CHAPTER 28

Conclusions

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT

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

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28.1 Description of the proposal seeking approval

This Environmental Impact Statement (EIS) considers potential impacts from construction and operation of the North Star to NSW/Queensland Border project (the proposal). The EIS has been prepared to support ARTC's application for approval of the proposal in accordance with the requirements of Part 5 Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act), and as a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). The EIS addresses the environmental assessment requirements of the Secretary of the Department of Planning, Industry and Environment (DPIE), dated 8 August 2018.

28.1.1 Proposal features

The proposal consists of the following key features:

- New track:
  - Approximately 25 km of new track within the existing non-operational Boggabilla rail corridor
  - Approximately 5 km of new track within a greenfield rail corridor
- Crossing and maintenance loop:
  - One crossing loop, designed to accommodate trains up to 1,800 m long
  - Turnouts on either end of the crossing loop to allow trains to be guided from one track to another
  - A one-ended siding (approximately 250 m long) incorporated into the crossing loop for maintenance purposes. It will be connected to the southern end of the crossing loop via a low-speed turn out
- Bridges:
  - Eleven new bridges
  - An approximately 1.8 km long viaduct over two major watercourses: the Macintyre River and Whalan Creek
- Drainage:
  - Reinforced concrete pipe culverts and reinforced concrete box culverts
  - Scour protection measures will generally be installed around culverts to prevent erosion
  - Embankment and catch drains adjacent to the proposed alignment to divert surface runoff to the nearest bridge or culvert location
- Road rail interfaces:
  - Work on new and existing non-operational level crossings, within the existing non-operational Boggabilla rail corridor
  - Signalling and communications infrastructure
- Road realignments:
  - Minor realignment of Bruxner Way near where the proposal transitions from the existing non-operational Boggabilla rail corridor to the greenfield rail corridor.
- Earthworks:
  - To achieve flood immunity, much of the proposal is elevated on a fill embankment. The embankment height is typically less than 2 m; however, in the lead up to the Macintyre River Viaduct, the height increases to approximately 7.5 m
  - No significant cuttings (> 10 m) are proposed
- Ancillary works:
  - Ancillary infrastructure including utilities, signalling and communications infrastructure, fencing and signage.

The construction phase of the proposal will also involve laydown areas, access tracks, borrow pits and workforce accommodation.

28.1.2 Timing and operation

Subject to approval of the proposal, construction is planned between 2021 and 2025. The proposal will be managed and maintained by ARTC; however, train services will be provided by a variety of operators.

Train services are not expected to commence until all 13 sections of Inland Rail are complete, planned for 2025.

The proposal will be trafficked by an estimated 14 trains per day in 2025, increasing to an estimated 21 trains per day in 2040. Annual freight tonnages will increase in parallel, from approximately 12 million tonnes per year in 2025 to 20 million tonnes per year in 2040.

The proposal is designed to support double-stacked, 21–25 tonne axle load intermodal (i.e. container) trains up to 1,800 m long and 6.5 m high. Depending on the tonne axle load, train speeds will vary between 80 kilometres per hour (km/hr) and 115 km/hr. In addition, the proposal footprint is future-proofed to accommodate 30-tonne axle load intermodal trains up to 3,600 m long and 6.5 m high, travelling at 80 km/hr.

28.2 Proposal uncertainties

The EIS is based on the reference design for the proposal. Given the current level of design development, some uncertainty remains about technical requirements, how the proposal would be constructed, and how it would operate as part of Inland Rail overall. These details would be resolved as the design of the proposal, and Inland Rail as a whole, progresses.

A summary of the main uncertainties around the design, construction and operation methodologies of the proposal, and how they will be resolved, are in Table 28.1.

TABLE 28.1 MAIN PROPOSAL UNCERTAINTIES

Phase	Uncertainty	How uncertainties will be resolved
Design	Property acquisition—exact areas that need to be acquired	Refining the amount and location of property acquisition will require a detailed survey of the proposal site and surrounding properties, and confirmation of the final detailed design for the proposal.
	Final level-crossing design	Detailed design involves further reviewing the proposed arrangements for each crossing in detail and confirming the preferred approach and considering input from affected landowners and stakeholders for alternative access opportunities.
	Utilities—impacts to utilities to be defined in detail	Further site utilities investigations will be undertaken in consultation with and approved by the relevant utility owners to validate current assessments and confirm relocation/protection requirements.
	Location of the crossing loop and maintenance siding	A key driver of Inland Rail is to achieve a Melbourne–Brisbane transit time of less than 24 hours with 98 per cent reliability. To achieve this target, ARTC is seeking to minimise crossing delays across the entire 1,700 km Inland Rail network by optimising the number and location of crossing loops. This is an iterative process as all 13 Inland Rail projects are at different stages of design development and construction. Projects in the construction phase have confirmed crossing-loop locations; however, opportunities exist on projects that are still in the design stage (such as NS2B) to optimise crossing loop locations. Based on the reference design, the optimised location of the NS2B crossing loop and maintenance siding is between Chainage (Ch) 22.7 km and Ch 24.9 km. This location is subject to change as the program-wide optimisation process progresses.
Construction	Final construction methodology	The final construction activities, sites and sequencing will be determined during the detailed design and construction phases, considering site-specific environmental and engineering constraints and the construction contractor's preferred methods. All future refinements will be constrained to the maximum parameters and impacts identified in this EIS. In this way, construction and operation of the proposal will be within the parameters and impacts approved through this EIS.

Phase	Uncertainty	How uncertainties will be resolved
Construction	Volume of material to be extracted from borrow pits	During the feasibility design phase, 11 borrow pit sites with the potential to provide general and/or structural fill were identified and assessed. The volume of borrow material assessed by this EIS was more than the actual deficit of general and structural fill, to account for shrinkage and the likelihood of encountering unsuitable borrow pit material during construction. During the detailed design and construction phases, the required volume of borrow material will be further refined. Future refinements will be constrained to the maximum parameters and impacts identified in this EIS. In this way, construction and operation of the proposal will be within the parameters and impacts approved through this EIS.

28.3 Justification of the proposal

28.3.1 Summary of proposal justification

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 by 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 constrained road freight and rail passenger networks.

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

The proposal is a critical component of Inland Rail. It will provide the first rail connection between regional NSW and Queensland. Where possible, the proposal has been designed to maximise use of the existing non-operational Boggabilla rail corridor, while still contributing to the overall efficiency of Inland Rail.

28.3.2 Summary of proposal benefits

The proposal is a key component of Inland Rail, which would:

- **Boost the Australian economy**—Inland Rail is expected to increase Australia's gross domestic product by $16 billion during its construction and first 50 years of operation
- **Create jobs**—construction of Inland Rail is estimated to require a workforce of up to 16,000 people at the peak of construction, and an average of 700 additional jobs per year over the construction period
- **Improve connections within the national freight network**—Inland Rail will enhance the National Land Transport Network by creating a rail linkage between Melbourne and Brisbane, providing a connection between Queensland and the southern and western states, and a connection to the east–west trans-continental line (at Parkes)

- **Provide better access to and from regional markets**—Inland Rail will make it easier for freight to move from farms, mines and ports to national and overseas markets
- **Reduce costs**—rail costs for inter-capital freight travelling between Melbourne and Brisbane is estimated to be reduced by $10 per tonne. Highway maintenance costs will also be reduced
- **Offer better transit time and reliability**—Inland Rail will allow a transit time of less than 24 hours between Melbourne and Brisbane and a reliability rate of 98 per cent, matching current road levels
- **Increase the capacity of the transport network**—Inland Rail will increase the capacity for freight and passenger services by reducing congestion along the busy coastal transport route, and allow for growth in passenger services, particularly in the Sydney region
- **Reduce distances travelled**—with Inland Rail, the rail distance between Melbourne and Brisbane will reduce by 200 km, and the distance between Brisbane and Perth, and Brisbane and Adelaide will reduce by 500 km
- **Improve road safety**—it is estimated, there will be up to 15 fewer serious crashes each year, avoiding fatalities and serious injuries
- **Improve sustainability**—carbon emissions will reduce by 750,000 tonnes
- **Improve community amenity**—truck volumes and road congestion on some of Australia's busiest highways will reduce, which will also mean a reduction in trucks travelling through more than 20 regional towns. This will lead to a corresponding reduction in amenity impacts associated with the movement of freight by road, including noise and air emissions
- **Provide an alternative north–south freight link**—Inland Rail will provide a second link between Queensland and the southern states, making Australia's national freight rail networks less vulnerable to disruptions, for example from extreme weather events.

28.3.3 Consequences of not proceeding with the proposal

The proposal is a section of Inland Rail as a whole. As there is no operational rail link between North Star and the NSW/QLD border, Inland Rail cannot proceed if the proposal does not proceed. This would mean that the benefits of Inland Rail would not be realised.

28.4 Environmental considerations

Environmental investigations were undertaken during preparation of the EIS to assess the potential impacts of the proposal. These included:

- Specialist assessments of terrestrial and aquatic biodiversity
- Cultural heritage
- Water quality, hydrology and flooding, and groundwater
- Soils
- Noise and vibration
- Air quality
- Sustainability and climate change
- Traffic and transport
- Landscape and visual amenity
- Land use and property
- Social
- Hazard and risk
- Waste management.

The EIS documents the potential environmental impacts of the proposal, considering both potential positive and negative impacts, and identifies mitigation measures to protect the environment, where required.

28.4.1 Biophysical

The main potential impacts of the proposal on the biophysical environment include:

- Impacts to terrestrial and aquatic ecology during the construction and operation phases, including habitat loss, injury or mortality, displacement and habitat fragmentation
- Potential impacts to surface water flows within the Border Rivers Valley Floodplain
- Construction activities potentially exposing existing contamination and/or causing contamination through leaks or spills
- Impacts on groundwater resources due to bridge piling works
- Surface water impacts, including increased water turbidity and sedimentation, and changes to water chemistry as a result of:
  - Vegetation clearing
  - Earthworks
  - Stockpiling
  - Accidental spills and leaks
  - Soil disturbance.

28.4.2 Social, cultural and economic

The main potential impacts of the proposal on the social, cultural and construction and operation will be due to:

- Changes to existing access arrangements as a result of temporary construction detours, level crossing works and road realignments
- Full and/or partial acquisition of privately owned land
- Construction activities potentially disturbing items with cultural heritage significance
- Impacts on rural landscape values due to vegetation clearing, stockpiling, new infrastructure, construction traffic movements, construction lighting and site offices
- Amenity-related impacts during construction and operation, for instance:
  - Noise, vibration and air quality impacts due to construction traffic, general construction activities and train movements
  - Increased traffic during the construction phases impacting on the level of service of the existing road network and increasing vehicle exposure at rail crossings
- Potential impacts on employment, local business and community well-being, including:
  - Expected employment opportunities for up to 350 construction personnel and up to 20 operations personnel
  - Local businesses may experience increased demand; however, if multiple Inland Rail projects are constructed in the same time frame, there may be a draw on regional trades and construction labour
  - The local community will experience increased workforce traffic, heavy haulage and construction vehicles during the construction phase
  - The social and cultural uses of creeks and the Macintyre River may be disrupted.

28.4.3 Addressing potential impacts

The proposal would incorporate construction management measures and design features to ensure that potential impacts are managed and mitigated as far as practical. The majority of potential construction-related impacts would be effectively managed by implementing the environmental management approaches consolidated in Chapter 27: Environmental Management Plan.

The biodiversity offset strategy will be implemented to address residual impacts of the proposal on biodiversity values, according to the requirements of the EP&A Act, *Biodiversity Conservation Act* 2016 (NSW) (BC Act) and EPBC Act.

28.5 Ecologically sustainable development

The EP&A Act adopts the definition of ecologically sustainable development contained in the *Protection of the Environment Administration Act 1991* (NSW) (POEO Act 1991). An assessment of the proposal against the principles of ecologically sustainable development as per clause 7(4) of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* follows.

28.5.1 Precautionary principle

The assessments of potential impacts described in Chapters 11 to 25 are consistent with the precautionary principle. The assessments comply with accepted scientific assessment methodologies and have considered relevant statutory and agency requirements. The assessments have applied a precautionary approach regarding construction and operational arrangements, modelling used and risk assessment criteria.

The proposal has evolved to avoid impacts where possible and to reflect the findings of the studies undertaken. The route for the proposal has been selected to minimise potential environmental impacts, particularly the amount of vegetation clearing that would be required, by maximising use of existing non-operational Boggabilla rail corridor.

28.5.2 Principle of inter-generational equity

Construction of a long, linear infrastructure project, such as the proposal, has the potential for some degree of environmental and social disturbance. These disturbances include:

- Clearing of vegetation
- Some disturbance to private properties during construction
- Potential disturbance of some cultural heritage sites
- Localised noise, vibration and air quality impacts.

However, the potential for environmental and social disturbance as a result of construction must be balanced against the long-term benefits of the overall Inland Rail proposal.

If Inland Rail does not proceed, the principle of intergenerational equity may be compromised as future generations would experience the increased environmental and safety impacts associated with the transport of large volumes of freight via the Newell Highway.

The strategic planning studies summarised in Chapter 2: Strategic Context have identified a strong need and justification for Inland Rail. The proposal would, as part of the overall Inland Rail network, benefit future generations by providing a safer, more efficient, means of freight transport.

28.5.3 Conservation of biological diversity and ecological integrity

Ecological studies have been undertaken to identify potential adverse impacts on biodiversity. Where potential impacts cannot be avoided, mitigation measures would be implemented to reduce the impact as far as possible.

The proposal would result in the clearing of some vegetation associated with threatened plant communities. Mitigation measures are proposed to minimise and manage the significance of the impact on native vegetation and flora and fauna. Biodiversity offsets would be implemented to address the impacts that cannot be avoided.

28.5.4 Improved valuation and pricing of environmental resources

The assessment has identified environmental and other consequences of the proposal and identified mitigation measures, where appropriate, to manage adverse impacts. Where possible, potential impacts have been expressed in economic terms to allow for a proper economic assessment of the costs and benefits of the proposal.

If approved, construction and operation of the proposal would be in accordance with relevant legislation, the conditions of approval, and the environmental management plans. Adhering to these requirements would increase the capital and operating costs of the proposal. As far as practical, these costs have been internalised by ARTC (i.e. not left to a third-party, either in the present or future, to pay for potential impacts as a result of the proposal).

The reference design for the proposal has been developed with an objective of minimising potential impacts on the surrounding environment. This indicates the reference design has been developed with an environmental objective in mind.

28.6 Concluding statement

The proposal involves constructing approximately 30 km of single track, standard gauge rail line between North Star and the NSW/QLD border, and operating this section of rail line as part of Inland Rail. The proposal is needed to support the development of the overall Inland Rail Program between Melbourne and Brisbane.

Potential impacts resulting from the proposal are considered manageable through implementing the proposed mitigation measures.

The detailed design for the proposal 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 would continue to be developed with this overriding objective in mind, taking into account the input of stakeholders.

To manage 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 proposal. Chapter 27: Environmental Management Plan summarises the environmental mitigation measures to be implemented. The environmental performance of the proposal would be managed by implementing the Construction Environmental Management Plan. The Construction Environmental Management Plan will also ensure compliance with relevant legislation and any conditions of approval.

With implementation of proposed mitigation measures, the potential environmental impacts of the proposal would be adequately managed.