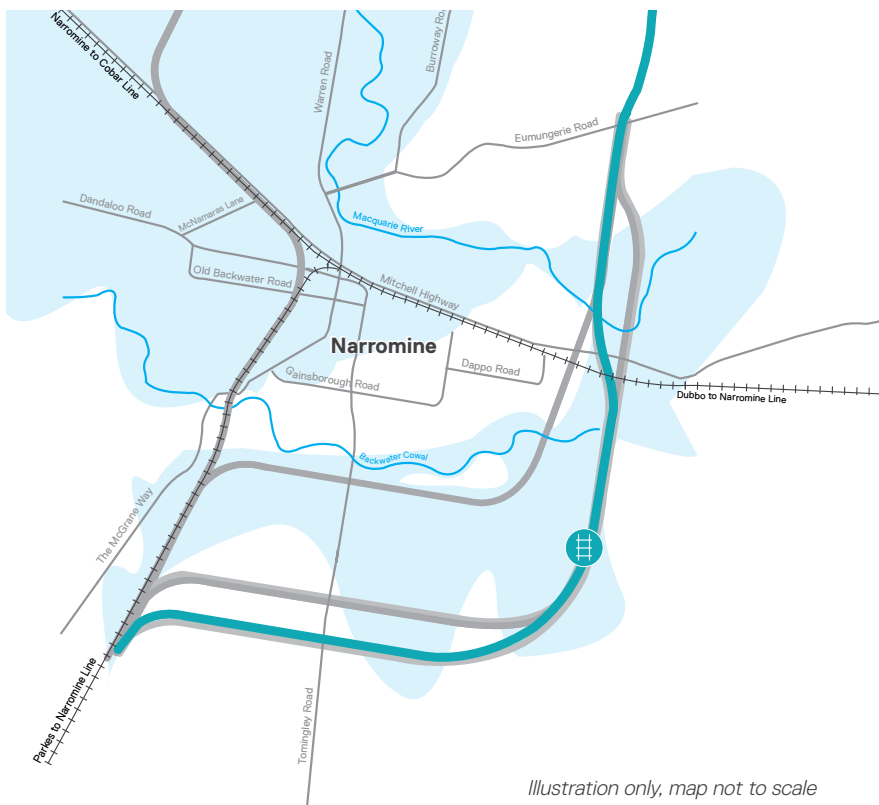


Illustration only, map not to scale



## Narromine route options

LEGEND






-  Final alignment
-  Options considered
-  Existing rail line
-  Roads
-  1 in 100-year flood zone
-  Watercourse

Illustration only, map not to scale

# Hydrology assessment process

Inland Rail is committed to minimising the impact of construction and operational activities on the communities in which we operate. Landowner and stakeholder input and consultation on existing flood conditions and potential impacts have been, and will continue to be, incorporated into the assessment and design process.

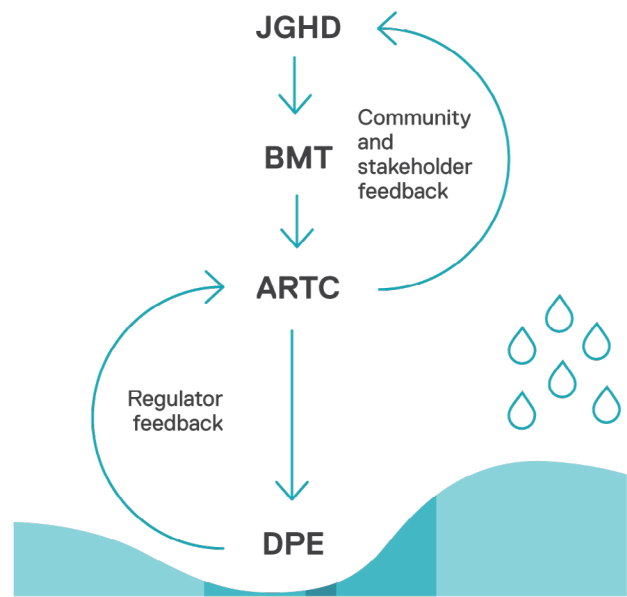
Our guiding principles are to minimise the impacts of Inland Rail on flood behaviour for stakeholders, landowners and the wider community. These principles take natural water flows into account and aim to achieve a level of flood immunity which will minimise risks to the ongoing operation and maintenance of the rail infrastructure.

To ensure we meet guidelines, criteria and community expectations, we undertake a four-tiered peer review process of the flood modelling and assessment.

The model and associated assessment report is prepared by Jacobs GHD, an ISO9001-certified global engineering consultancy and is reviewed by a range of industry professionals (from within and external to ARTC).

It is then provided to the Department of Planning and Environment (DPE) for review by their independent flood expert.

In addition to these formal reviews, Inland Rail meets monthly with DPE as part of the N2N Hydrology Working Group to address community and regulator concerns and update our flood modelling and assessment work, as required.



Four-tiered hydrology assessment process

1. **Jacobs GHD** (technical review and quality assurance/ quality control)
2. **BMT Group** (independent peer review of hydrology and hydraulic models)
3. **ARTC** (including Technical Advisors Arup SMEC)
4. **Department of Planning and Environment** (including independent flood expert)

## Hydrology related consultation

We have consulted extensively with stakeholders, landowners and the community during development of the Project's reference design to minimise flooding impacts wherever possible. Information collected from engagement activities over the past six years has informed and validated the flood modelling.

- 
- 2016**
- Site inspection, community consultation and landholder meetings following a period of heavy rain and local flooding.
- 
- 2019–2020**
- Meetings with landowners to discuss historical flooding, predicted changes to flooding, business operations and access to farm water supply
  - Community drop-in sessions attended by the community, council representatives and members of NSW Parliament
  - Presentations to the Narrabri and Narromine Floodplain Risk Management Committees
  - EIS stakeholder briefings for N2N Community Consultative Committees, government agencies, local government and the community.
- 
- 2021**
- Meetings with impacted landowners and provision of flood mapping
  - Telephone meetings with 18 individual landowners in Bohena Creek, Curban and Narromine regarding the potential for minor afflux (change in flood levels) and duration increases at their properties
  - Meeting with local residents and representatives from Narrabri Shire Council to discuss historical flooding at Bohena Creek
  - Established the monthly N2N Hydrology Working Group with representation from ARTC, DPE and industry professionals.
- 
- 2022**
- Meetings with impacted landowners regarding drainage control areas
  - Ongoing monthly N2N Hydrology Working Group meetings.



## What's changed since the EIS?

The Flooding and Hydrology Assessment Report which formed Technical Report 3 for the EIS, has been updated considering EIS submissions and the independent review undertaken by DPE. The updated report includes:

- Various proposed design refinements described in this PIR/AR summary report
- Additional and modified new culverts to the east of Narromine to assist with managing flood flows
- Establishment of drainage control areas along the alignment to address velocity exceedances
- Culvert blockage factors
- Additional floodplain management plans and studies
- Local flood impacts associated with Mulgate and Bohena Creeks
- Refinements to flood models to address minor issues identified in BMT's independent review
- Revised quantitative design limits (referred to as flood management objectives in the EIS) for afflux, velocity, flood hazard and duration.

## Key flooding and hydrology findings

The updated flooding and hydrology predictions demonstrate that the operation of Inland Rail between Narromine and Narrabri will have a minimal impact on existing flood levels:

- 23 habitable buildings exceed the afflux (change in flood levels) quantitative design limits following the construction of Inland Rail. Of these, 22 buildings are currently subject to flooding. Only one building is newly flooded above floor level by 4 millimetres in a 1 in 100 year flood event
- 28 non-habitable buildings exceed the afflux quantitative design limits following construction of Inland Rail. Of these, 27 buildings are already subject to flooding. Only one building is newly flooded above floor level by 21 millimetres in a 1 in 100-year flood event.

Property owners can view the existing flood depth and predicted afflux for the 1 in 100-year flood event here:

**[inlandrail.info/n2n-status](http://inlandrail.info/n2n-status)**

All affected property owners have been contacted and will be updated as new information and resources are developed during the final design process.

### Further information

Further information on the various flooding parameters (i.e. velocity, duration, hazard and afflux) and range of flood events can be found in the updated Flooding and Hydrology Assessment Report.

ARTC can provide property specific hydrology information from the updated Flooding and Hydrology Assessment Report on request by contacting **[inlandrailnsw@artc.com.au](mailto:inlandrailnsw@artc.com.au)** or **1800 732 761**.

### Want to know more?

See following sections of the Preferred Infrastructure/Amendment Report:

**Section 4.3:** Updated Flooding and Hydrology Assessment Report





*Castlereagh River, central–western district of New South Wales*

# Conclusion

The N2N Project comprises 306km of new rail corridor and track. The Project will enable trains to connect with other sections of Inland Rail to the north and south, completing one of the missing rail links along the supply chain route. The line will accommodate double-stacked freight trains up to 1,800 metres long and 6.5 metres high.

The Project is needed to support the development of Inland Rail by responding to the growth in public demand for goods and to address existing freight capacity and infrastructure issues. It is a critical component of the Program and is required to ensure Inland Rail will be fully operational.

The Preferred Infrastructure/Amendment Report, supported by further assessment of flooding and hydrology, biodiversity, noise, social impact and Aboriginal cultural heritage, identifies no significant residual impacts associated with the Project (as amended) and the preferred alignment is appropriate and justified.

Inland Rail offers a safe and sustainable solution to existing freight bottlenecks and provides opportunities for complementary supply chain infrastructure development to maximise associated economic growth opportunities.

## Want to know more?

See following sections of the Preferred Infrastructure/Amendment Report:

**Section 8:** Evaluation and conclusion





## How to have your say

DPE encourages online submissions to ensure the timely consideration of all issues raised.



### Online

To have your say online, during the exhibition period go to [planningportal.nsw.gov.au/major-projects](https://planningportal.nsw.gov.au/major-projects) and click on 'Make a submission'. You will need to log in or create a user account.



### By post

If you cannot lodge online, post or drop your submission to the address below, to arrive before the close of exhibition:

**Director – Transport Assessments  
Planning and Assessment  
Department of Planning and Environment  
Locked Bag 5022  
Parramatta NSW 2124**

If you choose to send a paper-based submission, it is important that both the submission and mailing envelope are addressed to the nominated contact team.

DPE advise if you choose to send a paper-based submission and it is not addressed to the correct contact team, the submission may not be received and may be returned.

#### Your submission must include:

- Your name and address, at the top of the letter only (if you want your personal details to be withheld from publication, please request this in a separate cover letter and do not include personal details in your submission)
- The name of the application and the application number: **Inland Rail – Narramine to Narrabri and SSI 9487**
- A statement on whether you 'support' or 'object' to the Proposal or if you are simply providing comment
- The reasons why you support or object to the Proposal; and
- A declaration of any reportable political donations you have made in the last two years (visit [planning.nsw.gov.au/DonationsandGiftDisclosure](https://planning.nsw.gov.au/DonationsandGiftDisclosure) or phone **1300 305 695** to find out more).

### We're here to help

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.

