



Narromine to Narrabri Project

RESPONSE TO SUBMISSIONS

ARTC

INLAND
RAIL

An Australian Government Initiative

COVER IMAGE

Existing Walgett rail branch.

ACKNOWLEDGEMENT OF COUNTRY

Inland Rail acknowledges the
Traditional Custodians of the
land on which we work, and pay
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Executive summary

Overview

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

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

- ▶ Using the existing interstate rail line through Victoria and southern NSW
- ▶ Upgrading about 400 km of existing track, mainly in western NSW
- ▶ Providing about 600 km of new track in NSW and south-east Queensland.

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

ARTC is seeking approval to construct and operate the Narromine to Narrabri section of Inland Rail ('the proposal'). The proposal consists of about 306 km of new single-track standard-gauge railway with crossing loops. The proposal would link the Parkes to Narromine section of Inland Rail, located in central-west NSW, with the Narrabri to North Star section of Inland Rail, located in north-west NSW. The proposal also includes changes to some roads to facilitate construction and operation of the new section of railway, and ancillary infrastructure to support the proposal.

Approval process and EIS

The proposal is declared State significant infrastructure and critical State significant infrastructure under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The proposal is permissible without development consent and is subject to assessment and approval by the NSW Minister for Planning. The proposal is also a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and requires approval from the Australian Government Minister for the Environment.

An Environmental Impact Statement (EIS) was prepared to support ARTC's application for approval of the proposal in accordance with the requirements of the EP&A Act and the environmental assessment requirements of the Secretary of the (then) NSW Department of Planning, Industry and Environment (DPIE) ('the SEARs') (now the Department of Planning and Environment (DPE)).

The EIS was placed on public exhibition by DPIE for a period of 62 days, commencing on 8 December 2020 and concluding on 7 February 2021. During the exhibition period, interested stakeholders and members of the community were able to review the EIS online or at display locations, participate in consultation and engagement activities, and make a written submission to the DPIE for consideration in its assessment of the proposal.

Purpose of this report

This report documents and considers the issues raised in community, government agency, organisation and other submissions received by DPIE during public exhibition of the EIS, in accordance with the requirements of Division 5.2 of the EP&A Act and as directed by the Secretary of DPIE. ARTC has carefully considered the content of the submissions and has prepared responses to the issues raised.

The report also describes the actions taken since the EIS was placed on public exhibition and provides a final set of mitigation measures, which incorporate amendments made to respond to issues raised in submissions and/or take into account additional information.

ARTC has also prepared a separate combined Preferred Infrastructure/Amendment Report in response to the Planning Secretary's direction, in accordance with section 5.17(6)(b) of the EP&A Act, to address the hydrology and flooding impacts of the proposal and provide additional information on alternative rail alignments considered. ARTC is also proposing design amendments to the proposal in accordance with clause 192(2) of the Environmental Planning and Assessment Regulation 2000. These amendments are described and considered in the combined Preferred Infrastructure/Amendment Report.

Overview of submissions

DPIE registered a total of 116 submissions on the Major Projects NSW Planning Portal website according to three categories:

- ▶ Public submissions—86 submissions
- ▶ Public authority—15 submissions
- ▶ Organisations—15 submissions.

For the purpose of the issues analysis and responses provided in this report, submissions have been considered and analysed according to two broad groupings:

- ▶ Community—includes local residents, members of the public, landholders and property owners
- ▶ Government agency and other key stakeholders—includes government departments and agencies, local councils, regional businesses and representative organisations/community groups.

Each submission was reviewed, and the issues raised have been summarised, categorised and grouped.

Issues raised

The analysis of submissions involved identifying the issues raised and grouping the issues into the following five main issue types identified by the guidelines *State significant infrastructure—preparing a submissions report* (DPIE, 2020a):

- ▶ The proposal
- ▶ Procedural matters
- ▶ Environmental, social and economic impacts
- ▶ Proposal evaluation
- ▶ Issues beyond the scope of the proposal.

Each type of issue was then categorised into key issues and sub-issue categories based on the information and environmental aspects considered by the EIS.

Community

The majority of issues raised by the community related to the potential impacts of the proposal (50 per cent), followed by issues relating to the proposal itself (28 per cent).

The most frequently raised issues relating to the potential impacts of the proposal are:

- ▶ Land use and property impacts (37 per cent of impact issues)
- ▶ Socio-economic impacts (13 per cent of impact issues)
- ▶ Noise and vibration impacts (13 per cent of impact issues)
- ▶ Flooding impacts (eight per cent of impact issues).

The most frequently raised issues about the proposal are in relation to:

- ▶ Alternatives and options (79 per cent of proposal issues)
- ▶ Design features (15 per cent of proposal issues).

A more detailed breakdown of the land use and property impact sub-issues shows that the most frequently raised sub-issues are:

- ▶ Private access impacts (25 per cent)
- ▶ Property impacts during operation (19 per cent)
- ▶ Compensation (17 per cent)
- ▶ Impacts on property values (12 per cent).

Government agencies and other key stakeholders

The majority of issues raised by government agencies and other key stakeholders related to the potential impacts of the proposal (64 per cent). The most frequently raised issues relating to the potential impacts of the proposal are:

- ▶ Socio-economic impacts (21 per cent of impact issues)
- ▶ Land use and property impacts (21 per cent of impact issues)
- ▶ Traffic and transport impacts (13 per cent of impact issues)
- ▶ Biodiversity impacts (11 per cent of impact issues).

A more detailed breakdown of the socio-economic impact sub-issues shows that the most frequent sub-issue raised by government agencies and key stakeholders is how the potential impacts of the proposal would be mitigated (50 per cent). The most frequent land use and property impact sub-issue raised by government agencies and key stakeholders is property impacts during operation (32 per cent).

Summaries of the issues raised in submissions, and responses to these issues, are provided in sections 4 to 10 of this report.

Mitigation measures

The EIS identified the proposed approach to environmental management and the mitigation measures that would be implemented to avoid or minimise the potential impacts of the proposal.

After consideration of the issues raised in the submissions, and additional work undertaken since exhibition, the mitigation measures have been updated to:

- ▶ Make additional commitments to respond to issues raised in the submissions
- ▶ Modify the wording in some instances so that the intent of the measure is clearer
- ▶ Respond to the findings of further assessments and the amendments described in the combined Preferred Infrastructure/Amendment Report.

Some new measures have been added, and the wording of some measures has been amended. The full set of updated mitigation measures is provided in section 11 of this report. These measures supersede the measures presented in the EIS.

The next steps

Approval process

DPE will, on behalf of the NSW Minister for Planning, review the EIS, this Response to Submissions Report, and the separate combined Preferred Infrastructure/Amendment Report. Once DPE has completed its assessment, DPE will prepare a draft Environmental Assessment Report for the Planning Secretary, which may include recommended conditions of approval in accordance with the EP&A Act.

The Planning Secretary's Environmental Assessment Report will be provided to the NSW Minister for Planning, who will then approve the proposal (with any conditions considered appropriate) or refuse to give approval to the proposal.

The Minister for Planning's determination, including any conditions of approval and the Environmental Assessment Report, will be published on the DPE Major Projects website following determination.

DPE will assess the impacts to matters of national environmental significance (protected by the EPBC Act) under the Assessment Bilateral Agreement between NSW and the Australian Government. Once NSW has determined the project, it will provide the Australian Government with the approval conditions. The Australian Government will then complete its assessment under the EPBC Act and make recommendations to the Australian Minister for the Environment.

Subject to approval of the proposal, the detailed design would be developed with the objective of minimising potential impacts on the local and regional environment and the community. The design and construction methodology would continue to be developed with this objective in mind, taking into account the input of stakeholders and the local community, and the conditions of approval.

Consultation during design and delivery

If the proposal is approved, construction contractor(s) would be engaged to carry out detailed design and construct the proposal. ARTC and the construction contractor(s) would continue to engage with stakeholders and the community in the lead up to, and during, construction. The consultation activities, defined by the communication management plan for the proposal, will aim to ensure that:

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

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

- ▶ Meetings and briefings
- ▶ Workshops
- ▶ Community information sessions
- ▶ Telephone, email and written correspondence
- ▶ Updates to the Inland Rail project website
- ▶ Distribution of information, including mail outs.

Community and stakeholder consultation carried out during construction will include updates on the planned construction activities and program, and notifications to affected residents and landowners/landholders. Enquiries and concerns will be addressed in a timely manner through a complaints handling system.

Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEP	annual exceedance probability
AHIMS	Aboriginal Heritage Information Management System
ALCAM	Australian Level Crossing Assessment Model
Approved Methods	Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales
ARTC	Australian Rail Track Corporation Ltd
AS	Australian Standard
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)
BDAR	biodiversity development assessment report
BoM	Bureau of Meteorology
CCC	community consultative committee
CEMP	construction environmental management plan
Cth	Commonwealth
dB(A)	decibels (A-weighted)
DP	deposited plan
DPE	NSW Department of Planning and Environment (previously DPIE)
DPIE	NSW Department of Planning, Industry and Environment (now DPE)
EIS	environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
EPL	environment protection licence
ISO	International Organization for Standardization
Just Terms Act	<i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW)
km	kilometres
km ²	square kilometres
km/h	kilometres per hour
LEP	local environmental plan
LGA	local government area
m	metres
m ³	cubic metres
mm	millimetre
NEPC	National Environmental Protection Council
NSW EPA	NSW Environment Protection Authority
ONRSR	Office of the National Rail Safety Regulator
PCT	plant community type
PM10	airborne particulate matter with an aerodynamic diameter of less than 10 micrometre (µm)
PM2.5	airborne particulate matter with an aerodynamic diameter of less than 2.5 micrometre (µm)
RAP	Registered Aboriginal Parties
SEARs	Secretary's environmental assessment requirements (for the EIS)
SIMP	social impact management plan
TEC	threatened ecological communities
TSR	travelling stock reserve

Definitions

Term	Definition
Aboriginal site	A place where physical remains or modification of the natural environment indicate past and 'traditional' activities by Aboriginal people. Site types include artefact scatters, isolated artefacts, burials, shell middens, scarred trees, quarries and contact sites. Includes sites listed on the AHIMS. Also known as Aboriginal objects.
Active control (level crossings)	Where the movement of vehicular or pedestrian traffic across a railway crossing is controlled using devices such as flashing signals, warning sounds, gates and/or boom barriers (or a combination of these), with the device/s activated prior to, and during, the passage of a train through the crossing.
Annual exceedance probability	The chance of a flood of a nominated size occurring in a particular year. The chance of the flood occurring is expressed as a percentage and, for large floods, is the reciprocal of the annual recurrence interval. For example, the 1 per cent annual exceedance probability flood event is equivalent to the 100-year annual recurrence interval flood event.
Aquifer	A groundwater bearing formation sufficiently permeable to transmit and yield groundwater or water bearing rock.
Ballast	Crushed rock, stone, etc. used to provide a foundation for a railway track. Ballast usually provides the bed on which railway sleepers are laid, transmits the load from train movements, and restrains the track from movement.
Biodiversity	The variety of plant and animal life in the world or in a particular habitat.
Biodiversity offsets	Measures that benefit biodiversity by compensating for the adverse impacts elsewhere of an action, such as clearing for development. Biodiversity offsets work by protecting and managing biodiversity values in one area in exchange for impacts on biodiversity values in another.
Bore	Constructed connection between the surface and a groundwater source that enables groundwater to be transferred to the surface, either naturally or through artificial means.
Borrow pit	An area where material (such as sand, gravel or rock) has been dug for construction use at another location.
Construction compound	An area used as the base for construction activities, usually for the storage of plant, equipment and materials and/or construction site offices and worker facilities.
Construction environmental management plan	A site-specific plan developed for the construction phase of a project, to ensure that all contractors and sub-contractors comply with the environmental conditions of approval for the project, and that the environmental risks are properly managed.
Construction noise management level	Construction noise management levels are established in accordance with the <i>Interim Construction Noise Guideline</i> (DECC, 2009). They represent the noise level at which there may be some community reaction to noise. Construction noise management levels are not mandatory limits; however, where construction noise levels are predicted or measured to be above the management levels, feasible and reasonable work practices to minimise noise emissions are to be investigated.
Crossing loop	A section of track off to the side of the main track/s that allows a train to move to the side so that another train can pass.
Crown land	Land that is owned by the NSW Government.
Culvert	A structure that allows water to flow under a road, railway, track, or similar obstruction.
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own.
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water.
Ecosystem credit	A credit that relates to a vegetation type and threatened fauna species that are reliably predicted by that vegetation type (as a habitat surrogate).
Emission	A substance discharged into the air.
Erosion	A natural process where wind or water detaches a soil particle and provides energy to move the particle.
Flood	Relatively high stream flow that overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flow associated with major drainage before entering a watercourse.
Floodplain	An area of land that is inundated by floods up to and including the probable maximum flood event (i.e. flood prone land).
Freight	Goods transported by truck, train, ship, or aircraft.

Term	Definition
Groundwater	Water that is held in rocks and soil beneath the Earth's surface.
Heritage listed	An item, building or place included on statutory heritage lists maintained by local, State and/or the Australian Government.
Hydrology	The study of rainfall and surface water runoff processes.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
Inland Rail Program (Inland Rail)	The Inland Rail program comprises the design and construction of a new inland rail connection between Melbourne and Brisbane, via Wagga, Parkes, Moree, and Toowoomba. The route for Inland Rail is about 1,700 kilometres in length. Inland Rail will involve a combination of upgrades of existing rail track and the provision of new track.
L _{A90} (period)	The sound pressure level exceeded for 90 per cent of the measurement period.
L _{Aeq} (time)	The equivalent continuous sound level for a defined time period.
L _{Amax}	The maximum sound level recorded during the measurement period.
Landscape	All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.
Landscape character	The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place.
Level crossing	A place where rail lines and a road cross at the same elevation.
Level crossing protection	The level of control provided at level crossings, which is determined on a case by case basis, and depends on the particular characteristics of a crossing. It generally falls into two categories: passive protection (uses warning signage only) or active protection (uses signage and flashing lights with boom gates).
Level of service	Defined by Austroads as a measure for ranking operating road and intersection conditions, based on factors such as speed, travel time, freedom to manoeuvre, interruptions, comfort and convenience.
Local road	Road used primarily to access properties located along the road.
Made road	A road that has been graded but may or may not be sealed.
Multi-function compound	Large construction compounds proposed for use during construction that would provide a variety of construction-related support services, including storage, assembly, concrete batching and workforce facilities.
PM ₁₀	Particulate matter 10 micrometres or less in diameter. Particles in this size range make up a large proportion of dust that can be drawn deep into the lungs. This is a classification of particles by size rather than chemical properties.
Possession	A period of time during which a rail line is blocked to trains to permit work to be carried out on or near the line.
Proposal	The construction and operation of the Narromine to Narrabri section of Inland Rail.
Proposal site	The area that would be directly affected by construction works (also known as the construction footprint). It includes the location of proposal infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of the storage areas/compounds sites etc. that would be used to construct that infrastructure.
Rail alignment	The exact positioning of the track, accurately defined both horizontally and vertically, along which the rail vehicles operate.
Rail corridor	The corridor within which the rail tracks and associated infrastructure are located.
Rating background level	The underlying level of noise present in an area once transient and short-term noise events are filtered out.
Reference design	An initial functional layout of a project. Used to facilitate understanding of a project, establish feasibility, provide basis for estimating and determine further investigations needed for detailed design.
Risk	Chance of something happening that will potentially have an undesirable effect. It is measured in terms of consequence and likelihood.
Road reserve	A legally defined area of land within which facilities such as roads, footpaths and associated features may be constructed for public travel.
Scour	The erosion of material by the action of flowing water.

Term	Definition
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the threatened species profile database.
Spoil	Excess soil, rock or dirt excavated from the site.
Sensitive receivers	Land uses that are sensitive to potential flooding, noise, air and visual impacts, such as residential dwellings, schools and hospitals.
State significant infrastructure	Major transport and services infrastructure considered to have State significance as a result of size, economic value or potential impacts.
Stock crossing	A defined location providing the ability for stock (cattle and sheep) to safely cross the rail corridor, via a level crossing or an underpass (culvert or bridge).
Study area	The study area is defined as the wider area including and surrounding the proposal site, with the potential to be directly or indirectly affected by the proposal (e.g. by noise and vibration, visual or traffic impacts). The actual size and extent of the study area varies according to the nature and requirements of each impact assessment technical report.
Surface water	Water flowing or held in streams, rivers and other wetlands in the landscape.
Temporary workforce accommodation facility	A facility used to accommodate the construction workforce for the proposal and provide a range of facilities for the workforce, including accommodation and catering.
Track	The structure consisting of the rails, fasteners, sleepers and ballast, which sits on the formation.
Track formation	See the definition of formation.
Travelling stock reserves	Travelling stock reserves are parcels of Crown land reserved under the Crown Land Management Act 2016 (NSW) for use by travelling stock.
Visual amenity	The value of a particular area or view in terms of what is seen.
Viewpoint	The specific location of a view, typically used for assessment purposes.
Waste	Includes any matter (whether liquid, solid, gaseous or radioactive) that is discharged, emitted or deposited in the environment in such volume, constituency, or manner as to cause an alteration to the environment.
Watercourse	The path of the main flow of surface water along its extent, variously referred to as streams or rivers (as relevant).
Water table	The surface of saturation in an unconfined aquifer, or the level at which pressure of the water is equal to atmospheric pressure.

1. Introduction

1.1 Background

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

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

- ▶ Using the existing interstate rail line through Victoria and southern NSW
- ▶ Upgrading about 400 km of existing track, mainly in western NSW
- ▶ Providing about 600 km of new track in NSW and south-east Queensland.

The Inland Rail program has been divided into 13 sections, seven of which are located in NSW. Each of these projects can be delivered and operated independently with tie-in points on the existing railway.

Australian Rail Track Corporation Ltd (ARTC) ('the proponent') has developed a program to deliver Inland Rail. ARTC was created after the Australian and state governments agreed in 1997 to the formation of a 'one stop shop' for all operators seeking access to the national interstate rail network. Across its network, ARTC is responsible for:

- ▶ Selling access to train operators
- ▶ Developing new business
- ▶ Capital investment in the corridors
- ▶ Managing the network
- ▶ Infrastructure maintenance.

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

1.2 Proposal overview

The proponent is seeking approval to construct and operate the Narromine to Narrabri section of Inland Rail ('the proposal'). The proposal consists of about 306 km of new single-track standard-gauge railway with crossing loops. The proposal also includes changes to some roads to facilitate construction and operation of the new section of railway, and ancillary infrastructure to support the proposal.

The proposal would be constructed to accommodate double-stacked freight trains up to 1,800 metres (m) long and 6.5 m high. It would include infrastructure to accommodate possible future augmentation and upgrades of the track, including a possible future requirement for 3,600-m-long trains.

The land requirements for the proposal would include a new rail corridor with a minimum width of 40 m, with some variation to accommodate particular infrastructure and to cater for local topography. The corridor would be of sufficient width to accommodate the infrastructure currently proposed for construction, as well as possible future expansion of crossing loops for 3,600-m-long trains. Clearing of the proposal site would occur to allow for construction and to maintain the safe operation of the railway.

1.2.1 Location

The proposal would be located between the towns of Narromine and Narrabri in NSW. The proposal would link the Parkes to Narromine section of Inland Rail, located in central-west NSW, with the Narrabri to North Star section of Inland Rail, located in north-west NSW.

The location of the proposal is shown in Figure 1-1. Further information on the location, study area and proposal site is provided in chapter A2 of the EIS.

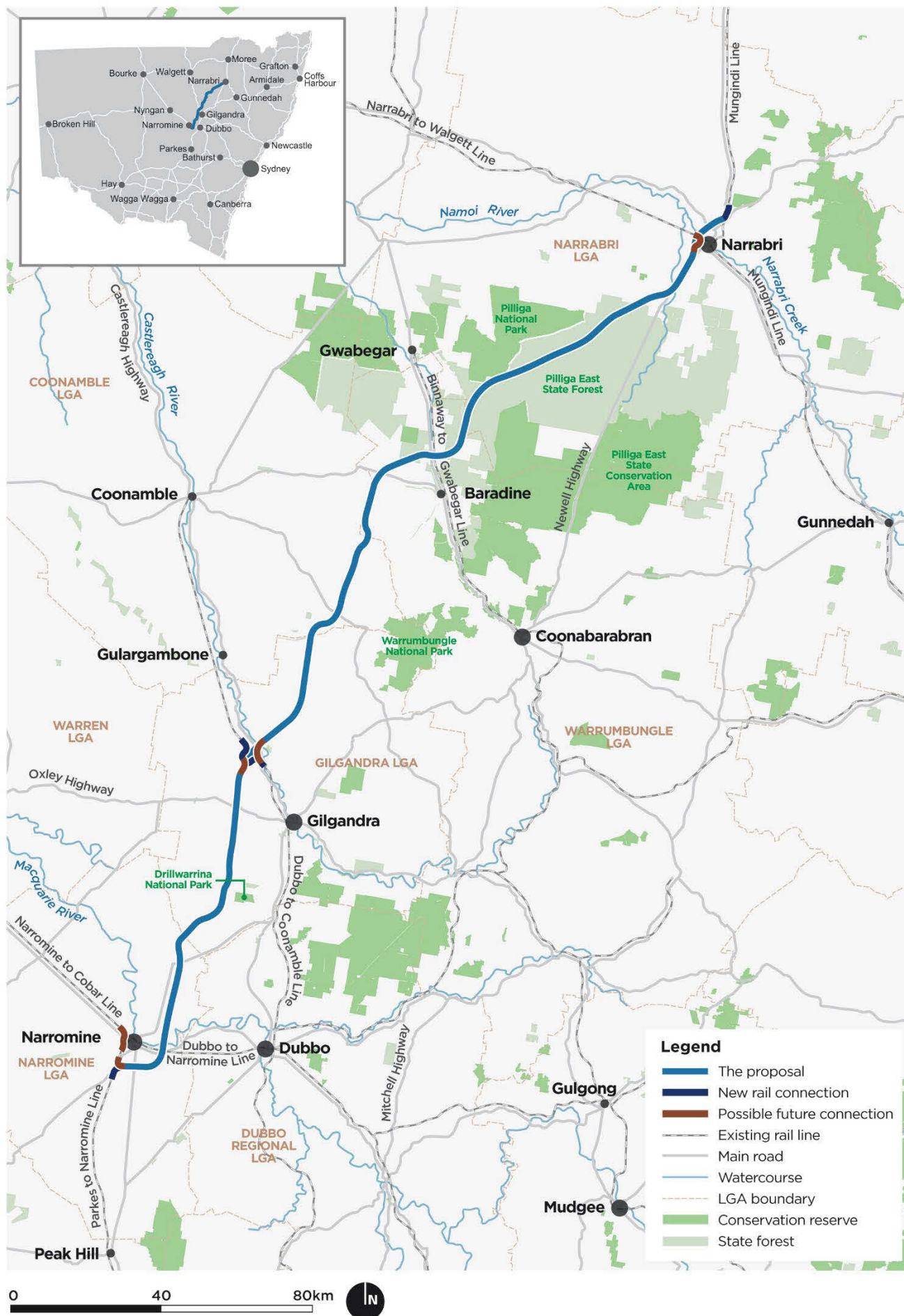


FIGURE 1-1: LOCATION OF THE PROPOSAL

1.2.2 Key design features

The key features of the proposal (as amended—see section 1.5.3) include:

Rail infrastructure

- ▶ A new 306-km-long rail corridor between Narromine and Narrabri
- ▶ A single-track standard-gauge railway and track formation within the new rail corridor
- ▶ Seven crossing loops located at Burroway, Balladoran, Armatree/Tonderburine, Mt Tenandra, Baradine, The Pilliga and Bohena Creek
- ▶ Bridges over rivers and other watercourses (including the Macquarie River, Castlereagh River and the Narrabri Creek/Namoi River system), floodplains and roads
- ▶ Level crossings
- ▶ New rail connections and possible future connections with existing ARTC and Country Regional Network rail lines, including a new 1.2-km-long rail junction between the Parkes to Narromine section of Inland Rail and the existing Narromine to Cobar Line (the Narromine West connection).

Road infrastructure

- ▶ Road realignments at various locations, including realignment of the Pilliga Forest Way for a distance of 6.7 km
- ▶ Limited road closures.

The key features of the proposal are shown in Figure 1-2 and Figure 1-3.

Ancillary infrastructure to support the proposal would include signalling and communications, drainage, signage and fencing, and services and utilities.

1.2.3 Key construction infrastructure

The following key infrastructure is proposed to support construction of the proposal:

- ▶ 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.

The key construction infrastructure is shown in Figure 1-4 and Figure 1-5.

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

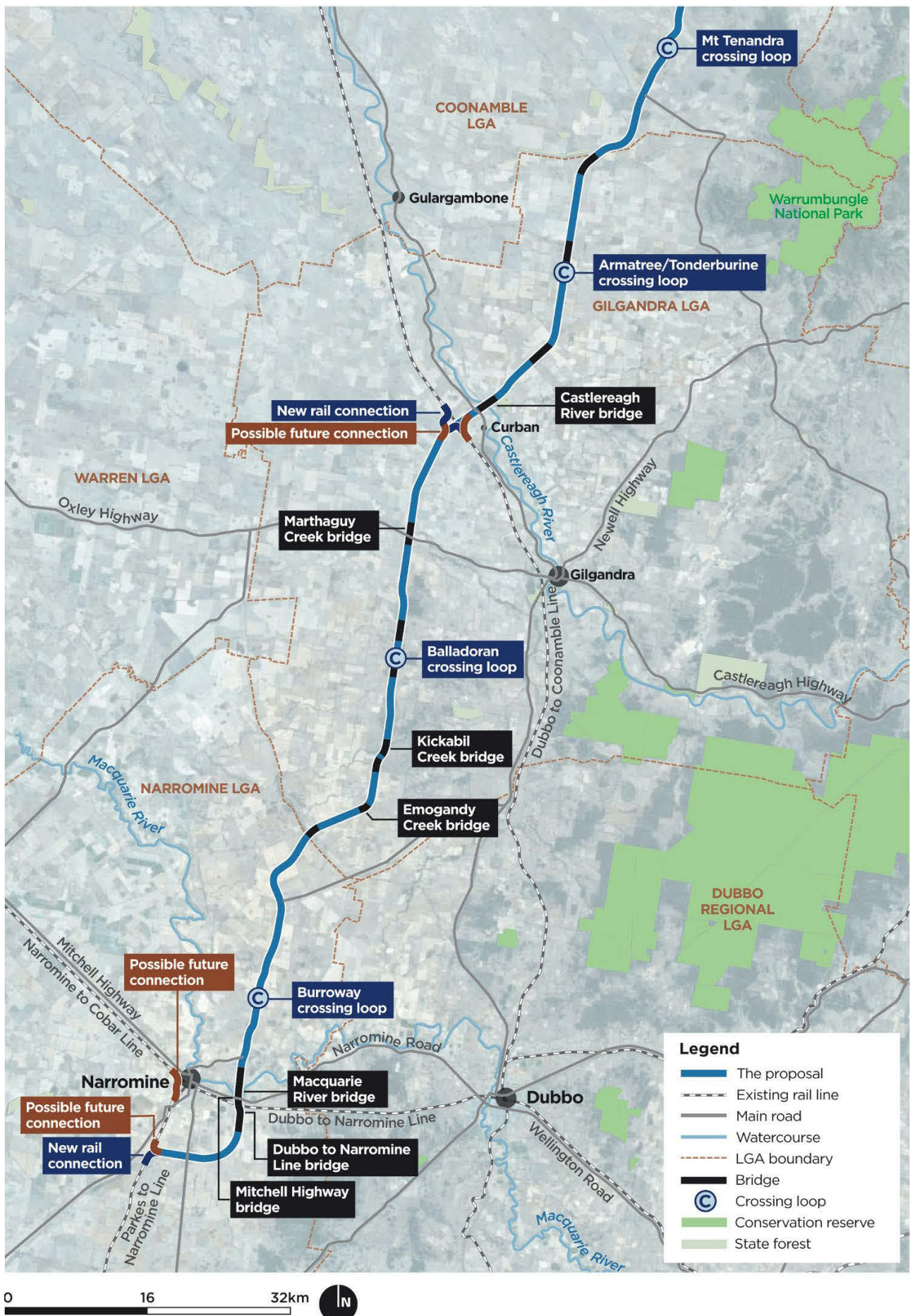


FIGURE 1-2: KEY FEATURES OF THE PROPOSAL (MAP 1 OF 2)

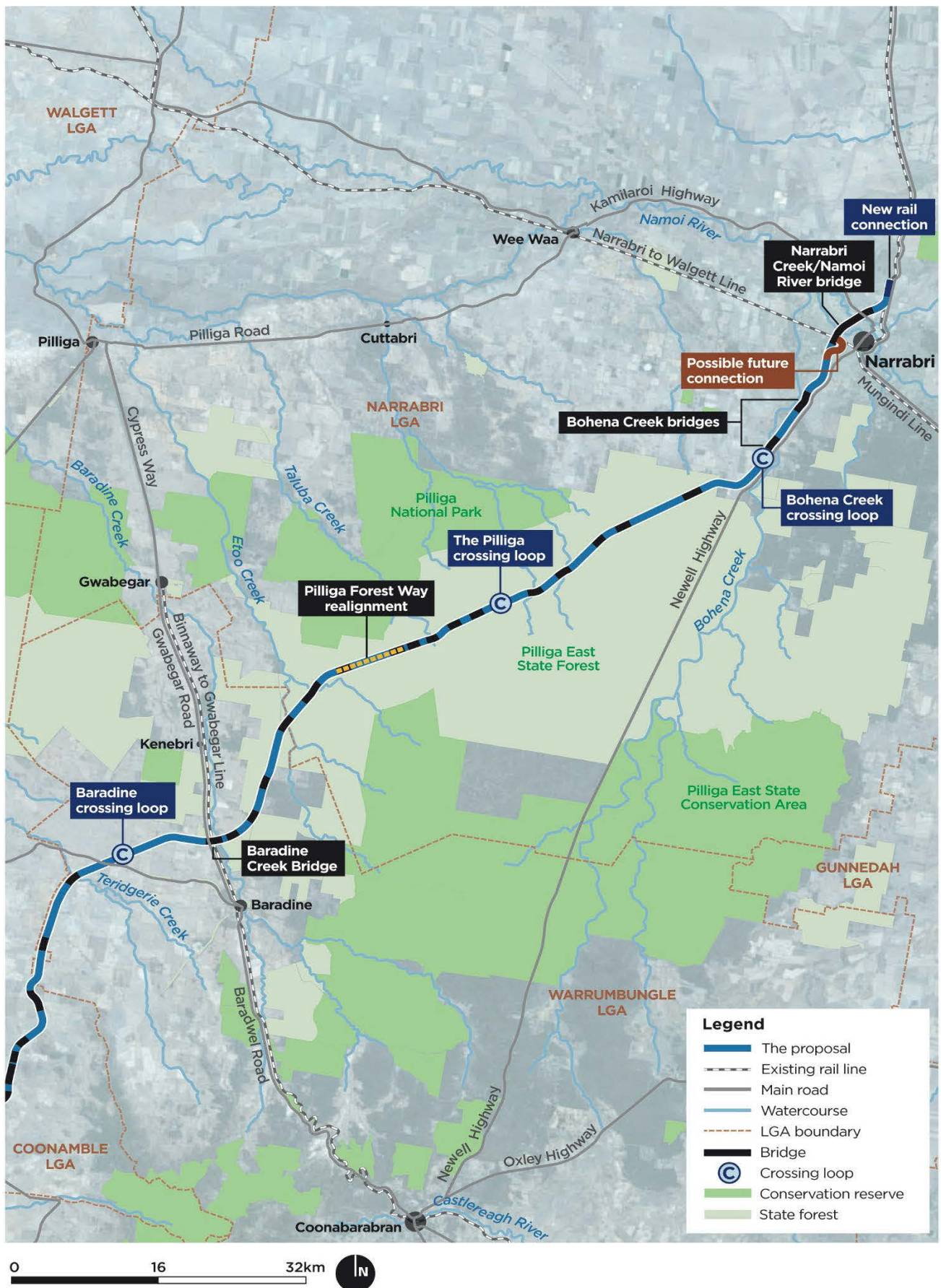


FIGURE 1-3: KEY FEATURES OF THE PROPOSAL (MAP 2 OF 2)

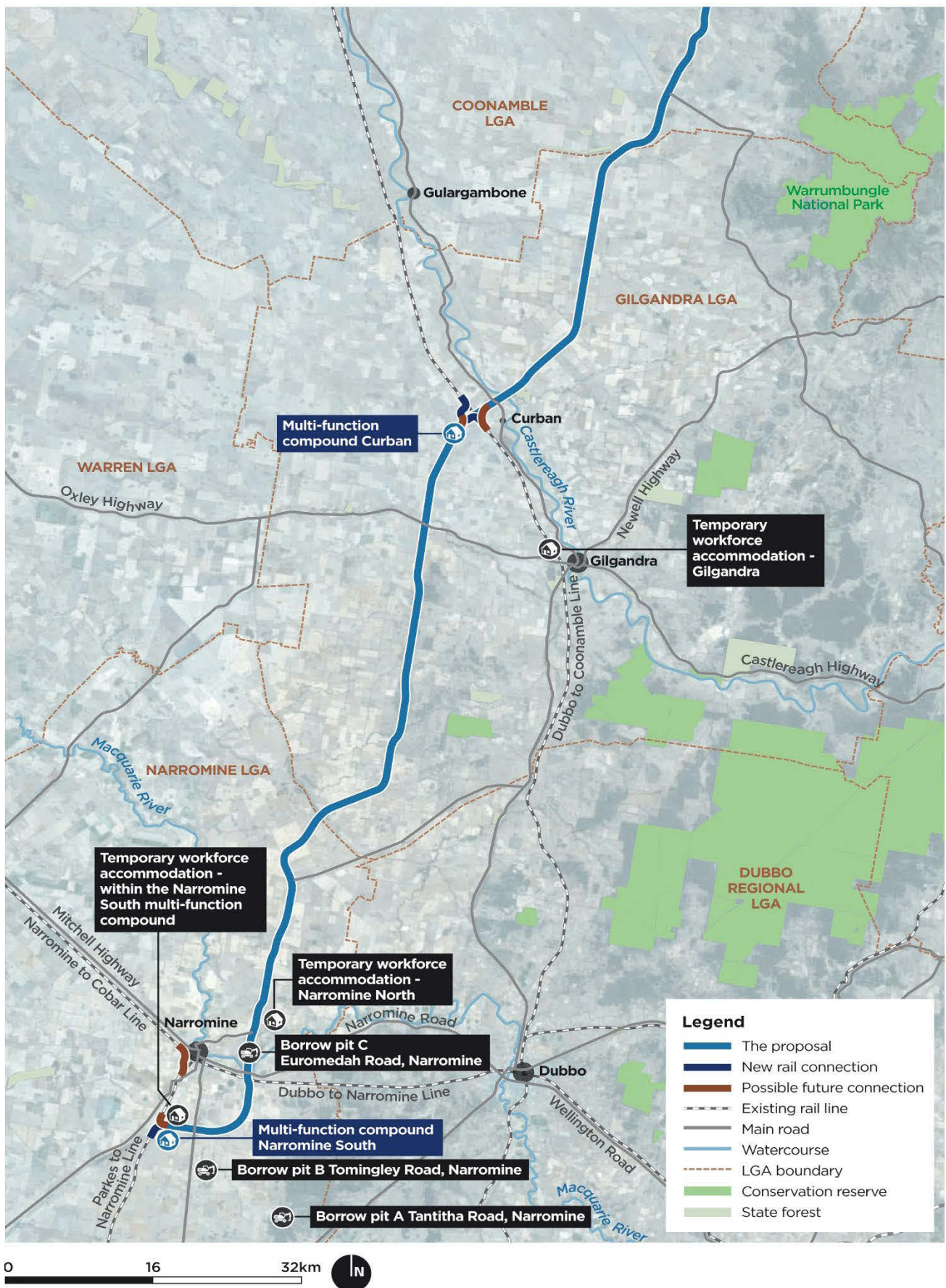


FIGURE 1-4: KEY CONSTRUCTION INFRASTRUCTURE (MAP 1 OF 2)

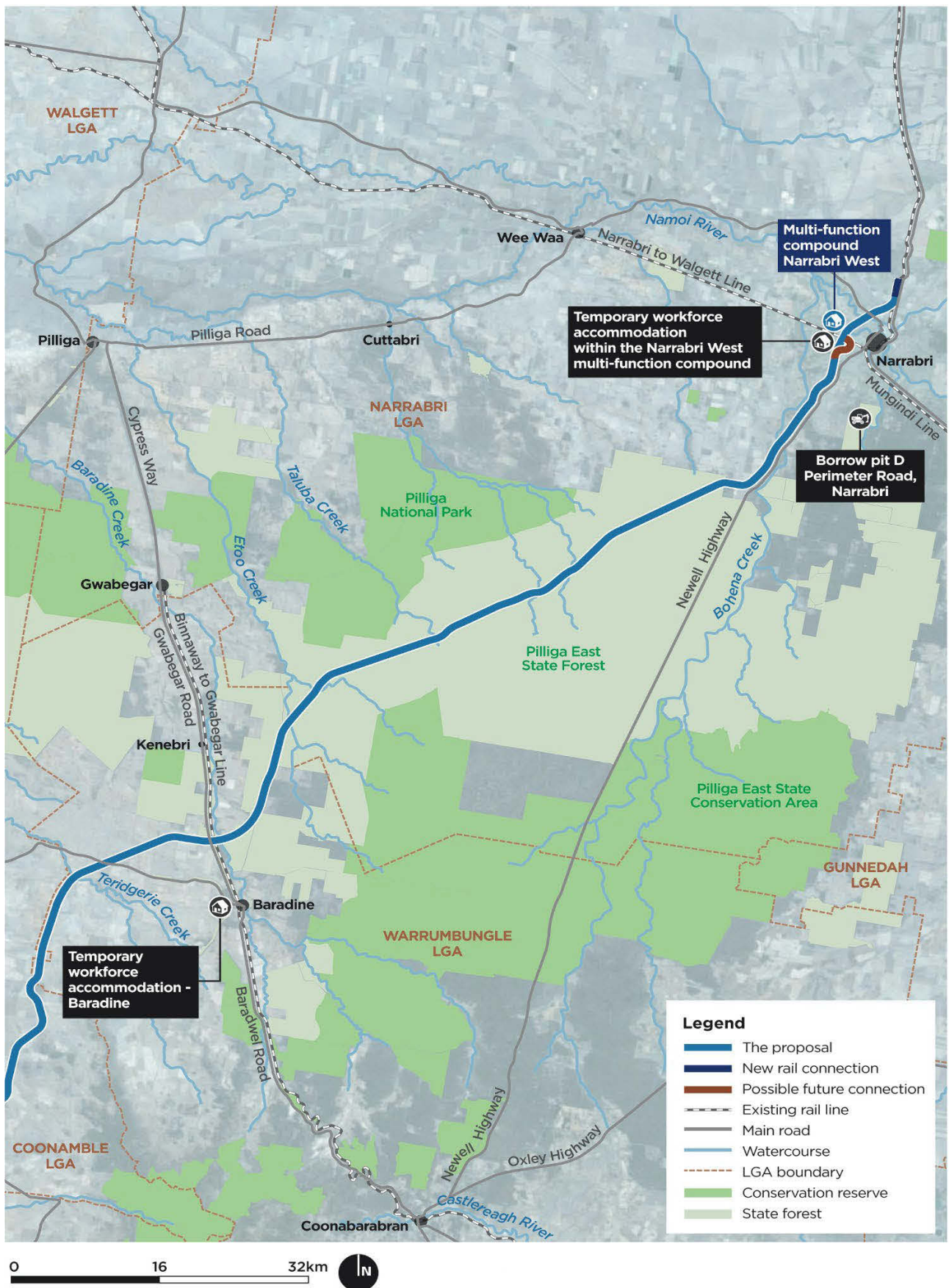


FIGURE 1-5: KEY CONSTRUCTION INFRASTRUCTURE (MAP 2 OF 2))

1.2.4 Operation

The proposal would form part of the rail network managed and maintained by ARTC. Train services would be provided by a variety of operators.

It is estimated that the proposal would be trafficked by an average of 10 trains per day (both directions) in 2026, increasing to about 14 trains per day (both directions) in 2040. This rail traffic would be in addition to the existing rail traffic using other lines that the proposal interacts with.

The trains for Inland Rail as a whole would be a mix of grain, bulk freight and other general transport trains. Total annual freight tonnages would be about 10 million tonnes in 2027, increasing to about 17.5 million tonnes in 2040.

Train speeds would vary according to axle loads and range from 80 to 115 km per hour.

1.2.5 Timing

Subject to approval, the first phase of construction is anticipated to start in late 2022 and is expected to take about four years to complete. The proposal is expected to be operational in 2026. Inland Rail as a whole would be operational once all 13 sections are complete, which is estimated to be in 2027.

1.3 Statutory context and assessment

The proposal is declared State significant infrastructure and critical State significant infrastructure under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The proposal is permissible without development consent and is subject to assessment and approval by the NSW Minister for Planning. The proposal is also a controlled action under the *Environment Protection Biodiversity Conservation Act 1999* (Cth) (EPBC Act) (referral reference 2018/8259) and requires approval from the Australian Minister for the Environment.

An environmental impact statement (EIS) was prepared to support ARTC's application for approval of the proposal in accordance with the requirements of Division 5.2 of the EP&A Act. The EIS addressed the environmental assessment requirements of the Secretary of the (then) NSW Department of Planning, Industry and Environment (DPIE) (now the Department of Planning and Environment (DPE)) ('the SEARs'), dated 9 September 2020.

The EIS was also prepared to support ARTC's application for approval of the proposal under the EPBC Act.

Further information about the statutory context, approval and assessment requirements is provided in chapter A3 of the EIS.

1.4 EIS exhibition

The EIS was placed on public exhibition by DPIE for a period of 62 days, commencing on 8 December 2020 and concluding on 7 February 2021.

During the exhibition period, interested stakeholders and members of the community were able to review the EIS online or at display locations (described in section 3.4 of this report), participate in consultation and engagement activities (also described in section 3.4), and make a written submission to DPIE for consideration in the assessment of the proposal.

1.5 Purpose and scope of this report

1.5.1 Purpose

The Secretary of DPIE provided copies of the submissions received by DPIE to ARTC. In accordance with section 5.17(6)(a) of the EP&A Act, on 16 February 2021 the Secretary directed ARTC to provide '*...a Response to Submissions that addresses the issues identified in the submissions from members of the public, interest groups and government agencies.*'

This report documents and considers the issues raised in community, government agency, organisation and other submissions received by DPIE during public exhibition of the EIS in accordance with the requirements of Division 5.2 of the EP&A Act and as directed by the Secretary of DPIE. ARTC has carefully considered the content of the submissions and has prepared responses to the issues raised.

The report also describes the actions taken since the EIS was placed on public exhibition and provides a final set of mitigation measures, which incorporate amendments made to respond to issues raised in submissions and/or take into account additional information.

The report has been prepared with regard to the *State significant infrastructure guidelines—preparing a submissions report* (DPIE, 2020a) ('the guidelines'). In accordance with the guidelines, a submissions report:

...analyses the issues raised in submissions, explains what actions the proponent has taken since the exhibition, provides a serious response to the issues raised in submissions, and provides an updated evaluation of the project as a whole having regard to the detailed findings in each section of the Submissions Report and the principles of ecologically sustainable development.

1.5.2 Scope and structure

This report provides the following information:

- ▶ Introduction to the report (section 1)
- ▶ A summary and analysis of the submissions received (section 2)
- ▶ A description of the actions taken since the EIS was placed on exhibition (section 3)
- ▶ Responses to submissions from local councils (section 4)
- ▶ Responses to submissions from NSW Government agencies (section 5)
- ▶ Responses to submissions from other key stakeholders, including peak bodies and community groups (section 6)
- ▶ Responses to issues raised in submissions from members of the public, including property owners (sections 7 to 10)
- ▶ A conclusion to the report (section 11).

Appendices to this report provide a full set of updated mitigation measures and additional calculations in relation to potential traffic impacts (see section 3.2.2 of this report).

Further information on the proposal's background, location, approval requirements, strategic need, options and alternatives are provided in chapters A2 to A6 of the EIS. The results of the assessment of the potential impacts of the proposal during construction and operation are described in chapters B1 to D4 of the EIS.

1.5.3 Amendments and preferred infrastructure report

ARTC is proposing a number of design amendments to the proposal in accordance with clause 192(2) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). The aim of these amendments is to address issues raised during consultation and in submissions, and to minimise the potential impacts of the proposal. A summary of the proposed amendments is provided in section 3.1 of this report. Further information is provided in the combined Preferred Infrastructure/Amendment Report, which is available separately.

The proposal description chapters provided in the EIS (chapters A7 and A8) have been updated taking into account the amendments summarised in section 3.1 of this report. The amended proposal description is provided in the combined Preferred Infrastructure/Amendment Report.

In addition, in accordance with section 5.17(6)(b) of the EP&A Act, the Planning Secretary directed ARTC to provide a preferred infrastructure report. Further information is provided in section 3.3.1 of this report.

2. Analysis of submissions

2.1 Submissions received

During the exhibition period, submissions were invited from the community and other stakeholders. The receipt of submissions was coordinated and managed by DPIE (now DPE). Submissions were received and registered by DPIE and uploaded onto the Major Projects NSW Planning Portal website (planningportal.nsw.gov.au/major-projects/project/41351). Submissions were accepted by electronic online submission or by post and were provided to ARTC for review and consideration.

A total of 116 submissions was recorded on the Major Projects website according to three categories. A breakdown of submissions by the submitter category registered on the website is provided in Table 2-1.

TABLE 2-1: BREAKDOWN OF SUBMISSIONS REGISTERED ON THE MAJOR PROJECTS WEBSITE

Submitter category ¹	Number of submissions recorded on website	Types of submitters	Total
Public	86	Individuals/community members, landholders and property owners	86
Public authority	15	NSW Government departments and agencies	10
		Local councils	5
Organisations	15	Submissions provided by an organisation (such as a law firm) on behalf of property owners	3
		Other businesses	3
		Peak bodies, representative organisations/land managers and community groups	9
Totals	116		116

1. As selected by submitters when submissions are uploaded to the Major Projects website

The following information was also recorded by DPIE as part of the public submission registration process:

- ▶ 70 submissions registered an objection to the proposal
- ▶ 39 submissions registered a comment on the proposal
- ▶ 7 submissions registered support for the proposal.

For the purpose of the issue analysis and responses provided in this report, submissions have been considered and analysed according to two broad groupings:

- ▶ Community—includes local residents, members of the public, landholders and property owners
- ▶ Government agency and other key stakeholders—includes government departments and agencies, local councils, regional businesses and representative organisations/community groups.

2.1.1 Community submission locations

The main locations of people who provided a location/address in their submission are summarised in Table 2-2. It is noted that some submitters chose to withhold their address.

TABLE 2-2: SUBMITTER LOCATIONS

Location	Number of community submissions
Narrabri	27
Narromine	10
Wee Waa	7
Dubbo/Kickabil	5
Tonderburine	2
Bohena Creek	2
Armatree	2
Gulargambone	2
Curban	1

2.2 Approach to analysing submissions

Each submission was reviewed, and the issues raised were summarised, categorised and grouped. The analysis of submissions involved identifying the issues raised and grouping the issues into the five main issue types identified by the guidelines:

- ▶ The proposal
- ▶ Procedural matters
- ▶ Environmental, social and economic impacts
- ▶ Project evaluation
- ▶ Issues beyond the scope of the proposal.

Each type of issue was then categorised into key issues (e.g. design features, noise and vibration) and sub-issue categories (e.g. level crossings, construction noise), which were based on the information and environmental aspects considered by the EIS. This provided an understanding of the frequency of the issues that were raised and the key areas of concern.

2.2.1 Review of government agency and key stakeholder submissions

Each agency and key stakeholder submission was reviewed and the issues raised in each were summarised broadly according to the order and headings provided in each submission (where such headings were provided). In some instances, related issues have been grouped under a single heading. The issues raised in each submission, and responses to these issues, are provided per submitter in sections 4 to 6 of this report. Where relevant, input to the responses was sought from the technical specialists who assisted with preparing the EIS.

2.2.2 Review of community submissions

An assessment of each community submission was undertaken, with each submission individually reviewed to understand the issues raised. The analysis involved identifying the issues raised and categorising them into key issues and sub-issues.

Responses to the issues raised are provided in sections 7 to 10 of this report, according to the issue categories. Where relevant, input to the responses was sought from the technical specialists who assisted with preparing the EIS.

Each issue identified in sections 7 to 10 is presented as a summary of the issues raised by individual submissions. This means that, while the exact wording of a particular submission may not be present in the summary of the issue, the intent of issues raised has been captured. A response has been provided to each grouped issue summary, which may be relevant across a number of submissions.

Appendix A contains a table identifying community submissions using the submitter and submission identification numbers provided to submitters by DPIE. The table presents, for each submission, a cross reference to where the issues raised in the community submissions have been addressed in sections 7 to 10 of this report. Further detail on issues raised in each submission, including background, contextual information and full submissions, is provided in the detailed submissions available via the Major Projects NSW Planning Portal website (planningportal.nsw.gov.au/major-projects/project/41351).

2.3 Summary of issues raised

2.3.1 Government agency and key stakeholder issues breakdown

A breakdown of the issue types for the issues raised by agencies and key stakeholders is shown in Figure 2-1. This figure shows that the majority of issues raised (64 per cent) related to the potential impacts of the proposal. A breakdown of the key impact issues raised by agencies and key stakeholders is shown in Figure 2-2.

This figure shows that the most frequently raised key impact issues are:

- ▶ Socio-economic impacts (21 per cent of impact issues)
- ▶ Land use and property impacts (21 per cent of impact issues)
- ▶ Traffic and transport impacts (13 per cent of impact issues)
- ▶ Biodiversity impacts (11 per cent of impact issues).

A more detailed breakdown of the socio-economic, and land use and property sub-issues raised is shown in Figure 2-3 and Figure 2-4. The most frequent socio-economic sub-issue raised by government agencies and key stakeholders is how the potential impacts of the proposal would be mitigated (50 per cent). The most frequent land use and property sub-issue raised is property impacts during operation (32 per cent). Further information on the issues raised in government agency and key stakeholder submissions is provided in sections 4 to 6 of this report.

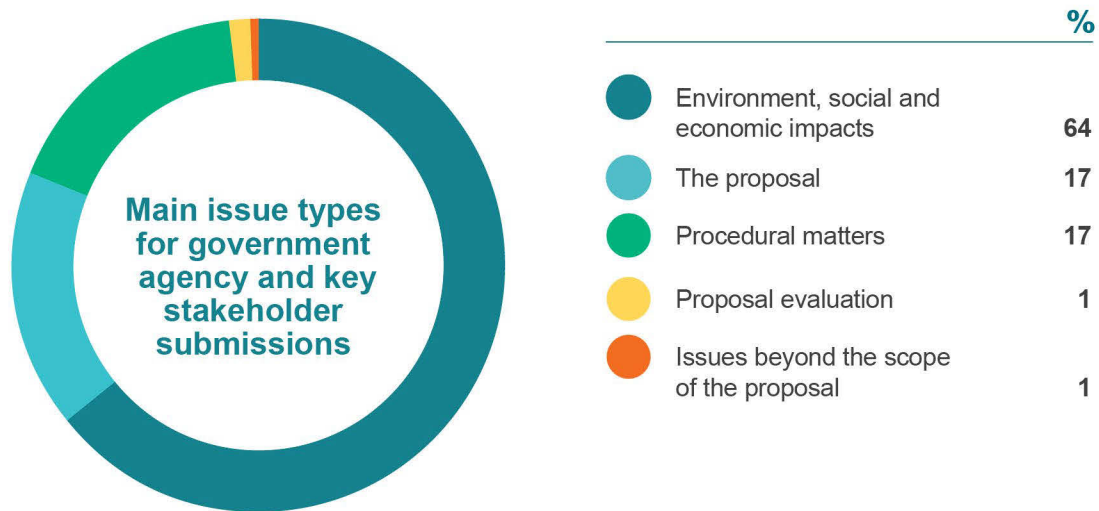


FIGURE 2-1: MAIN ISSUE TYPES FOR GOVERNMENT AGENCY AND KEY STAKEHOLDER SUBMISSIONS

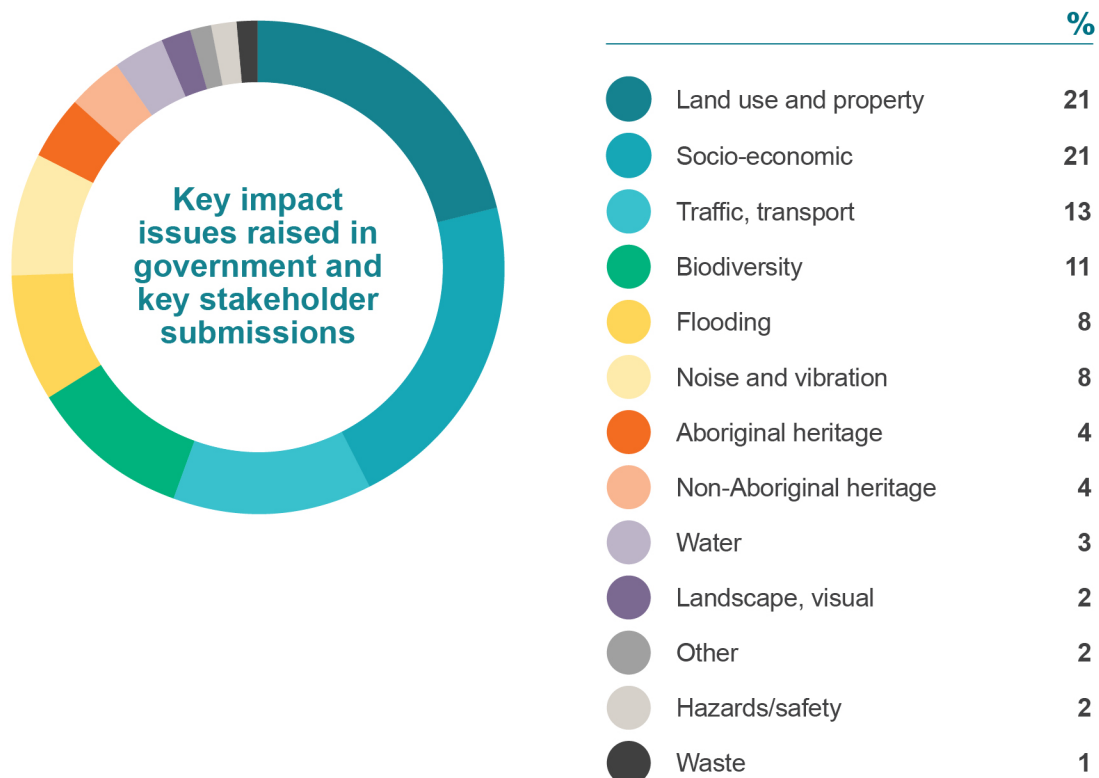


FIGURE 2-2: KEY IMPACT ISSUES RAISED IN GOVERNMENT AND KEY STAKEHOLDER SUBMISSIONS

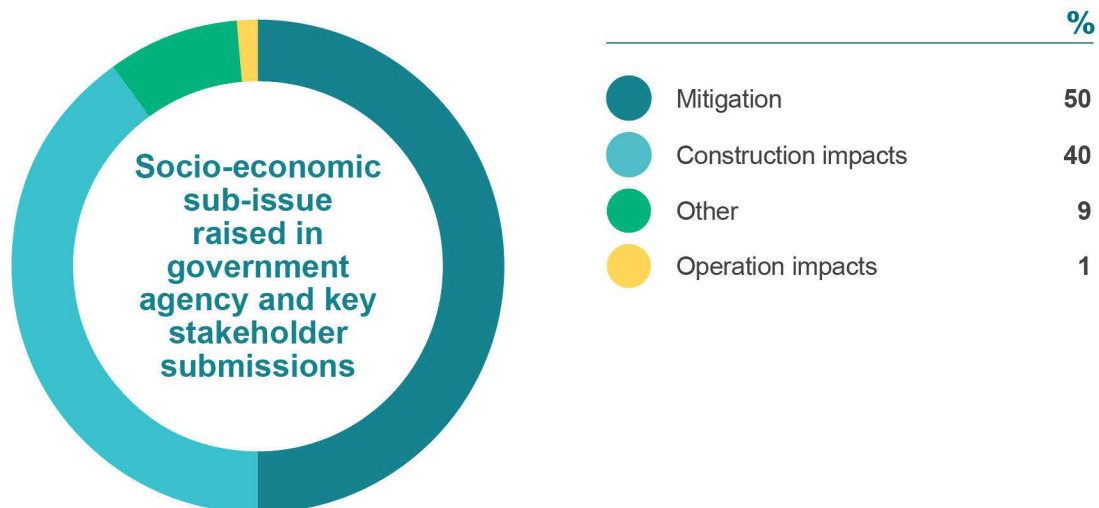


FIGURE 2-3: SOCIO-ECONOMIC SUB-ISSUE RAISED IN GOVERNMENT AGENCY AND KEY STAKEHOLDER SUBMISSIONS



FIGURE 2-4: LAND USE AND PROPERTY SUB-ISSUES RAISED IN GOVERNMENT AGENCY AND KEY STAKEHOLDER SUBMISSIONS

2.3.2 Community issues breakdown

A breakdown of the issue types for the issues raised in community submissions is shown in Figure 2-5. This figure shows that the majority of issues raised (50 per cent) related to the potential impacts of the proposal, followed by issues relating to the proposal itself (28 per cent). A breakdown of the key impact issues raised in community submissions is shown in Figure 2-6. This figure shows that the most frequently raised key impact issues are:

- ▶ Land use and property impacts (37 per cent of impact issues)
- ▶ Socio-economic impacts (13 per cent of impact issues)
- ▶ Noise and vibration impacts (13 per cent of impact issues)
- ▶ Flooding impacts (8 per cent of impact issues).

A breakdown of the key proposal issues raised in community submissions is shown in Figure 2-7. This figure shows that the most frequently raised key proposal issues are:

- ▶ Alternatives and options (79 per cent of proposal issues)
- ▶ Design features (15 per cent of proposal issues).

A more detailed breakdown of the land use and property sub-issues raised in community submissions is shown in Figure 2-8. This figure shows that the most frequently raised sub-issues are:

- ▶ Private access impacts (25 per cent)
- ▶ Property impacts during operation (19 per cent)
- ▶ Compensation (17 per cent)
- ▶ Impacts on property values (12 per cent).

Further information on the issues raised in community submissions is provided in sections 7 to 10 of this report.

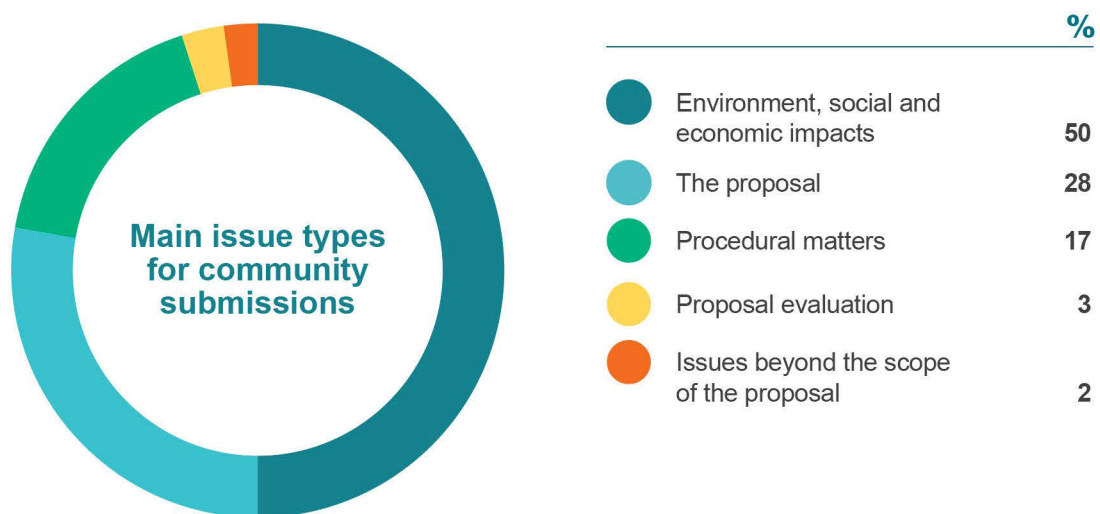


FIGURE 2-5: MAIN ISSUE TYPES FOR COMMUNITY SUBMISSIONS

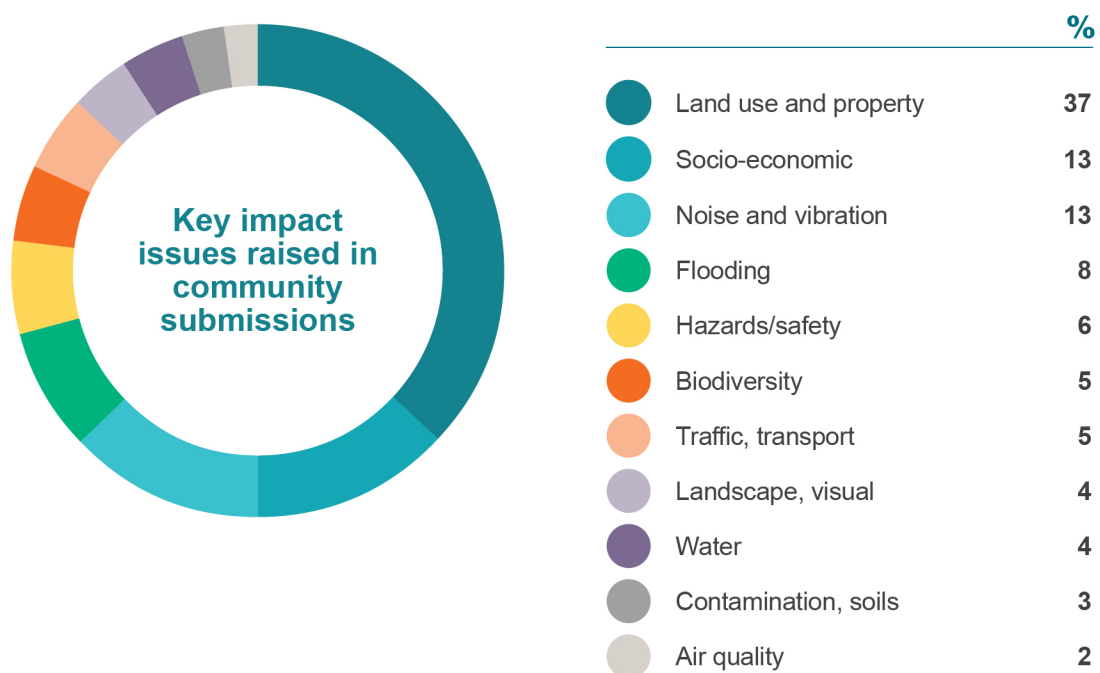


FIGURE 2-6: KEY IMPACT ISSUES RAISED IN COMMUNITY SUBMISSIONS

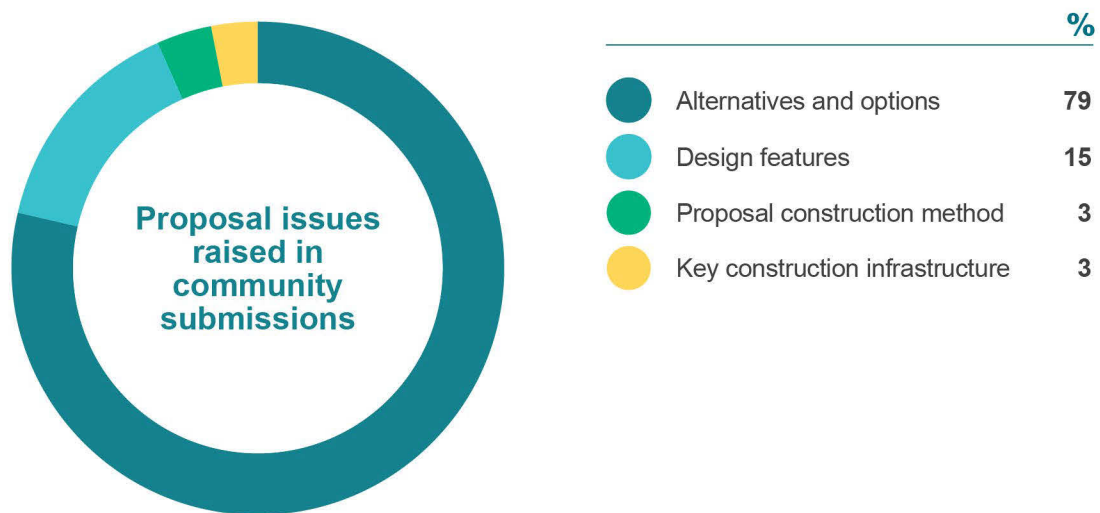


FIGURE 2-7: PROPOSAL ISSUES RAISED IN COMMUNITY SUBMISSIONS

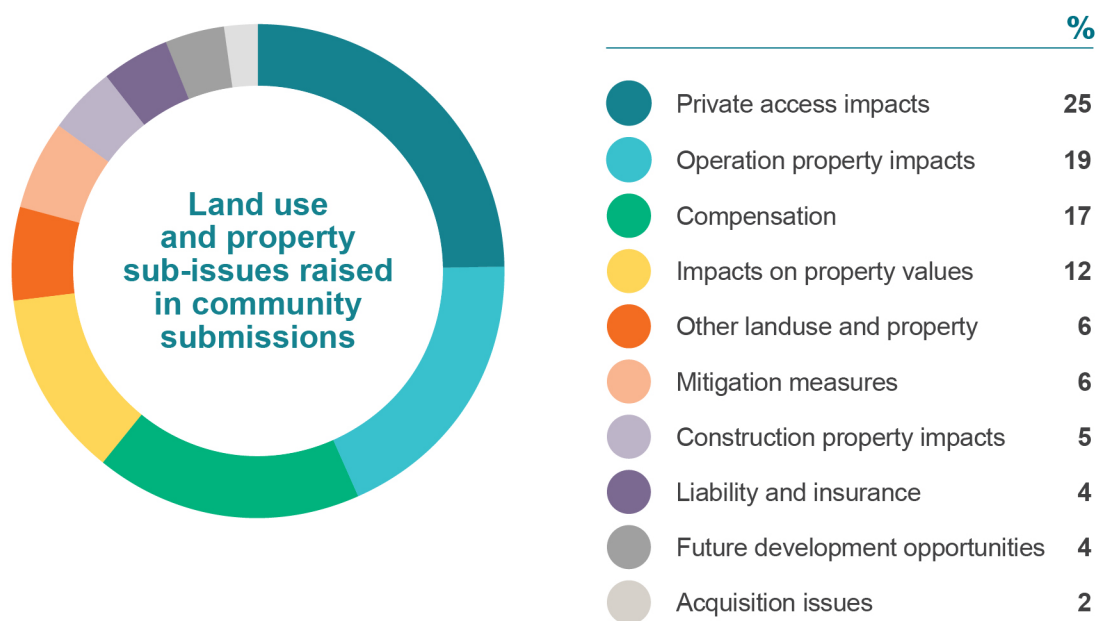


FIGURE 2-8: LAND USE AND PROPERTY SUB-ISSUES RAISED IN COMMUNITY SUBMISSIONS

3. Actions undertaken since public exhibition

3.1 Amending the project

An application may, with the approval of the Planning Secretary, and in accordance with clause 192(2) of the EP&A Regulation, be amended before it is determined. During and subsequent to public exhibition of the EIS, ARTC has undertaken further investigations and is proposing a number of design refinements/amendments to the proposal. The aim of these amendments is to address issues raised during consultation and in submissions, and to minimise the potential impacts of the proposal where practicable; particularly, in respect of land use and property, and traffic and access. The amendments have been developed, taking into account consultation with the community and key stakeholders, and submissions made.

A combined Preferred Infrastructure/Amendment Report has been prepared to consider the amendments to the exhibited proposal. The report considers whether the proposed amendments would result in any changes to the impacts described by the EIS, and whether any changes to the mitigation measures are required.

The proposed amendments are summarised in Table 3-1. Further information about the proposed amendments is provided in the combined Preferred Infrastructure/Amendment Report.

TABLE 3-1: SUMMARY OF AMENDMENTS

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

3.2 Further environmental assessment

3.2.1 Updated assessment reports

Additional biodiversity, noise and vibration, and flooding and hydrology assessments have been undertaken since exhibition. The assessments have been undertaken to assist with considering and responding to issues raised in submissions and during consultation with stakeholders, assessing the impacts of the proposed amendments (see section 3.1), and to further progress commitments made in the EIS. The technical reports for these issue areas that were prepared to support the EIS have been updated based on the additional assessments undertaken, and the following reports are provided separately:

- ▶ Updated biodiversity development assessment report
- ▶ Updated noise and vibration assessment—construction and other operations report
- ▶ Updated noise and vibration assessment—operational rail report
- ▶ Updated flooding and hydrology assessment report.

A summary of the scope of the updated biodiversity and noise and vibration assessments is provided below. The findings of the updated assessments have been incorporated (where relevant) into the responses provided in sections 4 to 10 of this report, and in the assessment of the proposed amendments described in the combined Preferred Infrastructure/Amendment Report.

The flooding and hydrology report has been updated for the reasons noted above, and to respond to the Secretary's direction to prepare a preferred infrastructure report (see section 3.3.1). Further information is provided in section 4.3 of the Preferred Infrastructure/Amendment Report.

Other assessments undertaken are summarised in section 3.2.2 of this report.

3.2.1.1 Updated biodiversity development assessment report

The biodiversity development assessment report, which formed Technical Report 1 for the EIS, has been updated in consultation with DPE (Biodiversity, Conservation and Science Directorate) (BCS), taking into account the comments provided in the BCS submission (see section 5.3 of this report) as well as discussions with BCS representatives regarding the agreed approach to various matters raised. A key focus of the updated assessment has been revising the vegetation mapping and fauna habitat mapping, extending the vegetation mapping to accommodate the amended construction and operational footprints, and recalculating the offset liabilities for the proposal. The biodiversity development assessment report has also been updated to meet the requirements of the *Biodiversity Assessment Method 2020* (DPIE, 2020b), which came into effect in October 2020.

Further information on these aspects is provided below. More detailed information is provided in the responses in section 5.3.

Revised native vegetation and fauna habitat mapping

Technical Report 1 noted that additional targeted surveys would be undertaken in spring 2020 to provide a better understanding of the presence of potential habitat for the following key species:

- ▶ Winged peppercress (*Lepidium monolocoides*)
- ▶ Spiny peppercress (*Lepidium aschersonii*)
- ▶ *Commersonia procumbens*
- ▶ *Tylophora linearis*
- ▶ Slender darling pea (*Swainsona murrayana*)
- ▶ Native Milkwort (*Polygala linariifolia*)
- ▶ Coolabah Bertya (*Bertya oppositifolia*).

Targeted surveys were undertaken in September, October and November 2020, August 2021 and March 2022 to capture all required survey months for candidate threatened flora species and provide increased opportunity to undertake surveys in favourable conditions. A number of other threatened flora species were also surveyed at the same time where the survey timing was suitable.

Thermal drone surveys were conducted in July 2021 to provide a supplementary search for koala presence in the Pilliga. Independent specialist experts in the koala, little eagle and square-tailed kite were engaged to provide a supplementary assessment of the likely extent of occupied habitat for these three key species, which are difficult to confirm the presence of from field survey alone.

The way that some plant community types (PCTs) (derived grasslands and paddock trees) have been classified and species polygons (fauna habitat) developed in the assessment have also been revised in response to BCS comments, the drone survey and expert reports.

The vegetation mapping has been updated, taking into account the spring 2020 and March 2022 surveys, changes to vegetation zones, and the proposed amendments summarised in section 3.1 of this report.

The revised native vegetation mapping was used to reassess the potential impacts of the proposal on biodiversity. The updated biodiversity development assessment report includes a comparison of the changes as a result of the revisions to the vegetation mapping. One of the changes is that it is estimated that up to about 1,791 hectares (ha) of native vegetation would need to be removed for the proposal (taking into account the amendments assessed in the combined Preferred Infrastructure/Amendment Report), compared to 1,732 ha for the exhibited proposal. Further information about the impacts of the proposal, incorporating the proposed amendments, is provided in the combined Preferred Infrastructure/Amendment Report.

Recalculation of offset obligations

The Biodiversity Assessment Method calculator, which is used to calculate the offset obligations for the proposal, was re-run to adopt a revised methodology requested by BCS. This involved providing the impact areas and associated credit obligations at a subregion level to allow for greater detail. The recalculations took into account the revised vegetation zone mapping, updated habitat assessments and PCT associations for candidate threatened species.

The recalculations identified that a total of 49,052 ecosystem credits are now required, compared with 34,820 ecosystem credits noted in the EIS and Technical Report 1. This includes 9,625 credits for prescribed impacts on ecosystem credit fauna species.

The proposal site is known to support 11 species credit species. An additional 13 species are assumed to be present due to limited site access and poor survey conditions due to prolonged drought. These species would now require a total of 271,971 species credits, compared to the 160,421 species credits noted in the EIS and Technical Report 1. This includes 87,501 credits for prescribed impacts on species credit fauna species.

The difference in ecosystem and species credits between the exhibited proposal and the proposal incorporating the amendments described in the combined Preferred Infrastructure/Amendment Report is a result of:

- ▶ incorporating the survey findings from spring 2020, August 2021 and March 2022
- ▶ improved conditions resulting in increased vegetation integrity scores for some vegetation zones
- ▶ changed requirements for vegetation mapping
- ▶ revised requirements for candidate species credit calculations requested by BCS
- ▶ Revised method for calculation of prescribed impacts on ecosystem credit fauna species and species credit fauna species.

It should be noted that the ecosystem and species credits are not calculated as a result of a direct ratio with area.

The revised credit obligations have been included in the updated biodiversity development assessment report.

Update to meet new guidelines

The biodiversity development assessment report that was exhibited with the EIS was prepared in accordance with *Biodiversity Assessment Method 2017* (OEH, 2017), which was the applicable guideline at the time the biodiversity assessment was undertaken and the report was prepared. The biodiversity assessment report has now been updated to meet the requirements of the *Biodiversity Assessment Method 2020* (DPIE, 2020b). Key changes include:

- ▶ Revised requirements for native vegetation mapping and classification
- ▶ Revised requirements for the assessment of prescribed impacts, including direct and indirect impacts
- ▶ Clarification of requirements for offsetting any residual prescribed impacts
- ▶ Stronger impact assessment and reporting requirements for serious and irreversible impacts
- ▶ Adjustments to terminology, definitions and minimum assessment requirements.

The updated biodiversity development assessment report has been restructured and revised to address the requirements of the new guidelines. A checklist of the minimum requirements is included in Appendix B of the updated biodiversity development assessment report. A summary of the changes between the exhibited and updated biodiversity development assessment reports is included in Appendix O of the updated report.

3.2.1.2 Updated noise and vibration assessment—construction and other operations report

The noise and vibration assessment—construction and other operations report, which formed Technical Report 8 for the EIS, assessed the potential impacts of constructing the proposal and operating other proposed infrastructure (that is, the operational noise and vibration impacts associated with roads upgraded or altered as part of the proposal and stationary infrastructure, such as maintenance sidings).

The report has been updated to assess the impacts of constructing the proposal as amended by the design changes summarised in section 3.1 of this report. To assess these changes, the construction noise models were re-run. The construction noise and vibration predictions have been updated and are presented in the updated report.

The updated report also responds to a submission by the NSW Environment Protection Authority (EPA). The EPA identified that the temporary workforce accommodation facilities were incorrectly assessed according to *Interim Construction Noise Guideline* (DECC, 2009). The potential impacts of the facilities have been assessed in accordance with the *Noise Policy for Industry* (EPA, 2017) and the results are provided in the updated assessment report. The predicted exceedances have increased slightly from 240 to 258 residential receivers during operation of the temporary workforce accommodation facilities.

The updated predictions have been taken into account in the responses provided in sections 4 to 10 of this report.

Further information about the impacts of the proposal, incorporating the proposed amendments, is provided in the combined Preferred Infrastructure/Amendment Report.

3.2.1.3 Updated noise and vibration assessment—operational rail report

The noise and vibration assessment—operational rail report, which formed Technical Report 9 for the EIS, assessed the potential noise and vibration impacts of operating trains along the proposed rail infrastructure.

The report has been updated to assess the impacts of the proposal, incorporating the amendments summarised in section 3.1 of this report. Key changes considered by the updated assessment relate to train noise and vibration associated with:

- ▶ Operation of the amended crossing loop and associated maintenance siding locations
- ▶ Operation of the amended public level crossing numbers and locations
- ▶ The movement of trains along the rail line, incorporating the proposed minor realignments at Narwonah, Nancarrow Road, Narrabri and within Euligal State Forest.

To assess these changes, all operational noise models were re-run. The operational noise and vibration predictions have been updated and are presented in the updated report. As a result of these changes, the updated assessment concludes that the total number of residential receivers that would qualify for consideration of operational noise mitigation would be as follows:

- ▶ In 2026, 41 residential receivers would qualify for consideration of operational noise mitigation (compared with 36 in Technical Report 9)
- ▶ In 2040, 53 residential receivers would qualify for consideration of operational noise mitigation (compared with 58 in Technical Report 9).

The updated report also addresses a community submission from a property owner located near Narrabri who identified that their residence was not included in Technical Report 9. The updated assessment report provides the predicted operational noise levels at this location.

The updated predictions have been taken into account in the responses provided in sections 4 to 10 of this report.

Further information about the impacts of the proposal, incorporating the proposed amendments, is provided in the combined Preferred Infrastructure/Amendment Report.

3.2.2 Other assessments undertaken

Additional social, Aboriginal cultural heritage, and traffic and transport assessments have been undertaken since exhibition to assist with considering and responding to issues raised in submissions and during consultation with stakeholders, assist with assessing the impacts of the proposed amendments, and/or further progress commitments made in the EIS.

A summary of the scope of the additional assessments is provided below. The findings have been incorporated (where relevant) into the responses provided in sections 4 to 10 of this report, and in the assessment of the proposed amendments described in the combined Preferred Infrastructure/Amendment Report.

3.2.2.1 Addendum social assessment

An addendum social assessment has been prepared to respond to clarification requests from DPE in relation to the findings of the original social assessment, which formed Technical Report 13 for the EIS. The addendum social assessment, which is available separately, provides the following:

- ▶ Confirmation of the qualifications of the personnel who prepared the social assessment
- ▶ Clarification of how the social assessment aligns with the principles for social impact assessment provided in the *Social Impact Assessment Guideline* (DPIE, 2021)

- ▶ Confirmation of the timing of the consultation activities described in the social assessment and any potential impacts from COVID-19 restrictions on these activities
- ▶ Summary of the issues raised during consultation to inform the social assessment and where each issue was assessed in the report
- ▶ Clarification of the engagement conducted to date with Native Title Applicant Groups
- ▶ Addition of a residual impact assessment to the summary of construction and operational impacts, to consider the potential for residual impacts following implementation of the proposed mitigation measures
- ▶ Clarification of the intent to prepare a social impact management plan (SIMP) to manage the implementation of the socio-economic mitigation measures (provided in the EIS and (as amended) in section 11 of this report), and the specific actions and targets that would be developed to deliver social benefits for the proposal.

3.2.2.2 Addendum Aboriginal cultural heritage assessment report

The Aboriginal cultural heritage assessment report formed Technical Report 6 for the EIS. An addendum Aboriginal cultural heritage assessment report has been prepared to assess the change in construction and operation footprints summarised in section 3.1 of this report. The addendum report is available separately.

The amended footprint resulted in a change to the impacts on four sites registered by the Aboriginal heritage information management system (AHIMS). As a result of these changes the addendum assessment concluded that:

- ▶ There would be a reduction in impact on the two artefact scatter sites, from complete to partial
- ▶ Two additional modified trees would be located within the amended construction footprint. However, these trees would be able to be retained in situ and would not be impacted, provided that standard protection measures are implemented.

An additional mitigation measure has been developed (mitigation measure AH7 — see section 11 of this report) to protect and further minimise risk of inadvertent harm to the two additional modified trees.

3.2.2.3 Aboriginal community and stakeholder engagement preliminary framework

An Aboriginal community and stakeholder engagement preliminary framework has been prepared to provide an overarching framework for engagement with Aboriginal stakeholders and communities during future stages of the proposal. The framework also draws together the commitments for these stages that are considered most relevant to Aboriginal communities.

A detailed Aboriginal community and stakeholder engagement strategy and action plan would be prepared by ARTC during the detailed design phase in accordance with the framework and new mitigation measure SE3 (see section 11 of this report).

3.2.2.4 Traffic and transport

The assessment of potential delays to road traffic at level crossings contained within Technical Report 10—Traffic and transport assessment has been updated as described below.

The original assessment of potential delays to road traffic at level crossings was undertaken as described in section 6.2.1 of Technical Report 10. The assessment was based on a number of assumptions, including that train speeds would be 115 kilometres per hour (km/hr); however, as noted in section A1.2.4 of the EIS, train speeds would vary according to axle loads, and range from 80 to 115 km/hr.

The assessment methodology used for the level crossing assessment also included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period. To address this issue, additional traffic counts were undertaken in November 2020 during a harvest period that produced higher than average yield. As a result of this strong harvest period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles.

To understand the potential impacts at level crossings from higher traffic activity and different train speeds, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated.

The results from the traffic survey undertaken in November 2020 indicated that traffic volumes were about 40 per cent higher than during a 'typical' period, and the proportion of heavy vehicles using Castlereagh Highway increased from about 15 per cent on a typical day to 31 per cent during the harvest period. Based on the harvest period traffic counts and forecast traffic growth, traffic volumes on Castlereagh Highway would be 153 vehicle movements (two way) during the peak period in 2026 and 176 vehicle movements (two way) during the peak period in 2040.

The maximum delays and associated number of vehicles delayed for trains travelling at 80 km/hr and 115 km/hr based on traffic volumes from the November 2020 harvest period are provided in Table 3-2. The calculations made for this assessment are provided in Appendix C of this report. The delays listed in Table 3-2 are considered representative of the time it would take for the opening of the crossing. Table 3-3 provides the maximum delay for the last vehicle in the queue, assuming this is a heavy vehicle with an average speed of 10 km/hr.

The results indicate that the delays and vehicle queue lengths at level crossings would increase if the train speed was 80 km/hr compared to 115 km/hr, which is to be expected. The delays and queue lengths provided in Table 3-2 and Table 3-3 are considered a worst case, as the analysis used a conservative estimate of traffic growth and the traffic volumes used in the analysis were from a harvest period that had greater than average yields.

TABLE 3-2: CASTLEREAGH HIGHWAY LEVEL CROSSING DELAYS

Scenario ¹		Estimated maximum delay		
Opening year	Train speed (km/hr)	Time (seconds)	No. Of vehicles delayed (two-way)	Queue length (metres)
2026	80	121	9	74
2026	115	96	8	66
2040	80	121	10	82
2040	115	96	9	74

1. Based on a train with a maximum length of 1,800 metres

TABLE 3-3: CASTLEREAGH HIGHWAY REAL TRAFFIC DELAY

Scenario ¹		Estimated maximum delay		
Opening year	Train speed (km/hr)	Time for level crossing to open (seconds)	Additional delay for last vehicle in queue (seconds)	Total delay (seconds)
2026	80	121	27	148
2026	115	96	24	120
2040	80	121	30	151
2040	115	96	27	123

1. Based on a train with a maximum length of 1,800 metres

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway level crossing.

Potential impacts on road users due to level crossing delays would be managed by implementing the management approach described in section B11.5 of the EIS, and the mitigation measures provided in section 11 of this report. The increase in delays and vehicle queue lengths at level crossings would not require any changes or additions to the traffic and transport mitigation measures that were originally provided in the EIS.

3.3 Other updates/additional information

3.3.1 Preferred infrastructure report

Section 5.17(b) of the EP&A Act provides that the Planning Secretary may require the proponent to submit to the Secretary ‘a preferred infrastructure report that outlines any proposed changes to the State significant infrastructure to minimise its environmental impact or to deal with any other issue raised during the assessment of the application concerned’. On 30 April 2021, the Planning Secretary directed ARTC to provide a preferred infrastructure report to:

- ▶ Address 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
- ▶ Provide 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.
- ▶ Provide design alternatives to demonstrate how residual flooding impacts can be reduced.

As described in section 3.2.1 of this report, the flooding and hydrology assessment report has been updated since the EIS was publicly exhibited. Further information about the scope and contents of the updated assessment report, and the requested additional information on the alternative rail alignments considered, is provided in the combined Preferred Infrastructure/Amendment Report.

3.3.2 Updated project description

The proposal description chapters provided in the EIS (chapters A7 and A8) have been updated, taking into account the amendments described in the combined Preferred Infrastructure/Amendment Report. The updated proposal description is provided in the combined Preferred Infrastructure/Amendment Report.

3.3.3 Updated map book

The EIS included a map book (in Part E), which provided detailed mapping information for the proposal site and proposal features, including:

- ▶ Environmental baseline—maps displaying a range of environmental data and existing environmental information, including topography, biodiversity, heritage, watercourses, sensitive receivers and community infrastructure
- ▶ Construction phase—maps showing the land required during construction (the construction footprint), access requirements, and infrastructure required to construct the proposal, including the key construction infrastructure and other construction features (such as compounds and work areas)
- ▶ The proposal (design features)—maps showing the permanent operational footprint, design features and infrastructure proposed.

The map book has been updated to take into account the proposed amendments and additional assessment results. The updated map book is available separately.

3.4 Community engagement

3.4.1 Overview

ARTC's values commit the organisation to active engagement with stakeholders and the community. For Inland Rail, effective communication and stakeholder engagement are fundamental to reducing risk and minimising the potential for social and environmental impacts as far as possible. ARTC believes that identifying, engaging and effectively communicating with stakeholders is critical to the successful delivery of Inland Rail.

Prior to exhibition of the EIS, engagement activities were carried out during the following key periods:

- ▶ Inland Rail announcement and preliminary consultation—2015 to end 2017
- ▶ Route option assessment—February 2018 to July 2019
- ▶ Preliminary design development and environmental assessment—July 2019 to October 2020.

The purpose of consultation was to raise awareness about Inland Rail and the proposal, understand community and stakeholder issues, and obtain important feedback to help shape the proposal's route, design and environmental assessment.

Further information about the engagement activities undertaken as part of the above stages is provided in chapter A4 and Appendix C of the EIS.

3.4.2 Consultation prior to exhibition

Subsequent to the activities described in the EIS, and prior to public exhibition, additional consultation was undertaken. As the EIS was being finalised at this time, these activities were not described in the EIS. Table 3-4 lists the engagement activities undertaken in November 2020, prior to exhibition of the EIS.

TABLE 3-4: CONSULTATION UNDERTAKEN IN NOVEMBER 2020 PRIOR TO PUBLIC EXHIBITION

Activity	Detail
Inland Rail Program website (inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri)	<ul style="list-style-type: none"> ▶ The project website was updated advising of the public release of the EIS for review and welcoming of submissions. This update included links to the EIS (hosted on DPIE's Major Projects website), the process for formal submission, and information related to planned consultation activities.
Toll-free community information line (1800 732 761) and Inland Rail Program email (inlandrailnsw@artc.com.au)	<ul style="list-style-type: none"> ▶ Requests for information were responded to by the ARTC stakeholder engagement team.
Briefings	<ul style="list-style-type: none"> ▶ Meetings with the community consultative committee for the proposal (the Narromine to Narrabri Community Consultative Committee) ▶ Meetings were held with interested community members to inform them of the approaching EIS public exhibition period.
Advertisements	<ul style="list-style-type: none"> ▶ Advertisements were placed in the following local papers to provide information about the upcoming exhibition of EIS, display locations and information sessions: <ul style="list-style-type: none"> ▶ Coonabarabran Times ▶ Coonamble Times ▶ The Courier Narrabri ▶ The Gilgandra Weekly ▶ The Narromine News ▶ Dubbo Photo News ▶ Wee Waa News (The Courier).
Letters to landowners	<ul style="list-style-type: none"> ▶ Registered postal letters were sent to 197 directly and indirectly impacted landowners. These letters were distributed two weeks prior to the public exhibition period and notified stakeholders of the upcoming public exhibition, ongoing consultation activities and the formal submission process.
Letters to key stakeholders	<ul style="list-style-type: none"> ▶ Registered postal letters were sent to 51 key stakeholders. These letters were distributed two weeks prior to the public exhibition period and notified stakeholders of the upcoming public exhibition, ongoing consultation activities and the formal submission process.
Ongoing email and telephone contact with stakeholders	<ul style="list-style-type: none"> ▶ Regular communication was undertaken with Narromine Shire Council, Gilgandra Shire Council, Warrumbungle Shire Council, Coonamble Shire Council and Narrabri Shire Council. ▶ Ongoing engagement was undertaken with the elected representatives as required. ▶ Landowner enquiries were responded to as required. ▶ A community e-newsletter was sent to the Narromine to Narrabri stakeholder mailing list. This comprehensive database includes contact details of affected impacted landowners, interested community members and business groups. The email blast notified stakeholders of the upcoming EIS public exhibition period.
Community Consultative Committee	<ul style="list-style-type: none"> ▶ All Community Consultative Committee members were notified via email two weeks in advance of the public exhibition period to assist representatives remain informed and engaged.

3.4.3 Consultation during exhibition

The EIS was placed on public exhibition for a period of 62 days between 8 December 2020 and 7 February 2021. During the exhibition period, government agencies, key stakeholders (including interest groups and organisations), and the community were invited to make written submissions. A summary of the engagement activities and tools used to encourage community and stakeholder participation during the exhibition period is provided in Table 3-5.

TABLE 3-5: CONSULTATION DURING THE EIS EXHIBITION PERIOD

Activity	Detail
Website updates	<ul style="list-style-type: none"> ▶ The Inland Rail Program website (inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri) was updated advising of the public release of the EIS for review and welcoming of submissions. This update included links to the EIS (hosted on the Major Projects website), the process for formal submission, and information related to planned consultation activities.
Emails to key stakeholders	<ul style="list-style-type: none"> ▶ An email was sent to key stakeholders, elected representatives and local councils advising of the EIS exhibition, ongoing consultation activities and formal submission process. These stakeholders were offered a one-on-one EIS briefing.
Briefings	<ul style="list-style-type: none"> ▶ Briefings were offered to a range of key stakeholders, including government agencies, local councils, Traditional Owners and Local Aboriginal Land Councils. ▶ Briefings occurred with the following key stakeholders: <ul style="list-style-type: none"> ▶ Transport for NSW ▶ Australian Department of Infrastructure, Transport, Regional Development and Communications ▶ Gilgandra Shire Council ▶ Narromine Shire Council ▶ Warrumbungle Shire Council ▶ Coonamble Shire Council ▶ NSW Environment Protection Authority ▶ Forestry Corporation of NSW ▶ NTS Corp ▶ North West Local Land Services.
Community e-news	<ul style="list-style-type: none"> ▶ A community e-newsletter was sent to the stakeholder mailing list. This comprehensive database includes contact details of affected landowners, interested community members and business groups. The e-newsletter provided an overview of the EIS exhibition process, where to find more information, and the process on how to make a formal submission.
Community Drop-In Sessions	<ul style="list-style-type: none"> ▶ Seven Community Drop-In Sessions were held during the public exhibition period in mid-December 2020. The sessions were held across the five local government areas (Narromine, Gilgandra, Warrumbungle, Coonamble and Narrabri) to introduce the EIS and provide information on the content, submission process and timelines. ▶ There was a total of 86 attendees across these sessions.
Additional EIS Community Support/Drop-In Sessions	<ul style="list-style-type: none"> ▶ Six EIS Community Support/Drop-In Sessions were held during the public exhibition period in January and February 2021. These sessions were held at Narrabri, Narromine and Gilgandra. These additional sessions were to support the community in understanding the EIS and the submissions process. ▶ A further four of these sessions were held online during the public exhibition period ▶ There was a total of 88 attendees across these sessions.
Static displays	<ul style="list-style-type: none"> ▶ The EIS (via USBs) and the EIS 'Summary of Findings' document were made available to the public at the following locations: <ul style="list-style-type: none"> ▶ Narromine Shire Council—124 Dandaloo Street, Narromine ▶ Gilgandra Library—1 Warren Road, Gilgandra ▶ 'The Gil' Information Centre—30–32 Miller Street, Gilgandra ▶ Baradine Library—13–15 Wellington Street, Baradine ▶ Coonamble Library—82 Castlereagh Street, Coonamble ▶ Coonamble Shire Council—80 Castlereagh Street, Coonamble ▶ Coonabarabran Library—50 John Street, Coonabarabran ▶ Warrumbungle Shire Council—14–22 John Street, Coonabarabran ▶ Gulargambone Rural Transaction Centre—39 Bourbah Street, Gulargambone ▶ Narrabri Library—8 Doyle Street, Narrabri ▶ Narrabri Shire Council—46–48 Maitland Street, Narrabri.

Activity	Detail
Distribution of EIS and 'Summary of Findings' document to landowners	<ul style="list-style-type: none"> ▶ The EIS (on USB) and the EIS 'Summary of Findings' document (hard copy) were sent to 197 landowners directly.
Advertisements	<ul style="list-style-type: none"> ▶ Advertisements were placed in the following local papers to provide information about exhibition of the EIS, display locations and information sessions: <ul style="list-style-type: none"> ▶ Coonabarabran Times ▶ Coonamble Times ▶ The Courier Narrabri ▶ The Gilgandra Weekly ▶ The Narromine News ▶ Daily Liberal ▶ Dubbo Photo News ▶ Wee Waa News (The Courier).
Summary of Findings	<ul style="list-style-type: none"> ▶ A condensed version of the EIS, known as the Summary of Findings, was produced to aid in communicating the main topics addressed in the EIS to members of the public. This was distributed to 197 landowners directly and about 700 copies were given out to the broader community and other stakeholders.
USBs containing the EIS	<ul style="list-style-type: none"> ▶ USBs with the EIS were delivered to all affected landowners and provided to local councils and libraries for use at the static displays. ▶ The USBs were also given out during the community drop-in sessions and support sessions.
Fact sheet	<ul style="list-style-type: none"> ▶ A fact sheet on the assessment process for major projects in NSW, which included information on how to make a submission, was made available on the Inland Rail Program website; provided directly to landowners; included at public exhibition locations and emailed, as requested, to interested community members.
Social media	<ul style="list-style-type: none"> ▶ Social media channels (such as Facebook, Twitter, and LinkedIn) provided an effective means to engage in a targeted manner with key stakeholders. Social media channels were used to advise of the public release of the EIS, including the process for formal submissions, and provide information on planned consultation activities.
Community Consultative Committee	<ul style="list-style-type: none"> ▶ Meetings of the Community Consultative Committee occurred in early December 2020. DPIE was invited to present on the EIS public exhibition and submissions process. The meetings were held at Narromine, Gilgandra and Narrabri.
Phone and email	<ul style="list-style-type: none"> ▶ Community engagement contact details (phone and email) were published on all advertising. This included the community engagement hotline (1800 732 761) and email inlandrailnsw@artc.com.au.
Alignment fly-through	<ul style="list-style-type: none"> ▶ An alignment fly-through was created and assisted in visually communicating the proposal alignment and reference design. This interactive tool was provided at the community drop-in sessions and on the project website.

4. Response to public authority submissions—councils

4.1 Coonamble Shire Council

4.1.1 Alternatives and options

Alternative route via Coonamble

Issue

Council believes that an alternative alignment via Coonamble would help alleviate many of the concerns raised by the community about the proposed alignment being constructed too close to the foothills of the Warrumbungle Range and the associated environmental and social impacts that the alignment would generate. Council believes that the focus on travel time efficiencies and construction costs has overshadowed consideration of the longer-term social, economic and environmental costs/benefits that an alternate route via Coonamble would generate.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of an alternative alignment via Coonamble (see section 2.4.3 of the Route Selection Summary Report) and the justification for the preferred option selected.

As noted in the combined Route Selection Summary Report, this process included an economic analysis of an alternative route via Coonamble.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, which may provide future opportunities for regional communities along the alignment to connect to Inland Rail.

4.1.2 Proposed LGA boundary changes

Unclear if LGA boundary changes are proposed

Issue

The EIS does not provide any clear indication of the extent of LGA boundary changes required as a result of the proposal.

Response

No alternations to LGA boundaries are proposed or required.

4.1.3 Land use and property

Impacts of property acquisition on farming operations

Issue

Council is concerned that the proposed acquisition of private land for rail-related purposes raises complex issues and impacts for farming businesses, including loss of viable farming land, and access limitations for movement of livestock, machinery and equipment within properties. The amount of land acquired should be minimised as far as possible. Where farm holdings are impacted, it is requested that robust/practical mitigation strategies are arrived at to ensure long-term viability of affected farms.

Response

The EIS describes the estimated land requirements for the proposal based on the reference design available at the time the EIS was prepared. As described in section 3.1 of this report, a number of amendments are proposed to minimise the potential impacts of the proposal and respond to issues raised. These amendments include refinements to the construction and operation footprints, which has increased the amount of acquisition that would be required. The amended indicative (estimated) land requirements are described in the combined Preferred Infrastructure/Amendment Report.

The final acquisition areas would be confirmed during detailed design and property acquisition negotiations, in consultation with landowners.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties. ARTC has already undertaken extensive consultation with landowners and, where feasible, considered access requirements for agricultural machinery, upgraded access, or provided new access and alternative routes; noting that in some instances access has not been provided in the landowner's preferred location due to safety and design requirements.

ARTC acknowledges that the proposed acquisitions would present complex issues and impacts for properties and farming businesses. This was a key issue assessed by Technical Report 11—Agriculture and land use assessment and Technical Report 13—Social assessment. Potential land use and property impacts, and associated socio-economic impacts, are described in chapters B12 and B14 of the EIS.

In accordance with mitigation measure LP2, and as described in section B12.5.1 of the EIS, all property acquisitions would be undertaken in consultation with landowners/landholders, and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) and the land acquisition reforms announced by the NSW Government in 2016. The reforms can be viewed online at: finance.nsw.gov.au/land-property/land-acquisition-reform-2016.

Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable.

In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements may include:

- ▶ Measures to minimise property impacts, including impacts on agricultural operations (mitigation measure LP5)
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible (mitigation measure LP7)
- ▶ Measures to manage severance impacts as they relate to each property holding, where practicable, including appropriate movement arrangements (mitigation measure LP6) such as new or adjusted accesses to the public road network or internal access networks, divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of, affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

Mitigation measure LP3 provides that, where land is acquired, compensation would be assessed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) and the NSW Property Acquisition Process <https://www.nsw.gov.au/housing-and-construction/property-acquisition>. Depending on the individual circumstances of each land/business owner, and the proposed impacts on the land and to operations, compensation may take the form of money or land/works—as agreed by the parties.

4.1.4 Detailed design

Difficult to make an informed submission without detailed designs

Issue

Council notes that many aspects of the design are yet to be provided and, as much of the detail will be in the management plans, it is difficult to provide a fully informed submission. Council requests that design plans that interact with the public road, waste management and water supply network are provided to Council for approval, including new roads, road upgrades, fencing and gated access, and drainage infrastructure.

Council also requests that conditions of consent require detailed designs on important elements of the proposal should clearly articulate the design intent, design standards, construction techniques, maintenance schedules, stakeholder consultation requirements, monitoring standards and agreement on the procedures for review of design details.

Response

Detail provided

The EIS and supporting technical reports were prepared in accordance with the requirements of the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS.

The assessment presented in the EIS is based on a reference design and indicative construction methodology, and is considered sufficient to assess the environmental impacts, and inform the risks and issues potentially associated with the proposal. The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures (provided in section 11 of this report) and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

The main EIS report must address the SEARs, the abovementioned statutory requirements and relevant guidelines. In doing so, it needs to address a wide range of technical assessment requirements, while also providing information to explain a project, its potential impacts, and management of these impacts to the community and other stakeholders. To make this information more accessible to the general public, chapters in the main EIS provide a summary of the main findings of the technical assessments. It is not the purpose of these chapters to fully replicate the detailed information in the reports. The technical reports that support the EIS provide the detailed results of the assessments undertaken.

ARTC is also proposing design amendments to the proposal to address issues raised during consultation and in submissions, and to minimise the potential impacts of the proposal. A summary of the proposed amendments is provided in section 3.1 of this report. Further information is provided in the combined Preferred Infrastructure / Amendment Report, which is available separately.

The proposal would be designed, constructed and operated in accordance with the conditions of approval and all other relevant legislative requirements and approvals. As described in section D5.2 of the EIS, the management of environmental impacts during construction would be documented in the construction environmental management plan (CEMP). The CEMP would provide a centralised mechanism through which all potential construction-related environmental impacts would be managed. It would also provide the overall framework for the system and procedures to ensure that environmental impacts are minimised, and that legislative and approval requirements are fulfilled during construction. The CEMP would include detailed management plans (environmental sub-plans), which would define how specific environmental issues are to be managed during construction in accordance with the mitigation measures (see section 11 of this report) and the approval conditions. The management plans/environmental sub-plans would be prepared in consultation with relevant agencies and key stakeholders, as defined by the mitigation measures and conditions of approval.

Provision of design plans for Council approval

The proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

Concept designs for the proposed road realignments/closures were provided to Coonamble Shire Council during discussions held in 2020. ARTC acknowledges Council's concerns in relation to interactions with Council infrastructure and recognises that Coonamble Shire Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council on material aspects of the proposal that are of relevance and interest to Council.

Further information would be provided to Council as part of the third-party agreement process for those Council assets that the proposal would affect.

Conditions of approval

The conditions of approval for the proposal are a matter for the Department of Planning and Environment (DPE) with input from relevant agencies. ARTC will consider in detail any proposed conditions of approval at an appropriate time in the assessment process.

4.1.5 Traffic and transport arrangements

Impacts on local road network

Issue

Council is concerned about the potential impacts of the proposal on the local road network in Coonamble Shire. Council requests dilapidation reporting be carried out well before construction begins.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, as far as reasonably practicable.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.

Issue

Council anticipates that the transport of materials by road during construction will impact on road assets, in particular the unsealed gravel network. Council requests a series of meetings with ARTC, Transport for NSW and local road authorities to strategically investigate road-related issues and agree on a consistent approach to improve the road network where required.

Council does not believe that these issues should be deferred to detailed design stage or as part of the development of the CEMP, given the significant lead times required to properly investigate, plan, design, program and implement required road network improvements.

Response

As noted in section 4.1.4, ARTC acknowledges Coonamble Shire Council's concerns in relation to interactions with Council infrastructure (including those parts of the road network managed by Council) and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council in relation to these concerns.

The reference design and indicative construction planning undertaken to date for the proposal incorporates a number of features and proposed measures to minimise construction traffic movements and the associated impacts on the local road network; in particular, gravel roads. This includes the proposal to construct high-quality haul roads within the construction footprint (see section A8.11.2 of the EIS). This would enable materials and personnel to be transported within the proposal site, as far as practicable, minimising traffic on local roads. In addition, it is proposed to use existing rail lines to deliver bulk construction materials, where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase, as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases.

ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of construction on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including Coonamble Shire Council) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with councils. Consultation with Coonamble Shire Council and preparation of the plan would not be deferred and would be undertaken prior to construction commencing, in accordance with the conditions of approval. Appropriate haul routes would be defined in consultation with Council and specified in the plan.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.

Issue

Council is concerned about the delays caused to traffic from the movement of trains along Inland Rail. Council is also concerned about the increased number of 'dog-legs' required at the approaches to railway crossings, and their implications for road safety and maintenance.

Response

An assessment of potential delays to road traffic at level crossings was undertaken as described in section 6.2.1 of the traffic and transport assessment (Technical Report 10). The assessment considered the delays at the worst-case active level crossing (highest traffic volume impacted), which would occur at the Castlereagh Highway. In response to submissions and the proposed amendments described in the combined Preferred Infrastructure/Amendment Report, this assessment has been updated and is provided in section 3.2 of this report. The maximum delays and associated number of vehicles delayed for trains going 80 km per hour (km/hr) and 115 km/hr, based on this further assessment, are provided in Table 3.2 of this report. Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy: Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations, with regard to existing level crossings and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

ARTC has used a consistent methodology to develop all proposed road-rail interface treatments across the Inland Rail Program. In 2020, ONRSR audited the Inland Rail Road-Rail Crossing Strategy using a sample of crossings in NSW, including some proposed new crossings on the proposal. The objective of the audit was to assess how ARTC is applying the strategy, to ensure level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. The report published in 2020 contained no findings or recommendations requiring action by ARTC.

Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including AS 1742.7:2016 *Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings* and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

This would ensure that crossings are safe for long-term use. To meet road and rail design safety guidelines, the road approaches to some level crossings would be realigned to provide a safe crossing. Where Council assets are impacted by the proposal, such as roads requiring realignment, these works would be undertaken as part of the proposal and would not require funding from Council.

Any arrangements related to maintenance would be subject to third-party agreements between ARTC and the relevant road manager. As part of the third-party agreements, consideration would be given to Council's position in relation to the cost of maintaining additional assets returned to Council, noting that Council may also receive benefit through reduced maintenance expenditure as partially aged existing Council assets are replaced with new assets.

Issue

The identified impacts on the local road network will increase the cost of upgrading, maintaining and depreciating local road assets. Council has not yet been informed of how this is to be managed. Council is of the view that Council and its ratepayers should not have to carry any of the extra burdens of expenditure required to fund rail-related road improvements.

Response

ARTC does not propose to hand back infrastructure to Council that requires additional management (and associated costs) as a result of the proposal. Any Coonamble Shire Council assets impacted by construction of the proposal would be constructed/modified and funded by ARTC. ARTC would continue to work with all potentially affected stakeholders (including Coonamble Shire Council) to minimise proposal-related impacts by implementing the mitigation measures and conditions of approval. ARTC is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

As noted above, ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of construction on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

As noted above, and in accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. Rectification measures would be implemented as needed during and/or following completion of construction to address any damage caused by construction.

Any arrangements related to maintenance would be subject to third-party agreements between ARTC and the relevant road manager. ARTC and its construction contractor would be responsible for the design and construction of the proposal. Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

4.1.6 Level crossings

Management and design of level crossings and roads

Issue

Council requests a series of meetings with ARTC, Transport for NSW and the local road authorities to strategically investigate the design requirements for level crossings, to ensure all crossings are safe for long-term use.

Response

ARTC acknowledges the concerns raised by Coonamble Shire Council and recognises that Council is a key stakeholder for the proposal. As noted above, ARTC would continue to liaise with Council on material aspects of the proposal that are of relevance and interest to Council, including the operation of its road network, in accordance with the communication management plan for the proposal (required by mitigation measure SE1). In addition, mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including Council and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include level crossings proposed on Council-managed roads.

In accordance with mitigation measure TT4, level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings*, *Guide to Road Design Part 4: Intersections and Crossings* (Austroads 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. This would ensure that crossings are safe for long-term use.

In accordance with new mitigation measure TT5, a level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

Issue

As a minimum requirement, road approaches to level crossings should be upgraded and sealed a minimum 150 m either side of the centreline of the railway, to a standard acceptable and manageable by council. Where practical, measures should be incorporated into road designs, to slow approaching traffic and provide adequate warnings of level crossings. The timing of construction operations on level crossings should avoid peak traffic periods, such as harvest, which generally occurs between October and January.

Council requests that design plans of proposed level crossings within the public road network be provided to Council for approval.

Response

Design of road approaches

As described in section A7.3.7 of the EIS, and in accordance with mitigation measure TT4, level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings* and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. This would ensure that crossings are safe for long-term use. ARTC would continue consultation with relevant road managers during detailed design to finalise preferred treatments at each location.

As noted above, public level crossings would be designed in accordance with ARTC standards, which require a minimum of 15 m road sealing on an approach to a level crossing. The reference design has assumed road sealing would be undertaken to the extent of roadworks proposed at each level crossing location, which is consistent with the operational footprint shown in the updated map book. The length of road sealing currently proposed is variable and depends on road design requirements, including design speed, road volumes and sighting distance. ARTC would continue to liaise with Council on those aspects of the proposal that are of relevance to Council.

The section of road that intersects with the rail line via level crossings would be re-constructed at the same grade as the proposed rail line, requiring some realignment and reconstruction works in the vicinity of the proposal site. The road sections would be designed and constructed in accordance with Austroads design guidelines and the relevant road authority's requirements.

Approval of design plans

In relation to Council's request to approve design plans, it is noted that the proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

ARTC acknowledges Coonamble Shire Council's concerns in relation to interactions with Council infrastructure and recognises that Council is a key stakeholder for the project. ARTC would continue to liaise with Council on those aspects of the proposal that are of relevance and interest to Council, and further information would be provided to Council as part of the third-party agreement process for those Council assets that the proposal would affect.

Issue

Council requests ARTC undertakes additional consultation with key road users, such as transport operators, school bus operators, rural landholders and other land users that will regularly use level crossings.

Response

ARTC would continue to engage with stakeholders (including key road users as noted above) in the lead up to, and during, construction.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. In addition, mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include level crossings proposed on Council-managed roads.

In relation to the potential impacts on private landholders, amended mitigation measure LP6 requires that, where the proposal affects access to and from a public road, input would be sought from relevant landholders regarding alternative access arrangements prior to finalising the detailed design.

4.1.7 Road culverts and other drainage improvements

Design and management of local drainage improvements

Issue

The stormwater management system needs to be carefully designed to avoid damage to public road infrastructure, and adjoining land uses and assets. Stormwater management improvements must be designed so that flows onto adjoining farmland achieve the correct water balance to meet the requirements of landholders.

Response

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all relevant road and drainage design standards and requirements, including:

- ▶ *Guide to Road Design Part 3: Geometric Design* (Austroads, 2021b)
- ▶ *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)
- ▶ *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2020)
- ▶ *Guide to Road Design Part 5: Drainage—General and Hydrology Considerations* (Austroads, 2021c)
- ▶ *Guide to Road Design Part 5A: Drainage—Road Surface, Networks, Basins and Subsurface* (Austroads, 2021d)
- ▶ *Guide to Road Design Part 5B: Drainage—Open Channels, Culverts and Floodways* (Austroads, 2018).

The proposed changes to road infrastructure are described in section A7.4 of the EIS. In relation to stormwater management and drainage, this would include, as relevant, provision of roadside drainage, culverts and scour protection. Culverts and bridges are generally located around existing drainage lines, watercourses, and within floodplains and associated overflow areas to minimise changes to natural flow patterns.

In relation to the design of the proposal (including the proposed changes to road infrastructure and associated drainage requirements), mitigation measure TT1 provides that the detailed design would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design (including on matters related to the design of the proposal, such as any changes to drainage infrastructure) to identify feasible and reasonable opportunities to minimise impacts on their operations/properties. Additionally, in accordance with mitigation measure FH1, the design would continue to be refined, taking into account detailed flood modelling, which would include assessment of road flood levels and extent of flooding along roads and overland flow paths. Flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and potentially impacted landholders.

Issue

Council and its ratepayers should not have to carry any of the extra burdens of expenditure required to fund rail-related road drainage improvements. Council will not accept liability for rail-related road drainage structures and improvements that lead to damage of the public road network or adjoining land use due to errors in assumptions and design standards progressed by ARTC and/or its contracted design team.

Response

ARTC does not propose to hand back infrastructure to Council that requires additional management (and associated costs) as a result of the proposal. Any Council assets impacted by construction of the proposal would be constructed/modified and funded by ARTC. As noted above, the proposal (including rail-related road drainage structures) would be designed and constructed in accordance with the conditions of approval, and all relevant design standards and requirements. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Any arrangements related to maintenance would be subject to third-party agreements between ARTC and the relevant road manager. ARTC and its construction contractor would be responsible for the design and construction of the proposal. Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

4.1.8 Socio-economic impact

Alternative route

Issue

An alternative railway route via Coonamble would provide strong support to the local community in the sub-region. The State government should give greater consideration of alternative routes for the Inland Rail via Coonamble, which have not been adequately considered in the EIS.

Response

A route via Coonamble was considered as part of the route option assessment process. Further information is provided in the response, in section 4.1.1 of this report.

Local socio-economic benefits

Issue

The socio-economic benefits of the proposal have not been broken down in the EIS by LGA. It is therefore difficult to determine the level of impacts, both negative and positive, that will be derived from the proposal.

Response

Regional economic catchment and distribution of benefits

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4¹ level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy.

¹ Statistical Area Level 4 are defined by the ABS as areas that represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas. The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which, in turn, stimulates further rounds of economic activity).

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy within which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified, where possible.

ARTC will continue to work with local councils to identify and realise local economic and social benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narromine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the project.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in December 2020, which can be accessed via inlandrail.artc.com.au/moving-ahead-with-inland-rail/.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction. It would be developed in consultation with local councils.

In addition, mitigation measure SE7 commits to developing a proposal-specific industry participation plan to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013* (Cth), the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c).

The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* (Cth) and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

4.1.9 Public infrastructure and utilities

Impacts on and funding for Council infrastructure and services

Issue

Any impact from the project on Council-owned public infrastructure must be fully detailed in the EIS.

Council and its ratepayers should not have to carry any of the extra burdens of any expenditure to fund rail-related expansion/relocation of Council infrastructure and services.

Response

As noted in sections 4.1.4 and 4.1.5, the assessment presented in the EIS is based on a reference design and indicative construction methodology, and is considered sufficient to assess the environmental impacts, and inform the risks and issues potentially associated with the proposal. The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures (provided in section 11 of this report) and the conditions of approval.

ARTC commits to implementing the mitigation measures and undertaking the proposal in accordance with the conditions of approval, to address the identified impacts. ARTC does not propose to hand back infrastructure to Council that requires additional management (and associated costs) as a result of the proposal. ARTC would continue to work with all potentially affected stakeholders (including Coonamble Council), to minimise proposal-related impacts by implementing the mitigation measures and conditions of approval. ARTC is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

4.1.10 Resource construction materials and stockpiles

Management measures for ancillary facilities

Issue

Council requests that any construction compounds, material stockpiles and hardstand areas be properly designed to include safe access onto public roads, and adequate buffers between dwellings, waterways and other environmentally sensitive land features. Specific conditions/environmental management plans should be developed for each compound, stockpile and hardstand area to manage drainage, weeds, dust, noise and public safety.

Response

All temporary connections with public roads would be designed and constructed in accordance with relevant road design guidelines and in consultation with the road manager. The proposed locations for temporary facilities, such as compounds and stockpiles, have been selected to minimise environmental and community impacts while meeting the requirements for safe construction of the proposal.

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all other relevant legislative requirements and approvals. As described in section D5.2 of the EIS, the management of environmental impacts during construction would be documented in the construction environmental management plan (CEMP). The CEMP would provide a centralised mechanism through which all potential construction-related environmental impacts would be managed. It would also provide the overall framework for the system and procedures to ensure that environmental impacts are minimised, and that legislative and approval requirements are fulfilled during construction. The CEMP would include detailed management plans (environmental sub-plans), which would define how specific environmental issues are to be managed during construction, in accordance with the mitigation measures (see section 11 of this report) and the approval conditions. Measures relevant to the management of compounds and stockpiles would be included, including requirements in relation to incorporating environmental protection measures and instructions in all relevant standard operating procedures and emergency response procedures.

4.1.11 Water supply

Groundwater extraction impacts

Issue

Council is concerned that the extraction of groundwater can lead to the lowering of the groundwater table or drawdown within the surrounding aquifer. The application of construction water could also result in impacts on the water quality of shallow groundwater and/or surface water due to differences in water quality or water being unsuitable quality for use during construction. Water supplies should not be taken from contaminated water sources, water sources with high salinity content, or from water sources that cannot be sustainably replenished.

Response

The groundwater assessment was undertaken, and Technical Report 4—Groundwater assessment prepared, in accordance with the SEARs, the *NSW Aquifer Interference Policy* (Department of Primary Industries (DPI), 2012b) and relevant legislation and guidelines, as described in section B2.1.1 of the EIS.

Potential for drawdown

The assessment methodology is described in section 4 of Technical Report 4 and included an assessment of potential groundwater drawdown for:

- ▶ Shallow proposal features, i.e. all proposal features with the potential to cause drawdown, except for the proposed bore field bores
- ▶ Deep proposal features, i.e. the proposed bore field bores.

The potential for drawdown associated with the shallow proposal features was assessed by comparing available groundwater-level data to proposal design levels. The results were conveyed in long sections, which showed that proposal excavations are relatively minor and unlikely to intersect the water table. As such, groundwater level drawdown associated with shallow proposal features is not anticipated.

An initial qualitative assessment of the potential risk of groundwater drawdown was undertaken prior to detailed assessment, to guide the methodology used. This initial assessment determined that the risk to groundwater levels would be low due to the following:

- ▶ The majority of the proposed bore fields, with the exception of bore fields PB1 and PB2, would target deep aquifers beneath the Great Artesian Basin, with significant vertical separation between the aquifers that the proposal would target and the aquifers that are currently pumped by existing bores.
- ▶ Bore fields PB1 and PB2 would be located outside the Great Artesian Basin.
- ▶ Groundwater extraction for construction water is proposed to occur for a period of less than 500 working days at each borefield.

As a result, the potential for drawdown associated with deep proposal features was assessed through analytical element groundwater modelling, an approach that is commensurate with the qualitatively assessed low risk of groundwater impact, the limited level of problem complexity, and data availability. The assessment of the bore fields is considered sufficiently rigorous and the approach is generally consistent with the *Australian Groundwater Modelling Guidelines* (Barnett et.al., 2012).

The results were assessed against the NSW Aquifer Interference Policy's minimal impact considerations and impacts were generally predicted to be less than these criteria. The exception was at one existing bore outside of the Great Artesian Basin, where drawdown of about 3.5 metres was predicted (bore ID 000986, located about 650 metres from bore field PB2).

The analysis approach taken as part of the groundwater assessment was considered conservative; however, commitments to minimising the potential for impacts due to groundwater drawdown are defined by a number of mitigation measures, including WR3, WR4, WR5, WR7, WR9, WR10, WR12, WR14, WR-CI1, WR-CI3 and WR-CI4. In particular, mitigation measure WR4 commits to installing test bores during detailed design and further investigation undertaken by a qualified hydrogeologist, to confirm the depth and location of the proposed bore fields, so that impacts from the extraction of groundwater are minimised. In addition, in accordance with new mitigation measure WR14, a bore field extraction plan would be prepared as part of the soil and water management plan and would be provided to DPE Water prior to construction of the proposed bore field bores. The plan would include information regarding the locations, water source, depth and proposed volumes of water take per year for the proposed bore field bores, as well as any measures to minimise the potential for impacts due to the extraction of groundwater for construction water. The plan would also provide confirmation that any applicable water sharing plan rules have been met.

Potential for contamination due to application of construction water

As described in sections 7.1.7 and 7.1.8 of Technical Report 4, the groundwater that would be extracted from the deeper groundwater systems for construction water is currently of unknown quality. It is acknowledged that if the groundwater is not of suitable quality, and is not treated prior to application, there is the potential that it could impact surface water, shallow groundwater systems and the quality of vegetation and surface soils.

In accordance with mitigation measure WR8, the quality of groundwater obtained from the proposed bore field bores would be assessed for the suitability of its intended use. Where required, treatment systems would be designed to ensure water quality is consistent with the relevant water quality criteria from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018).

In addition, in accordance with mitigation measure WR7, groundwater monitoring program would be developed in consultation with DPE Water and implemented, as part of the soil and water management plan, to monitor potential groundwater impacts. The program would define the following in accordance with chapter 10 of Technical Report 4—Groundwater assessment:

- ▶ Monitoring parameters
- ▶ Monitoring locations
- ▶ Frequency and duration of monitoring.

The monitoring program would include baseline monitoring to determine the water quality of groundwater from the proposed bore field bores. Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions. A review would be undertaken six months and one year after the completion of groundwater pumping to assess the recovery rates and determine if further mitigation is required.

4.1.12 Protecting Aboriginal culture and heritage

Consultation with Aboriginal communities

Issue

Inland Rail will be built and operated on the traditional lands of many Indigenous communities. Council requests adequate consultation with the Coonamble Local Aboriginal Land Council and any other Traditional Owner or community group recommended by the Land Council.

Response

Consultation with Aboriginal stakeholders is described in section B6.1.2 of the EIS. Consultation included identifying key Aboriginal stakeholders, native title claimant groups and Local Aboriginal Land Councils (LALCs). A detailed summary of the consultation process, which involved consultation with eight LALCs that fall within the study area, is provided in section 4 of Technical Report 6—Aboriginal cultural heritage assessment report.

ARTC would continue to liaise with the LALCs and Aboriginal parties in relation to the design and construction of the proposal. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning, where appropriate, in accordance with the proposal-specific community management plan. A new mitigation measure (SE3) has been included to commit to preparing and implementing an Aboriginal community and stakeholder engagement strategy and action plan. The plan would provide for continued two-way communication with local Aboriginal communities to opportunities to reflect Aboriginal community and cultural values in the outcomes of the proposal.

Consultation with, and the involvement of, registered Aboriginal parties is provided for in a number of the Aboriginal heritage mitigation measures, including preparing the salvage methodology and undertaking salvage (mitigation measure AH2), the targeted archaeological survey (measure AH3), pre-construction survey (measure AH4), managing impacts on PADs (measure AH5), and preparation of the Aboriginal cultural heritage management plan (measure AH10).

4.1.13 Flooding/overland drainage

Concerns regarding increased flooding and drainage impacts

Issue

Council is concerned about the potential for flooding and drainage impacts on farming properties, dams, roads and natural ecosystems, both upstream and downstream of the proposed railway. The introduction of the new rail infrastructure will change the flooding regime, with the potential to affect surface water flows across floodplains and other areas. Council recommends detailed modelling of the hydrological impacts along the railway corridor, as part of the assessment of the proposal, to determine site-specific downstream impacts of flows from proposed culverts on primary production land, dams, roads, environmentally sensitive land, heritage sites and the like.

Response

Detailed flood modelling was undertaken for the proposal as described in Technical Report 3—Flooding and hydrology assessment and summarised in section B3 of the EIS. Modelling involved detailed hydrologic and hydraulic modelling for the full proposal extent, including the Coonamble Shire Council area. It was undertaken in accordance with the SEARs, and relevant legislation and guidelines, as described in section B3.1.1 of the EIS.

As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited. Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal. Mapping of potential impacts following construction of the proposal is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results for a range of flood events from the 20 per cent annual exceedance probability (AEP) event to the probable maximum flood (PMF) event are provided. Potential impacts to buildings, roads, existing rail lines and land use are assessed.

ARTC acknowledges that constructing the proposal across farmland and other areas would affect the existing hydrological regime. The proposal seeks to minimise these impacts by including bridges and culverts in the railway embankment. In accordance with mitigation measure FH1, the design would continue to be refined during the detailed design process, to minimise impacts as far as practicable. Mitigation measure FH1 provides that further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

The additional flood modelling, and mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Cost of maintaining structures

Issue

Council is concerned about the cost of maintaining additional road culverts and other drainage structures and systems. Council and its ratepayers should not have to carry any of the extra burdens of expenditure required to fund rail-related drainage improvements. Council will not accept liability for rail-related drainage structures and improvements that lead to damage of the public road network or adjoining land use due to errors in assumptions and design standards progressed by ARTC and/or its contracted design team.

Response

ARTC does not propose to hand back infrastructure to Council that requires additional management (and associated costs) as a result of the proposal. Any Council assets impacted by construction of the proposal would be constructed/modified and funded by ARTC. As noted above, the proposal (including rail-related road drainage structures) would be designed and constructed in accordance with the conditions of approval, and all relevant design standards and requirements. TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Any arrangements related to maintenance would be subject to third-party agreements between ARTC and the relevant road manager. ARTC and its construction contractor would be responsible for the design and construction of the proposal. Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

4.1.14 Noise and vibration

Construction and operation noise impacts and mitigation

Issue

The EIS proposes primary construction hours that include periods outside the recommended standard hours in the NSW Interim Construction Noise Guideline. Council requests that all construction works be undertaken within the standard hours of the Interim Construction Noise Guideline or specific arrangements be made with affected landholders to mitigate impacts.

Response

As described in section A8.8.2 of the EIS, a small increase in working hours above the *Interim Construction Noise Guideline* (DECC, 2009) recommended standard hours is proposed to shorten the length of construction, as far as practicable, and minimise associated disruptions to the community. It is estimated that constructing the proposal during the primary proposal construction hours would reduce the overall construction program by up to six months. The following primary proposal construction hours are proposed:

- ▶ Monday to Friday: 6am to 6pm
- ▶ Saturday: 6am to 6pm
- ▶ Sundays: 6am to 6pm
- ▶ Public holidays: no work.

No work would be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except in the following circumstances:

- ▶ Where potentially affected receivers agree that the work can be undertaken
- ▶ Where construction noise levels do not exceed the rating background level by more than 5 dB(A) at residential receivers
- ▶ No more than the noise management levels specified in the *Interim Construction Noise Guideline* (Table 3) would be experienced at non-residential sensitive receivers.

Discrete construction activities may also be undertaken outside the primary proposal construction hours as follows:

- ▶ Work where there are no sensitive receivers with the potential to be affected by noise and vibration impacts
- ▶ Work at the proposed Narrabri, Narromine and Curban connections, and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line), which would be undertaken during rail corridor possessions and may need to be carried out on a 24-hour basis
- ▶ Other out-of-hours construction activities, including delivery of oversized plant or structures and emergency work
- ▶ Other discrete construction activities, such as large concrete pours and girder or deck installations at some bridges would also occur; however, these would be limited to 48 hours at any one location.

Work outside the *Interim Construction Noise Guideline* recommended standard hours would be undertaken with appropriate noise management controls and management measures implemented in accordance with the conditions of approval and the mitigation measures. Mitigation measure CNV5 provides that an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures, and communication requirements. Measures would be aimed at pro-active communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels.

All work outside the primary proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and the out-of-hours work protocol. The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders (including the NSW EPA) and the community with the potential to be impacted, and would be incorporated into the construction noise and vibration management plan. The key steps in the process are expected to include:

- ▶ Confirming upcoming works, including timing, duration, plant and equipment
- ▶ Identifying affected receivers
- ▶ Confirming predicted noise levels and potential exceedances of relevant construction noise management levels
- ▶ Identifying mitigation options in consultation with affected receivers.

As described in section 5.4 of the consultation report (provided in Appendix C of the EIS), ARTC undertook consultation regarding the primary proposal construction hours during one-on-one meetings with directly impacted landowners between July 2019 and February 2020.

The results of the construction noise assessment were not available at the time of the consultation, so information on the duration and level of potential noise impact was not able to be disclosed with landowners. Support or objection was, therefore, sought for the primary proposal construction hours to provide an indication of community sentiment. ARTC explained that extended construction hours could reduce the duration of noise impacts in some circumstances, such as isolated sensitive receivers close to track work with no major structures, as the work-front would move quicker.

ARTC has not stated or assumed that the verbal feedback sought from landowners constitutes informed consent, and would continue to engage with them during the detailed design and construction phase. ARTC would also negotiate community agreements with impacted landowners in accordance with the *Draft Construction Noise Guideline* (NSW EPA, 2020) prior to construction, if appropriate.

Issue

The ongoing operation and maintenance of Inland Rail will create long-term noise impacts for various segments of the local community. Council requests that every effort be made to minimise noise in detailed design. Where noise impacts are projected to exceed accepted criteria, Council requests specific arrangements are made with affected landholders to mitigate impacts.

Response

In accordance with mitigation measure ONV1, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design.

In accordance with mitigation measure ONV2, feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy. Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners.

4.1.15 Soils and weeds

Concern that ground disturbance from construction of the proposal will introduce weeds

Issue

The proposed disturbance of soils during construction has the potential to cause soil erosion and introduce plant species, including priority and high-threat weeds.

Council is concerned that construction vehicles may introduce weeds, pests and pathogens into the Shire. Council requests that greater consideration be given to the management of soils and weeds in the assessment of the proposal and subsequent imposition of conditions of consent for the development of site-specific construction/environmental management plans.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires that a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

A framework CEMP was provided as Appendix F of the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

4.1.16 Air quality

Dust generation impacts and management during construction

Issue

Dust minimisation measures are required to protect nearby housing, crops and road safety conditions along road/haulage and/or rail construction routes. Consideration should also be given to the impact of large dust plumes generated during construction on the dark skies around the Siding Springs Observatory.

Response

The construction air quality assessment, described in sections B10.3, C1.3.4, C2.3.8 and C3.3.6 of the EIS, included consideration of potential air quality impacts associated with rail and road construction, concrete batching plants, borrow pits, temporary workforce accommodation facilities and multi-function compounds.

The air quality assessment found that the main potential impact on air quality during construction would occur as a result of the generation of dust from construction works, and the movement of equipment and machinery along the proposal site—particularly, on unsealed roads. The assessment identified that, without mitigation, 57 sensitive receivers could be affected by dust during construction.

Potential dust impacts on property and agriculture are described in section 7.9 of Technical Report 11—Agriculture and land use assessment and summarised in section B12.3.3 of the EIS. The assessment noted that, during construction, there is potential for dust to settle on crops and pastures; however, dust suppression protocols would reduce the occurrence, and the impacts on production are likely to be insignificant. During construction, dust impacts would vary substantially from day to day depending on the level of activity, duration, soil type and topography, and the wind speed and direction.

An assessment of potential impacts on the Dark Sky Region, centered on the Siding Spring Observatory, was provided in section 7.3 of Technical Report 12—Landscape and visual assessment. The assessment noted that the generation of dust may give rise to lighting impacts due to the increased potential for light to be reflected by particles in the atmosphere and contribute to skyglow. As a result, the generation of dust should be managed so it does not contribute to skyglow.

In accordance with mitigation measure AQ1, an air quality management plan would be prepared and implemented as part of the CEMP. It would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction. Mitigation measure AQ2 provides that, where sensitive receivers are located within the separation distances determined for each key activity or visible dust is generated from vehicles using unsealed access roads, road watering and/or other stabilising approaches would be implemented.

The framework CEMP (see Appendix F of the EIS) provides the requirements for the required management plans, including the dust control and erosion measures to be implemented during construction.

With the implementation of the air quality management measures outlined above, no significant impacts due to dust are expected.

In accordance with amended mitigation measure LV4, however, consultation would be undertaken with the Siding Spring Dark Sky Committee during detailed design. The outcome of this consultation would determine if any additional measures are required to manage the potential for impacts to the observatory.

Issue

Council requests that greater consideration of water supply and the application of water to gravel roads, hardstands and surfaces prone to dust problems be given in the assessment of the proposal and subsequent construction/environmental management plans.

4.1.16.1 Response

As noted above, the air quality management plan would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction. In addition, and in accordance with mitigation measure AQ2, where sensitive receivers are located within the separation distances determined for each key activity, or visible dust is generated from vehicles using unsealed access roads, road watering and/or other stabilising approaches would be implemented.

A response to issues raised regarding water supply for construction are provided in section 4.1.11.

4.1.17 Dark Sky Planning Guidelines

Minimising impacts on the Siding Spring Observatory

Issue

Council requests that ARTC continue to work with the Siding Spring Dark Sky Committee to ensure the construction and operational phases meet their standards/guidelines.

Response

Mitigation measure LV4 has been amended to include a requirement to consult with the Siding Spring Observatory Dark Sky Committee as part of the design and siting of temporary and permanent lighting. This is in addition to the requirement to design and site lighting in accordance with *AS/NZS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* (Standards Australia/Standards New Zealand Standard Committee, 2019) and the good lighting design principles documented in the *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (Department of Planning and Environment, 2016).

4.1.18 Flora and fauna

Impacts on biodiversity

Issue

Council does not believe that the EIS has adequately attempted to avoid impacts to biodiversity values.

Response

The overall approach to managing impacts on biodiversity is, in order of importance, to:

- ▶ Avoid impacts through the planning and design process
- ▶ Minimise impacts through the planning and design process
- ▶ Mitigate impacts using a range of mitigation measures
- ▶ Offset any residual impact that could not be avoided or mitigated, as required by relevant legislation.

Section B1.1.4 of the EIS describes the measures taken to avoid or minimise impacts to biodiversity values, including during the option development and assessment phase. The option development and assessment process for Inland Rail as a whole is summarised in chapter A6 of the EIS. As noted in section A6.2, the shortlist of route options was subject to a detailed assessment, which included assessment of a broad study area to identify key constraints early in the design process, and assist with avoiding and minimising impacts, including impacts on biodiversity, as far as practicable.

ARTC has, where practicable, altered the proposal site to avoid and minimise ecological impacts in the proposal planning stage. Areas of existing woodland and forest vegetation were avoided, where practicable. Areas of threatened ecological communities were also avoided where a wider investigation corridor allowed for this to occur. Where the proposed rail alignment was aligned with a paper road (a Crown road reserve with no made road) the alignment was preferentially located in native grassland in private land adjacent to the paper road (where practicable) to retain wooded vegetation with higher threatened species habitat value in the road reserve.

A range of impact mitigation strategies have been included in the proposal to mitigate potential impacts on ecological values prior to consideration of offsetting requirements, e.g. the opportunities for retention of fauna connectivity provided by the proposed bridges and culverts along the alignment, including dedicated fauna culverts where suitable, as well as rope bridges. Bridges have been, and would continue to be, designed to minimise impacts on riparian habitat, as far as practicable. A preliminary fauna connectivity strategy (see Appendix J of the updated biodiversity development assessment report) has been developed to identify the principles and objectives

for fauna connectivity that will need to be met, as well as appropriate locations and types of connectivity structures tailored to meet the requirements of the key target species.

As noted in section B1.5.1 of the EIS, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through refinements during detailed design. Further information is provided in the updated biodiversity development assessment report (see section 3.2 of this report).

Justification in relation to impacts and alternatives

Issue

The EIS has not adequately justified the proposed railway route in relation to the impacts on the Warrumbungle Ranges and Pilliga Forest ecosystems. Council is also of the view that biodiversity offsetting at the scale proposed should not be used as an automatic default tool justifying the proposed railway route.

Council recommends that the proposed railway should avoid areas of high biodiversity value wherever possible. Council believes an alternative railway route via Coonamble would help alleviate many of the concerns raised by members of the community.

Council supports the proposal being declared a controlled action under the EPBC Act 1999, requiring approval from the Australian Minister for the Environment; however, Council believes that there is a need for a more detailed/independent expert assessment of a proposed railway route that avoids long-term impacts on already limited biodiversity assets.

Response

As described in section 4.1.1, the Australian Government confirmed the preferred study area for the proposal in November 2017. The study area traversed the Pilliga East State Forest and associated State forests. Section A6.2 of the EIS describes the route selection process for the proposal, both before and after confirmation of the study area. Further information is also provided in the combined Preferred Infrastructure/Amendment Report.

Since November 2017, ARTC has worked closely with stakeholders as it refined the study area to a proposed rail corridor.

This analysis, and the reasons why the route through the Pilliga forests was identified as the preferred option, is documented in section A6.2 of the EIS and the combined Preferred Infrastructure/Amendment Report. The route selection process has given due consideration to environmental, social, technical and economic factors. The preferred route was selected as it was considered to perform best across all assessment factors, considered collectively.

Further information on the route history and selection process is provided in the combined Preferred Infrastructure/Amendment Report (see section 3.3.1 of this report).

As described in section B1.5.1 of the EIS, and as noted in the response above, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable.

Biodiversity offsets are proposed to mitigate the impacts of the proposal that cannot be avoided. They are not proposed to justify the route as selected.

Biodiversity offsets

Issue

Where the location of the proposed railway route in areas of high biodiversity value are unavoidable, Council suggests that the biodiversity offsets should be robust enough to take into account the impacts on threatened species and communities, as well as consideration of cumulative impacts and loss of strategic corridors of bushland in areas of regional and national significance.

Response

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program. ARTC has invited landowners within 100 km of the route in NSW to contact them regarding establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate credits. The offset rules are established in the Biodiversity Conservation Regulation 2017. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), another option would be for ARTC to make a payment into the Biodiversity Conservation Fund.

In seeking the appropriate credits, ARTC would endeavour to source and establish the same vegetation that would be impacted by constructing Inland Rail in NSW, generally within the same areas, in accordance with NSW and Commonwealth legislative requirements. These requirements determine where stewardship sites can be located, the vegetation and habitats that will be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors.

Biodiversity offsets are not required to exactly replicate the area of impact. Offsets are required to take into account the landscape attributes of ecosystem and species credits within each subregion, including connectivity, patch size and areas of retained native vegetation, before and after the impacts of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced, in accordance with the legislated offset trading rules set out in the Biodiversity Conservation Regulation 2017.

Further information on the Inland Rail biodiversity offset credit process is provided at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

4.1.19 Construction workers

Local benefits to accrue from construction in the LGA

Issue

Council requests that targets be set in the workforce plans and procurement contracts for procurement of labour, materials and services to ensure that as much as possible is sourced from the local area.

Response

ARTC would continue to work with Coonamble Shire Council and other local and regional service providers to maximise the potential local and regional benefits of Inland Rail and the proposal. ARTC is committing to number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the Australian Jobs Act 2013 (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs; upskill local residents and young people; and connect businesses with Inland Rail opportunities and key regional industries. Working with schools along the alignment, the Inland Rail Academy profiles science, technology, engineering and mathematics (STEM) careers and pathways, and offers professional development for STEM teachers. Virtual work experience programs are being offered to high school students to connect young people with 'real-world' work problems and industry professionals.

In accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets

- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of construction workers in the region. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Proposal-specific targets for local and Indigenous industry and workforce participation would be further developed during the tendering process. Principal contractors would be contractually obliged to:

- ▶ Ensure that targets for local and Indigenous industry, and workforce participation and development are included in contracts with subcontractors
- ▶ Report to ARTC on local and Indigenous industry, and workforce participation and development outcomes.

ARTC is committed to communicating local and Indigenous industry and workforce participation outcomes for the proposal through a quarterly social performance snapshot, which would be shared publicly with local communities.

Issue

Where Council staff are required/contracted to enter railway lands for road maintenance, weeds management or to exercise its regulatory functions under the *Local Government Act 1993* (NSW) or other State legislation, Council requests that ARTC administer a tailored work health and safety and training program, including regular inductions for Council staff, instead of staff being required to make applications and maintain certification under the ARTC access permit requirements.

Response

Safety is one of ARTC's core organisational values. ARTC is obligated to comply with the *Work Health and Safety Act 2011* (Cth), the NSW Work Health and Safety Regulation 2017, and associated safety guidelines, to ensure the health and safety of employees and contractors.

During construction, the construction contractor would manage the site safety and induction process for their sites, to comply with relevant safety legislation and requirements. The contractor would also make necessary arrangements with Coonamble Shire Council for access to Council assets during construction.

Operational rail corridor

The works for Council following construction would largely, if not completely, fall outside of the rail corridor; however, ARTC notes that there may be rare instances where Council staff need to enter railway lands to inspect works. In the event that access to the rail corridor is required, Council employees must be inducted by ARTC and registered as a Rail Industry Worker (RIW) in accordance with the RIW Program. Specific details regarding induction requirements and other health and safety requirements when working within the rail corridor, in accordance with legislation and relevant ARTC guidelines and standards, would form part of the third-party agreements with Council.

4.1.20 Waste

Management of waste from construction

Issue

Council has limited capacity to manage waste within its existing network of waste management facilities. Council requests a series of meetings be held with ARTC, NSW EPA, local councils and any other relevant waste authorities to ensure that waste generated from the proposal is properly managed, including recycling of materials wherever practical.

Response

As described in chapter D2 of the EIS, the proposal would be designed, constructed and operated so that wastes are managed according to the waste minimisation hierarchy:

- ▶ Avoidance, where possible
- ▶ Treated, as required, and reused onsite
- ▶ Recycled either within the proposal or offsite
- ▶ Where other alternatives are not possible, unavoidable wastes would be disposed of at appropriately licensed waste management facilities.

There are a number of waste facilities in the region that could be used to dispose of unavoidable construction waste (depending on their existing approval and licencing arrangements), including those listed in section D2.2.4 of the EIS. The facilities that would be used, and the breakdown of estimated waste quantities that would be disposed of at those facilities, would be confirmed by the construction contractor, based on the suitability of waste and available capacity at relevant facilities. This would include consideration of existing approvals and licensed limits.

In accordance with mitigation measure WM1, detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes and the reuse of material onsite.

As noted above, ARTC recognises that Coonamble Shire Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council on those aspects of the proposal that are of relevance and interest to Council, including waste management, in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

4.1.21 Contributions framework

Further discussions required on responsibility for costs of local infrastructure improvements

Issue

Council requests a strategic cost investigation be carried out by ARTC, and presented to the councils along the Narramine to Narrabri rail corridor, to ensure a consistent approach to the delivery and ongoing maintenance of required road and drainage improvements as well as weeds and waste management. Council and its ratepayers should not have to carry any of the extra burden of expenditure required to fund rail-related improvements to public infrastructure.

Response

ARTC recognises its responsibility to deliver and operate Inland Rail with the least impacts practicable, while enhancing the benefits Inland Rail will deliver to the people of Australia at the local, regional and national scales. ARTC has established procedures to guide the development and implementation of measures to minimise potential impacts, and maximise potential local and regional benefits of Inland Rail.

ARTC acknowledges Coonamble Shire Council's concerns regarding the perceived gap between costs and benefits at the local level and is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

As noted above, the proposal (including road and drainage improvements, and ongoing maintenance and management structures) would be designed, constructed and operated in accordance with the conditions of approval, the mitigation measures, and all relevant design standards and requirements. Where Council assets are impacted by the proposal, these works would be undertaken as part of the proposal and would not require funding from Council.

As part of the third-party agreements, consideration would be given to Council's position in relation to the cost of maintaining additional assets returned to Council, noting that Council may also receive benefit through reduced maintenance expenditure as partially aged existing Council assets are replaced with new assets.

Maintenance requirements and procedures for ARTC's operational infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

4.1.22 Ongoing community engagement

Increased levels of community engagement are required

Issue

Council requests that additional consultation be undertaken as part of the development assessment process, including consideration of an alternative route via Coonamble. Council requests that a series of community engagement workshops be held to provide more detail on the key issues raised in Council's submission.

Response

Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning, in accordance with the communication management plan for the proposal. Mitigation measure SE1 provides for the development and implementation of a proposal-specific communication management plan to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquiries and complaints are managed, and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

Consultation would involve a range of activities, including stakeholder meetings and workshops, as required.

ARTC has also established a Project Co-ordination Group (PCG) in each state, including NSW, which comprises of representatives from ARTC, major state transport agencies and the Australian Government, to address major policy matters relevant to Inland Rail and serve as forums for resolution of outstanding issues. The PCGs are supported by technically focused working groups that involve a wide range of agencies and councils to focus on the practical aspects of interface issues with other rail corridors, roads and publicly owned infrastructure.

ARTC would establish a Stakeholder Engagement Coordination Group, comprised of four sub-groups along the proposal alignment. The group will meet quarterly and include key stakeholders including, but not limited to, ARTC, ARTC's construction contractor, councils, emergency services, and Australian and NSW Government agencies.

4.2 Gilgandra Shire Council

4.2.1 Introduction

Critical State significant infrastructure planning approach

Issue

Unlike State significant development or local development approvals in NSW, Council cannot enter into a Voluntary Planning Agreement or enact a Section 94 contribution from this project. It is imperative that the government and the community be aware of the significant cost that local councils are encumbered with in the assessment of State significant infrastructure projects.

Council believes that the proposal requires an integrated planning and approval response and requests that DPIE closely examines the impact the critical State significant infrastructure framework has on under-resourced councils in the region.

Response

ARTC has fulfilled, and will continue to fulfil, its requirements in relation to the assessment and approval process for the proposal in accordance with the requirements of the EP&A Act and EP&A Regulation. How this process is implemented and funded is a matter for the NSW Government.

Timing of public exhibition

Issue

Council is unclear whose decision it was to place the EIS on public exhibition over the Christmas period but are of the belief that it was a poor decision and has impacted the community's ability to respond. It is noted that there was additional time added to the exhibition period to allow for public holidays; however, this does not deter from the fact that Council and the community were placed under significant time pressure to respond.

Response

The Secretary of DPE is responsible for determining the timing and duration of public exhibition periods for EISs. Clause 12 of Schedule 1 of the EP&A Act provides that the minimum public exhibition period for an EIS for State significant infrastructure is 28 days.

The EIS for the proposal was placed on public exhibition by the (then) Department of Planning, Industry and Environment (DPIE) (now DPE) for a period of 62 days, commencing on 8 December 2020 and concluding on 7 February 2021. This is more than double the required statutory timeframe, which was provided to allow additional time for community feedback, and to take into account public holidays and the Christmas period.

Third-party agreement

Issue

Council is concerned that there is an over reliance by the proponent on a proposed third-party agreement for the management of impact on Council-controlled assets. It is Council's understanding that this agreement is a voluntary undertaking of ARTC Inland Rail and is not subject to enforcement and compliance actions for the project consent authorities or agencies.

Response

ARTC acknowledges Council's concern. The third-party agreements would be developed in accordance with a program-wide strategy that ARTC has already been using to guide management of third-party assets along Inland Rail; however, the commitment to develop detailed requirements regarding the ongoing management and maintenance of Council-owned assets has been confirmed by the amendment to mitigation measure TT2. In accordance with measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Skills and business development outcomes

Issue

Council would like ARTC Inland Rail and the principal contractors to work collaboratively to achieve a number of skills and business development outcomes in the Shire.

Response

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts as far as practicable and enhancing the benefits Inland Rail will deliver to the people of Australia at a local, regional and national scale. ARTC has established procedures to guide the development and implementation of measures to minimise the potential socio-economic impacts and maximise the potential local and regional benefits of Inland Rail.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction. It would be developed in consultation with local councils.

ARTC would continue to work with Gilgandra Shire Council and other service providers in the region to maximise potential local and regional benefits. ARTC is committing to a number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy to: leverage training programs; upskill local residents and young people; and connect businesses with Inland Rail opportunities and key regional industries. Working with schools along the alignment, the Inland Rail Academy profiles science, technology, engineering and mathematics (STEM) careers and pathways, and offers professional development for STEM teachers. Virtual work experience programs are being offered to high school students to connect young people with 'real-world' work problems and industry professionals.

In accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

In addition, mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of construction workers in the region. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers.

Proposal-specific targets for local and Indigenous industry and workforce participation would be further developed during the tendering process. Principal contractors would be contractually obliged to:

- ▶ Ensure that targets for local and Indigenous industry and workforce participation and development are included in contracts with subcontractors
- ▶ Report to ARTC on local and Indigenous industry and workforce participation and development outcomes.

ARTC is committed to communicating local and Indigenous industry and workforce participation outcomes for the proposal through a quarterly social performance snapshot, which would be shared publicly with local communities.

4.2.2 Social and economic

Concern with assessment process and reliance on post-approval management plans

Issue

Council raised a number of concerns in its submission about the assessment approach and the proposed mitigation measures and approach, particularly the application of post-approval management plans, including:

- ▶ The critical State significant infrastructure approval process is seriously deficient in informing the community of specific project impacts. In its current form, Council is not accepting many of the general assumptions contained in the EIS and the regional level data analysis approach that has been adopted.
- ▶ The over reliance on post-approval management plans has serious implications on councils and the community's ability to understand this project and maintain improvement at critical points.
- ▶ Council is dissatisfied with the weakness of the mitigation measures for socio-economic impacts at the LGA level and is concerned that most are deferred to post approvals, such as the workforce accommodation plan, workforce management plan, etc. Council expected tangible mitigations to be presented in the EIS and does not think they should be deferred to post approvals.
- ▶ Council is dissatisfied with the deferment of critical issues, such as those relating to workforce accommodation, workforce management, traffic and transport, etc. to the post-approval phase. Council is reliant on the detail in those plans in order to achieve social and economic benefits from the proposal. Council is also concerned that their involvement in these plans during their development and ultimate implementation may not be sufficiently robust to ensure appropriate social and economic benefits are realised.
- ▶ Council requests early and meaningful role in the preparation of all post-approval plans that affect the LGA.
- ▶ Council considers that the requirement outlined in *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) that allows for Council involvement near the end of the plan development process, with only 10 business days to comment, is unsatisfactory. Council requests that DPIE (now DPE) provide significant resources to Council to review post-approval work plans within this time frame; or, remove the 10-day turn around on review of plans and alter it to reflect the scale of the project and obvious impact on Council resources.

Response

The EIS (including Technical Report 13—Social assessment) has been prepared in accordance with the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. The assessment presented in the EIS is based on a reference design and indicative construction methodology and is considered sufficient to assess the environmental impacts, and inform the risks and issues potentially associated with the proposal. As described in section 3.2.1 of this report, an addendum social assessment has been prepared to clarify some aspects of Technical Report 13.

The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures provided in section 11 of this report and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

ARTC's approach to environmental management is described in section D5.2 of the EIS, including its commitment to manage its environmental responsibilities and environmental performance. DPE has clear guidelines on the process for the development of post-approval matters such as the CEMP and associated management plans. Much of the detail cannot be finalised until a construction contractor is appointed, as they will be responsible for the day-to-day activities onsite. Further detail on the post approval process in NSW can be found at planningportal.nsw.gov.au/major-projects/assessment/post-approval. The proposed post-approval plans would be prepared in accordance with the mitigation measures, conditions of approval, discipline-specific guidelines, consultation with key stakeholders, and the guidance presented in the technical reports that support the EIS.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts as far as practicable and enhancing the benefits Inland Rail will deliver to the people of Australia at a local, regional and national scale. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail. As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed mitigation measures and the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework. It would be developed in consultation with local councils and DPE.

The post-approval management plans would be prepared, and consultation undertaken, in accordance with the mitigation measures and conditions of approval. ARTC acknowledges the issues raised by Gilgandra Shire Council and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council on aspects of the proposal that are of relevance and interest to Council in accordance with the communication management plan for the proposal (required by mitigation measure SE1). Mitigation measure SE11 has been amended to confirm that the workforce management plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers. Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with Council.

There are no minimum timeframes for stakeholder comments on post-approval documents identified in either *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) or *Environmental Management Plan Guideline: Guideline for Infrastructure Projects* (DPIE, 2020d). Council would be consulted as soon as practicable on the development of the proposed plans.

Economic impact: differentiating between local, regional, State and national benefits and costs

Issue

Council is fully aware and appreciative of the expected economic benefits to the nation, NSW and to the region of both the construction and operation of the proposal and the overall Inland Rail project; however, Council is disappointed that the EIS and social assessment fail to specifically assess the likely economic benefits or costs of the proposal to the Gilgandra LGA.

Council does not believe that the scale selected for the regional analysis, compared to the six individually affected LGAs, is appropriate. Council contends that no meaningful interpretation of local (LGA-based) economic or social costs and benefits of either the construction or operation phase of the proposal can be obtained from the data presented for such a large region. Council requests that further detail be provided in the EIS and social assessment to assess the realistic economic, social and environmental costs and benefits that can be expected for the Gilgandra LGA.

Response

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4² level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy. This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas. The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which in turn stimulates further rounds of economic activity).

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy within which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified where possible.

ARTC would continue to work with local councils to identify and realise local economic and social benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narramine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the project.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in December 2020, which can be accessed via inlandrail.artc.com.au/moving-ahead-with-inland-rail/.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed SIMP would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and the specific management actions and targets that would be developed in response to these measures. In addition, mitigation measure SE7 commits to developing and implementing a proposal-specific industry participation plan to manage the potential employment and regional economic benefits of the proposal.

Local benefits as opposed to benefits to Dubbo

Issue

Council is concerned that the social assessment and EIS do not clearly articulate the extent to which Dubbo (as the major regional centre closest to the study area) will influence positive economic activity at the expense of the Gilgandra LGA. It is important to Gilgandra Shire Council that, as one of the small LGAs bearing the most impacts of the proposal, its community should receive as much of the economic benefit of the proposal as possible, particularly in the use of local suppliers and services, and in capturing spending by the construction workforce.

Council expects the social assessment and EIS to detail the extent to which local procurement measures will favour possibly larger businesses in Dubbo over smaller businesses in the Gilgandra LGA and what the subsequent result on realistic economic benefit to the Gilgandra LGA, as opposed to the study area, would be.

² Statistical Area Level 4 are defined by the ABS as areas that represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

Council expects the social assessment and EIS to detail to what extent potential construction workers are likely to remain in or move to Dubbo and commute daily to work rather than stay in the Gilgandra workers accommodation facility or rent or buy in Gilgandra. Council also asks for clarification as to whether the construction companies would be required to limit employees' or contractors' journey-to-work time or distance, as this would be beneficial for road safety and would then encourage workers to live in local housing or the workers accommodation facility in Gilgandra, rather than in Dubbo.

Response

ARTC is committed to working with local communities to meet their needs and deliver customer benefits. These opportunities will unfold as the proposal moves towards the commencement of construction. As noted above, the Parkes to Narromine project demonstrates the types of benefits that Inland Rail is bringing to local economies. Further information can be found in ARTC's *Moving ahead with Inland Rail* report.

Detailed procurement planning would be the responsibility of the construction contractor(s). Procurement processes are bound by strict guidelines and laws and are not a standard part of the environmental approval process; however, in accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013* (Cth), the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

An estimated breakdown of the workforce by expected place of residence or travel patterns would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

The workforce management plan would be informed by an analysis of the availability of construction workers in the region. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

As described in section B14.3.2 of the EIS, there is the potential for an increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally; however, this is expected to be a small increase in demand, which is considered unlikely to increase the price of rental properties in these locations. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourism accommodation and rental housing by workers.

Workforce health and safety procedures would be established by the construction contractor(s) in accordance with the *Work Health and Safety Act 2011* (NSW); these would consider matters such as safe driving and fatigue.

Planning for economic development

Issue

Council noted that two local economic development strategies were not referenced in the social assessment or EIS. Council requests that the details in the plans form the basis for the local details regarding local product and service procurement that will be included in the workforce management plan. Council expects early involvement in this plan, and that it will be completed to Council's satisfaction.

Response

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of the construction workforce in the region and other local data and information, including the latest economic development plans. This is confirmed by new mitigation measure SE5, which provides that, prior to construction, ARTC would confirm workforce requirements.

Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Employment, workforce and training

Issue

Council notes that the social assessment and EIS make reference to ARTC's commitment to creating opportunities for the development of local workers and request that it be confirmed that this will mean local to the LGA and not to the project study area in its entirety. Council expects to have early involvement in the post-approval workforce management plan to ensure that these local targets are properly informed, reasonable and achievable for both its community and for the efficient implementation of the proposal.

Response

ARTC is committing to a number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.

In accordance with mitigation measure SE7, and as noted above, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation. In accordance with mitigation measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to, recruitment, skills and training measures, including identification of skills and qualifications required, and training targets. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers.

Issue

Council is concerned that the incoming workforce and its subsequent demand for local retail and local services will put significant pressure on the employment of 'key workers' currently employed in local aged care and disability services in Gilgandra. Council and other services already have difficulty in attracting and retaining such staff. The creation of other (possibly higher-paid) employment opportunities for these people will be in direct competition with the aged care and disability services that rely on these key workers.

Response

While some key local workers may be attracted to local construction positions, these opportunities would be relatively short term and most roles would require specific technical skills, certification and experience. It is unlikely that there would be a significant overlap between the requirements for the construction workforce and the skills and experience required for aged care and disability services. In accordance with mitigation measures SE11 and SE12, the workforce management plan would include recruitment, skills and training measures to upskill the local workforce who may be unemployed or underemployed and assist them to develop skills that would improve their suitability for employment.

Issue

Council is disappointed that the social assessment section on local and Indigenous businesses does not contain information relevant to each LGA. The information presented is generic to the region and does not indicate the diversity of skills, experiences, contacts and issues relevant to each LGA. Council expects that much better detail relating to each LGA will be provided in the workforce management plan.

Council expects that the plan will contain a specific Aboriginal Business Development Strategy with early input by the local Aboriginal community and Council.

Council requests that training providers relevant to Gilgandra are listed, including TAFE, Joblink and Sureways.

Response

The social assessment provides a high-level consideration of the types of local and Indigenous businesses in the region to indicate capacity and capability. ARTC would continue to work with Gilgandra Shire Council and other local and regional service providers to maximise potential local and regional benefits.

ARTC is committing to prepare and implement an industry participation plan and a proposal-specific workforce management plan. The industry participation plan (mitigation measure SE7) would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* (Cth) and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c), including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation. In accordance with mitigation measure SE12, and as noted above, the workforce management plan would include measures to manage local employment and procurement requirements. The workforce management plan would provide relevant detailed data at the LGA level. The additional training providers council has provided are noted. The workforce management plan, when it is prepared, will include a full, up-to-date list of relevant training providers. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Failure of risk assessment to capture severity of socioeconomic impacts

Issue

Council expressed dissatisfaction with the social risk ratings given to a number of potential social and economic impacts of the proposal, as shown in the social assessment, which has meant they were not afforded detailed scrutiny in the remainder of the social assessment. Council requests that the ratings be reviewed and justified in the EIS.

Response

The social assessment was undertaken in accordance with the SEARs and guidelines for social impact assessment in NSW. The methodology applied to undertake the assessment is described in section 3.2.4 of Technical Report 13—Social assessment. Data triangulation methods were applied to identify and assess the potential impacts. Social impact assessment and the assignment of significance ratings is a matter of professional judgement.

The social assessment acknowledges that the degree to which community members would experience social impacts would vary based on factors such as perceptions and individual values, sensitivity to change, distance from the proposal, and the duration that people experience the impacts for. Appropriate mitigation measures have been identified to address the potential impacts related to the areas of concern noted in the submission.

The risk ratings presented in the social assessment have been reviewed and confirmed. Justifications for each rating, as relevant to Council's comments, are provided below.

Housing and accommodation

Due to the nature of rail construction work, the skillsets required to construct the proposal would change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities. As a result of these factors, it is considered unlikely that there would be much demand on local tourist accommodation or the local housing market. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small-scale.

In accordance with SE13, the workforce management plan would include measures to manage potential impacts of the non-resident construction workforce on local and regional communities, including strategies to promote wellbeing of the workforce.

Access and connectivity

The potential social impacts resulting from access and connectivity changes have been assessed based on the findings of the *ARTC Inland Rail Narromine to Narrabri Traffic and Transport Assessment* (JacobsGHD, 2020), which identifies a range of management measures to address potential traffic changes during construction, including delays and disruptions, road safety risks, and potential delays for school bus routes. These include consultation with relevant local stakeholders (e.g. local bus operators) to notify them of potential delays and changes to routes. The likelihood and consequence ratings identified in the social assessment are, therefore, considered appropriate.

Impacts on social infrastructure due to non-resident construction workforce

Temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). It is expected that each temporary accommodation facility would also have a dedicated health space that could be used for onsite occupational health and safety requirements. The layout, staffing and amenities provided would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and in consultation with relevant key stakeholders, including local councils.

As a result of these factors, along with the frequent turnover and short-term, temporary nature of construction roles noted above, which would reduce the likelihood that many construction workers would relocate to the region with their families, the social assessment found that there may be demand on local social infrastructure services. If this did occur, however, it would be small scale and minimal.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers) and would be detailed in the workforce management plan.

In accordance with mitigation measure SE11, the workforce management plan would include measures to manage health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4).

Impacts on emergency service response times

The potential for impacts on emergency response times is noted in section B14.3.5 of the EIS. As noted in the EIS, access for emergency vehicles would be maintained along the public road network throughout the construction period, with suitable alternative access arrangements provided where required. Emergency services would be consulted regularly during construction to minimise impacts of the proposal on their operations. As a result of these factors, it is considered there may be changes to emergency response times and the consequence would be minor.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers to inform providers about the locations of level crossings and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders.

In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

Presentation and use of socio-economic data and assumptions—estimate of non-resident workforce and families accompanying workers

Issue

The social assessment gives an estimate of the peak number of construction workforce expected for the proposal but does not provide an estimate of the likely numbers of resident 'local' and non-resident workforce expected in each LGA, or estimate the proportion of the workforce who may bring family members with them to reside in the LGA.

Council expects that, despite the social assessment stating that it was not possible to estimate the proportion of local and non-resident workforce, a sensitivity analysis should be developed and applied to a revised assessment of impact on the demand on housing and accommodation, employment of the local workforce and likely effects on local services, e.g. health and schools.

Response

The social assessment provides a high-level consideration of potential workforce numbers. A more detailed workforce breakdown would be defined by the construction contractor(s) as part of detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillsets in the region at the time of construction.

As noted above, due to the nature of rail construction work, the skillsets required will change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. The proportion of local and non-resident construction workforce would depend on the availability of required skillsets in the region at the time of construction.

ARTC would continue to work with Gilgandra Shire Council and other local and regional service providers to maximise potential local and regional benefits, and minimise the potential impacts. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan (mitigation measure SE11).

Use of population projections

Issue

Council is concerned that the assumptions about the future population size of Gilgandra are based on a projected decline in population to 2041 instead of focusing on the likely temporary changes to the town's demographic profile through the arrival of 500 workers at the workers accommodation facility. If a more realistic view of population size was adopted, a more realistic assessment of impacts on housing and local services that Council expects will be experienced as a result of the proposal can be developed.

Council expects that the post-approval workforce management plan will include a model of the likely future Gilgandra LGA demographics, prepared to Council's satisfaction, and be based on the anticipated demographics of the relevant construction industry workforce.

Response

ARTC acknowledges that there are a range of scenarios that can influence fluctuations in population at the local level, often in quite short time periods. Since the EIS was finalised, it is evident that many regional towns across NSW have experienced in-migration as a consequence of the COVID-19 pandemic, which has affected housing availability in some areas.

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA, to inform the baseline for each LGA in the regional study area, based on ABS and DPIE (now DPE) data (population projections). This is standard practice for social impact assessments. These population projections are consistently used as the basis for long-term planning by all levels of government across NSW.

Section 7.5.4 of Technical Report 13 acknowledges the potential for a temporary increase in the population of Gilgandra as a result of the influx of construction workers. Notwithstanding the basis of the population projections used by the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities. This assumption is made on the basis that temporary workforce accommodation would be made available to non-resident workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites.

As noted above, ARTC would continue to work with Gilgandra Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

In accordance with new mitigation measure SE5, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Provision of baseline social and economic data

Issue

Council does not accept that the social assessment has not included particular baseline social and economic data for each LGA. Council's submission includes a list of data that should be provided in both the social assessment and future relevant management plans.

Response

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA to inform the baseline for each LGA in the regional study area, based on ABS and DPIE (now DPE) data (population projections). This is standard practice for social impact assessments and is consistent with the assessment guidelines. In accordance with the assessment guidelines, this primary data was supported by secondary data obtained via consultation with local stakeholders and other research, as described in section 6 of Technical Report 13.

The data listed in Appendix A to Gilgandra Shire Council's submission is noted and would be considered during development of the workforce management plan, as appropriate. As noted above, and in accordance with new mitigation measure SE5, ARTC would undertake an analysis of the availability of construction workforce in the region and would develop updated population data and forecasts to inform the workforce management plan. In accordance with amended mitigation measure SE11, the workforce management plan would be developed in consultation with local councils and service providers.

Socio-economic mitigation—costs

Issue

Council perceives a large gap between the costs of the proposal that the LGA will be required to sustain and the economic benefits and tangible savings that will accrue. This presents an unfair situation and Council expects its community to be compensated fairly and transparently for this burden.

Response

Potential impacts associated with the proposal have been considered and assessed by the EIS. Appropriate mitigation measures would be implemented during detailed design, construction and operation of the proposal to mitigate the potential impacts on the local community.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts as far as practicable and enhancing the benefits Inland Rail will deliver at the local, regional and national levels.

ARTC commits to implementing the mitigation measures and undertaking the proposal, in accordance with the conditions of approval, to address the identified impacts. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail.

ARTC acknowledges Gilgandra Shire Council's concerns regarding the perceived gap between costs and benefits at the LGA level and is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

Social assessment consultation

Issue

Council identified several key groups that it believes were not consulted as part of the social assessment and requests that they be specifically consulted. These included:

- ▶ Western NSW Local Health District
- ▶ Primary health care and allied health providers in Gilgandra
- ▶ Allied health providers in Gilgandra
- ▶ NSW Police
- ▶ NSW Ambulance
- ▶ Rural Fire Service
- ▶ Fire and Rescue NSW
- ▶ State Emergency Service.

Response

As described in section 5 of Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. This was considered appropriate given the level of information available during preparation of the social assessment. The committee included representatives of NSW Police, NSW Ambulance, Rural Fire Service, Fire and Rescue NSW, and the NSW State Emergency Service. The committee confirmed that ARTC should consult with local emergency management committees as the design progresses to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision. This consultation would occur as detailed design progresses.

Council was consulted in relation to the capacity of local services (including health services) to meet demand from the construction workforce. The workforce management plan (mitigation measure SE11) would include appropriate processes and measures to manage potential increased demand on health and emergency service providers due to a non-resident construction workforce. It is expected that this would assist regional and local emergency and health services to understand potential demands on their services, and that they are supported and assisted to plan their resources appropriately. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce.

A description of the consultation undertaken for the social assessment, including the groups and organisations consulted, is provided in section 5 of Technical Report 13. Broader consultation for the proposal is described in chapter A4 of the EIS and section 3.4 of this report. ARTC would continue to liaise with relevant stakeholders and organisations in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

Impact on housing and accommodation

Issue

Council is supportive of the development of the Gilgandra workers accommodation facility; however, is concerned that the social assessment makes an erroneous assumption that there will be negligible impact on the local housing market. Council challenges the assumptions made in the EIS relating to housing choices and availability, and considers that a proportion of incoming construction workers will choose to move to their own house in each of the LGAs, even if temporarily. It is also likely that professionals and managers will choose not to live in a workforce accommodation facility for extended periods of time. The extent to which this is likely to occur specifically in Gilgandra, in both rentals and purchases, must be assessed.

The outcomes of this data, in conjunction with the workforce scenarios that have been requested, should form the basis for a realistic analysis of the impact of the temporary workforce on the current and future housing market and particular community groups in Narromine. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

4.2.2.1 Response

As noted above, it is expected that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities. As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market; however, as noted in section B14.3.2 of the EIS, there is potential for a small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small-scale.

Section 7.5.4 of Technical Report 13 acknowledges the potential for a temporary increase in the population of Gilgandra as a consequence of the influx of construction workers; however, as noted above, notwithstanding the basis of the population projections used in the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities.

As noted above, ARTC would continue to work with Gilgandra Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

ARTC would undertake an analysis of the availability of construction workforce in the region and would develop updated population data and forecasts. This would inform the workforce management plan (required by mitigation measures SE11 to SE13), which would also include measures to manage potential impacts of the non-resident construction workforce on local and regional communities. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Local tourist accommodation

Issue

The social assessment does not include detail on the likely number of smaller establishments and beds available in the LGA. This data must be shown to make further assumptions about housing availability and impact on local accommodation.

The social assessment should more rigorously assess the demand for, and impact on, tourism accommodation in each individual LGA, rather than make a generic regional statement. The social assessment must include a realistic analysis of the impact of the incoming workforce on local tourism accommodation in Narromine. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

Response

As described in section 7.4 of Technical Report 13, the capacity of the temporary workforce accommodation has been planned to be sufficient for the peak workforce. The accommodation would be available to non-resident construction workers at low or no cost. In ARTC's experience, where temporary workforce accommodation is available or provided, use of tourist accommodation by construction workers tends to be limited.

Based on these factors, and those noted in the above responses, it is considered likely that the majority of construction workers would choose to stay in the temporary workforce accommodation facilities, rather than tourist accommodation facilities. While there may be minor demand for tourist accommodation facilities during the design and construction phases, as a result of staff visiting the region for short periods of time, the social assessment found there is likely to be sufficient capacity in the existing regional tourism accommodation such that its use by visitors and tourists is unlikely to be affected. To monitor this potential impact, mitigation measure SE13 provides that the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Infrastructure contributions (legacy items)

Issue

To offset the impact of the Gilgandra workforce accommodation facility on the local community and the expected impacts on local housing and the economy, Council expects that a certain level of local infrastructure be provided by the proponent.

Response

The provision of local infrastructure is not part of the scope of the proposal for which approval is being sought. The Inland Rail program provides for rail infrastructure and does not include other infrastructure works, except where necessary or appropriate to deliver the rail infrastructure.

ARTC would, however, continue to consult and engage with Council regarding the potential for Council to retain proposal infrastructure for community benefit. This could include the potential for retaining bores after construction, or leaving some of the infrastructure associated with the temporary workforce accommodation. Any approvals, operating costs and maintenance associated with retaining and using this infrastructure would be the responsibility of the party that takes ownership.

Workforce accommodation facility

Issue

Council is fully supportive of the proposed workers accommodation facility in Gilgandra; however, it finds that there is insufficient detail provided in the EIS. Council seeks a commitment from ARTC to clarify a number of issues, confirm the inclusion of certain facilities in the proposed facility before project approval is given. Items identified included details of design materials, operating arrangements and utility connections. Without this detail, the likely impacts on the community cannot be properly assessed.

Response

A description of the proposed temporary workforce accommodation is provided in sections A8.9.4 and C2.1 of the EIS. The potential impacts associated with the facilities is provided in chapter C2 of the EIS. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant Council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would define:

- ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy)
- ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context
- ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping, as required
- ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment
- ▶ Location, design, service and amenity requirements for mobile accommodation facilities
- ▶ Provision of adequate parking onsite
- ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

In addition, in accordance with mitigation measure LV-CI2, the temporary workforce accommodation plan would include requirements for the design and visual screening of facilities to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.

Temporary workforce accommodation plan

Issue

Council expects the temporary workforce accommodation plan to be completed to Council's satisfaction, and requests early involvement in the development of the plan. It expects that the items/issues listed in Appendix C to Council's submission be included in the temporary workforce accommodation plan.

Response

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of the temporary accommodation facilities. The plan would be developed in consultation with relevant key stakeholders, including Gilgandra Shire Council.

Infrastructure to remain onsite after workforce accommodation facility closure

Issue

To offset the impact of the workforce accommodation facility on the local community, Council expects ARTC to commit to leave infrastructure (sewerage, water supply, electricity, drainage, telecoms, access and parking) to benefit local community, and to detail these in the temporary workforce accommodation plan.

Response

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction would be investigated and negotiated in consultation with relevant stakeholders, including local councils. Any legislative approvals associated with retention and ongoing use of these facilities would be the responsibility of the party who takes ownership.

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of the temporary accommodation facilities. The plan would be developed in consultation with relevant key stakeholders, including the relevant local council. It would also describe how sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal.

The industry approach for temporary workforce accommodation facilities is that the buildings and associated infrastructure would be hired for the duration of construction. Following construction, the buildings and associated infrastructure would be removed. However, ARTC would discuss with council the potential to leave access roads and in-ground utility infrastructure connections leading to the facility.

Impacts on social infrastructure

Issue

Council requests that the demand and likely impact on its own local recreational facilities be better assessed, and requests consideration of measures to support the integration of the incoming workers into the local community.

Response

The social assessment (Technical Report 13) identified that the construction workforce has the potential to generate some demand for local recreation facilities. ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts as far as practicable, and would continue to work with Gilgandra Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan. Mitigation measures SE11 to SE13 provide for the development and implementation of the workforce management plan to manage potential impacts of the non-resident construction workforce on local and regional communities. The plan would be prepared in consultation with local councils and service providers using up-to-date data on local facilities.

It is noted that temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). The amenities provided at the facilities

would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2.

Issue

Council expects a more rigorous assessment of the impacts on Jack Towney Hostel, particularly considering that the EIS does not present any detailed site plans for the proposed adjoining Gilgandra workforce accommodation facility.

Response

Gilgandra Shire Council and Jack Towney Hostel were consulted to inform the assessment of potential impacts on Jack Towney Hostel. As described in section 7.7.2 of Technical Report 13, these stakeholders identified that ongoing consultation with Council and the hostel would be required to inform the design of the facility, to address potential concerns of hostel residents and other nearby private residents.

Detailed plans (including site plans) for temporary workforce accommodation facilities are not available at the reference design and EIS stage. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The requirements for the plan are as described above. Mitigation measure SE-CI2 provides that the plan would be developed in consultation with relevant key stakeholders, which would include Gilgandra Shire Council.

Impacts on emergency services

Issue

Council considers that local emergency services will experience real impact as a result of the construction activities and the influx of construction workers. Potential impacts need to be properly understood and resourced. Council expects much more rigour in the assessment of impacts on local emergency services and expects to see accurate descriptions of all services, and their current level of service or response times, realistic assessment of impacts, and specific mitigation measures.

Council expects that the workforce management plan will contain a specific emergency services section, developed with the early involvement of Council and to the satisfaction of the local emergency service providers. This will consider the staffing and resourcing levels in the LGA, given the forecast of up to 500 additional residents for a period of up to 48 months.

Response

As described in Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. Consultation with the committee confirmed that while they did not anticipate much increased demand on local emergency services during construction, there may be need to increase resources at some smaller towns, and there may be affects due to changes to road conditions, such as changes to response times, as noted in section B14.3.5 of the EIS.

The committee confirmed that ARTC should consult with the respective local emergency management committees as the design progressed, to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

In accordance with mitigation measure SE11, the workforce management plan would include measures for managing increased demand on health and emergency services resulting from the non-resident construction workforce. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately.

The workforce management plan would include appropriate processes and measures to manage potential increased demand on emergency service providers due to a non-resident construction workforce.

It is expected that engagement would occur with the relevant regional and local emergency health services in the pre-construction phase when timing and impacts are able to be confirmed. This would assist service providers to understand potential demands on their services and plan resources appropriately.

Impacts on health services

Issue

Council is concerned that the Western NSW Local Health District was not consulted as part of the social assessment. Council expects a more detailed assessment of the impacts of the incoming workforce on local health providers and expects to see accurate descriptions of current health services, a realistic assessment of impacts on health services of the incoming workforce, and specific mitigations. Specific strategies should be developed in consultation with local GP services to ensure local servicing is maintained and provision for workers is serviced.

Council expects that the workforce management plan will contain a specific health impact section, developed with the early involvement of Council, Western NSW Local Health District, and local primary and allied health providers.

Response

As described in section 7.7.3 of Technical Report 13, local stakeholders consulted during the assessment reported varying levels of capacity in local and regional health services to meet any increase in demand that may occur during construction. The report recognises that there are existing challenges for local health service delivery, and that larger centres in the region are better resourced with health and wellbeing services and facilities. The EIS and Technical Report 13 acknowledge that, if inadequately managed, there is potential for the construction workforce to exacerbate these challenges in local towns.

ARTC commits to proactively managing the potential for impacts on local services during construction. A new mitigation measure (SE5) has been developed to confirm this commitment. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm the requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Mitigation measures SE11 and SE13 commit to developing and implementing the workforce management plan, in consultation with councils and service providers, to manage potential impacts of the non-resident construction workforce on local and regional communities, including:

- ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services
- ▶ Processes for managing potential increased demands due to non-resident workforce.

The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services, and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4). Western NSW Local Health District would be consulted as part of the development of the plan.

Cumulative social and economic impacts

Issue

Council requests that a more detailed assessment of the cumulative impact of regional infrastructure projects be presented, considering the timelines for each project and the estimates of expected construction workforce numbers and peaks, so that the full scale of the cumulative workforces and their impacts on local community and housing can be understood.

Response

Figure D1.2 in section D1.3 of the EIS shows the potential timing of the projects considered at the time the cumulative assessment was prepared. This demonstrates that, by the time the proposal is expected to start construction, several projects are likely to be complete, with some overlapping with the timing of the proposal.

Section 9.2.2 of Technical Report 13 acknowledges the potential for cumulative labour demands due to the concurrent construction of some projects in the region. The consequences of this would depend on the workforce profile and state of the labour market at any point in time.

As noted above, the social assessment provides a high-level consideration of potential workforce numbers. A breakdown of the workforce would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. This would inform the development of the workforce management plan, which, in accordance with mitigation measure SE11, would be implemented to manage the needs and impacts of the non-resident workforce.

Information regarding affected properties

Issue

Council requests that, wherever properties within the LGA are assessed in any of the EIS sections, that summary table(s) be presented showing the relevant properties and effects within each LGA.

Response

The EIS included tables in Appendix F that provided a breakdown of the indicative preliminary land requirements for construction (temporary land requirements) and operation (permanent land requirements for the proposal's operational features). This information has been updated based on the proposed amendments to the proposal, as summarised in section 3.1 of this report and described in more detail in the combined Preferred Infrastructure/Amendment Report. The updated land requirements tables are provided in the combined Preferred Infrastructure/Amendment Report. The updated tables present the information for each LGA.

Social impacts of traffic and transport/road safety

Issue

Insufficient data and evidence have been presented for each potential level crossing to justify the risk rating and dismissal of mitigation measures. Council challenges the conclusions made in the EIS and considers that the total of the disruptions and possible accidents at all the crossings is considered major for the LGA.

Council requests that a full analysis be presented for each crossing before a final decision is made about its status as an active or passive level crossing. The social costs of possible accidents and fatalities needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards. Options considered included grade separations, level crossings, consolidation, relocation, diversion and realignment. From both a rail safety and policy perspective, the overarching objective across the Inland Rail program is to, as far as reasonably practicable, minimise the number of level crossings across the alignment.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology, which aligns with the *Office of the National Rail Safety Regulator guidelines* (2019), has been used to develop proposed level crossing treatments.

This approach involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified (e.g. upgrade passive protection to active, active to grade separation).

ALCAM is the nationally accepted risk tool for level crossings, which looks at a range of factors including road and rail volumes and speeds, heavy vehicle use, sighting distances and road/rail geometry. The road inputs are validated by the relevant road manager through the stakeholder consultation process. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, the focus of which was on ensuring level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

The ALCAM assessment has been carried out separate to the EIS. The requirement to minimise safety risks is an ongoing process that must be adhered to in future design changes. In accordance with amended mitigation measure TT4, level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. In addition, in accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

ARTC will also provide a presentation to council on the level crossing treatment assessments undertaken for public level crossings located within the Gilgandra LGA.

Issue

Council requests that it be given early opportunity to contribute to the post-approval traffic, transport and access management plan and that it be developed to the satisfaction of Council and local bus operators.

Response

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Issue

Council disputes the EIS statements about the likely level crossing waiting times and traffic queue lengths, especially as it is only presented for one crossing location. Council requests data regarding the cumulative costs of the additional waiting time for traffic (especially for agricultural machinery and local commercial traffic) over the life of the proposal in each LGA. This needs to be factored into the local economic costs.

Response

As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delays and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed); however, the maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 and 74 metres, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. As a result, further assessment and reporting is not considered necessary. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

It is estimated that Inland Rail would be trafficked by an average of 10 trains per day (both directions) in 2027, increasing to about 14 trains per day in 2040. As a result, it is unlikely that vehicles could make more than one passage over different sections of the rail line and be impacted by having to wait for the same or successive trains.

Issue

No assessment has been made of the logistics and difficulties of moving agricultural machinery across level crossings. Council requests that further information be given in the EIS. This also needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types that need to be catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings* and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

ARTC acknowledges the issue of access for agricultural machinery, which would continue to be addressed as the design and construction planning progresses. The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

Issue

No analysis has been made of the additional travel time for journeys required from road closures. Consideration of the additional travel time required over the life of the proposal, as a result of closures in the LGA, needs to be factored into the local economic costs.

Response

Section A7.4.1 of the EIS noted that four council-managed made roads (Dappo Road, Brooks Road, Nalders Access Road and Munns Road), one vehicle access track (Bardens Road) and 14 forestry tracks/roads within State forests would be closed as part of the proposal; however, of the four council-managed made roads, only Dappo Road would have been completely closed. The other roads were proposed to be closed near the end of the road and realigned to a new level crossing or around the rail corridor via an existing road.

Potential impacts due to these road closures are described in section 6.2.2 of Technical Report 10—Traffic and Transport Assessment. As noted in the assessment, while road closures may result in additional travel distance for road users, at the majority of locations where road closures are proposed, the impacts would be minor (about one to two kilometres).

As described in the combined Preferred Infrastructure/Amendment Report and summarised in section 3.4 of this report, however, a number of amendments to the exhibited proposal are proposed to further minimise the potential environmental impacts of the proposal and to respond to matters raised in submissions received. As a result of these amendments, Brooks Road, Nalders Access Road and Bardens Road would no longer be closed, further minimising impacts to travel distance as a result of the proposal.

Given the number and scale of road closures proposed, and the low traffic volumes on those roads, any traffic-related delays would be minor and localised in nature.

4.2.3 Traffic and transport

Unclear approval process for increased train length

Issue

Council requests that the EIS detail the approval process required to permit the commencement of 3,600-metre-long trains on Inland Rail and specify thresholds of incremental changes not needing consent or approval.

Response

The operation of 3,600-metre-long trains would be subject to a separate assessment and approval process under the EP&A Act. While components of the proposal would include infrastructure to accommodate possible future augmentation, including a possible future requirement for 3,600-metre-long trains, this is not part of the proposal for which approval is being sought.

In relation to this and any other changes following approval, as described in section D5.4.2 of the EIS, proposed changes would be reviewed for consistency with the results of the assessments described in the EIS, relevant mitigation measures, performance outcomes and the conditions of approval. If any proposed changes are not consistent with the approvals and assessment results, appropriate modifications to the project approval would be sought in accordance with the requirements of the EP&A Act and the terms of the approval for the proposal.

Operational degradation of existing rail lines—poor connectivity with Inland Rail

Issue

Council requests the EIS demonstrate why the proposal has provided minimal connectivity to Inland Rail, particularly in high-production agricultural areas where there is an opportunity for road freight movements to be shifted to rail. The provision of operationally efficient connections to existing regional lines will be of outstanding benefit to both existing and new markets domestically and for export.

The EIS must demonstrate, through an appropriate cost-benefit analysis and economic model, the operational cost of additional train kilometres travelled due to inefficient connections, and potential impact to accessing existing and new markets.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value for money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

The social and economic assessments were undertaken in accordance with the SEARs and with reference to the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2013a). The approach adopted for the assessments reflects the recognised industry approach to undertaking an EIS. Due to the nature of the incremental assessment approach adopted for the EIS, a project-specific cost-benefit analysis has not been undertaken, as the results would not capture the full benefits that are expected to be delivered upon completion of Inland Rail.

Impacts to Council/public roads

Issue

The EIS fails to provide a complete assessment of the impact to Council roads during construction and operation. There should be no lasting impacts to Council-controlled and other classified roads as a result of the proposal. Council requests that a rail possession strategy and traffic, transport and access management plan be prepared in consultation with both Transport for NSW and Council to minimise transfer of rail freight impacts to the road network and construction traffic impacts on the road network.

Council requests that any infrastructure approval contain the nominated conditions of approval.

Response

Impacts to Gilgandra Shire Council roads

ARTC acknowledges Gilgandra Shire Council's concerns in relation to interactions with Council's infrastructure (including those parts of the road network managed by Gilgandra Shire Council) and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The reference design and indicative construction planning undertaken to date for the proposal incorporates a number of features and proposed measures to minimise construction traffic movements and the associated impacts on the local road network, in particular gravel roads. This includes the proposal to construct high-quality haul roads within the construction footprint (see section A8.11.2 of the EIS). This would enable materials and personnel to be transported within the proposal site as far as practicable, minimising traffic on local roads. In addition, it is proposed to use existing rail lines to deliver bulk construction materials where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase, as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases.

ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of the proposal on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning, and property accesses, would avoid or minimise the potential for impacts on the surrounding road and transport network as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT10 provides that a dilapidation survey would be undertaken of the made public roads, within the proposed haulage routes, prior to and following completion of construction and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during and/or following completion of construction, to address any damage caused by construction.

Conditions of approval

The conditions of approval for the proposal are a matter for DPE with input from relevant agencies. ARTC will consider in detail any proposed conditions of approval at an appropriate time in the assessment process. ARTC considers that the intent of the recommendations has been addressed in the mitigation measures noted above.

Failure of risk assessment due to likely material haulage route variation

Issue

Council does not consider the haulage route assessment in the EIS to be representative of a practical material supply strategy for construction of the proposal. Council is concerned that the lack of acknowledgement regarding the likelihood of altered haulage routes of quarry materials eventuating has resulted in an ineffective risk assessment process for transport and road impacts.

Council requests an early and meaningful role in the preparation of the traffic, transport and access management plan and the designation of bulk material haulage routes.

Response

Construction would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would be developed in consultation with relevant stakeholders, including Gilgandra Shire Council.

Failure to address importance of impacts caused by level crossings

Issue

Council considers that the key assumptions adopted for the review of proposed level crossings and the assessment methodology is inconsistent with the remainder of the EIS and appear severely flawed.

Council requests that the proponent prepare and make public a Level Crossing Report for the proposal, which must be developed in consultation with Transport for NSW and Council, and that the design of any level crossing on a public road be submitted to Transport for NSW and Council for review and endorsement.

Council also requests the Level Crossing Report include the cumulative impacts of multiple level crossings across the wider program of works and operations related to Inland Rail on transit times throughout the region, which may impact the route selection for road traffic; particularly, higher mass limits vehicles during peak harvest and intercity freight.

Response

An assessment of potential delays to road traffic at level crossing was undertaken, as detailed in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 metres during the proposal's opening year (2026), while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 metres.

As described in section 3.3 of Technical Report 10, the traffic and transport assessment methodology included, as an input traffic volume, information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions in the area and was the basis for the assessment of travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken had an impact on the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Therefore, additional traffic counts were undertaken in November 2020 during a harvest period which produced higher than average yield. As a result of this strong harvest period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the impacts from higher traffic activity, the traffic analysis at Castlereagh Highway has been updated using harvest period traffic volumes and is provided in section 3.2 of this report. The assessment found that there would still be a maximum delay of

96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS, at 66 metres and 74 metres, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway and, therefore, the assessment is considered appropriate. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

Notwithstanding the above, Council's request for a level crossing report is acknowledged. In accordance with new mitigation measure, TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

Grade separation

Issue

Council believes that the criteria and methodology used to determine the need for a grade separation, as stated in the traffic and transport assessment, unfairly disadvantages regional areas. Council requests that, at a minimum, all State and regional roads be grade separated.

Response

As described in section A6.2 of the EIS, option development has been an integral part of the overall design process for the proposal. An iterative process of option selection, design development, and evaluation has been undertaken to define the proposal. The approach to considering treatment options for the interaction of public roads and the rail corridor is described in section 5.1.1 of Technical Report 10—Traffic and transport assessment and summarised in section A6.3.3 of the EIS. This approach has taken into account relevant NSW and Australian level crossing policies, which emphasise the need to minimise the number of level crossings, as far as reasonably practicable.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations, with regard to existing level crossings and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised that a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It is noted that the approach ensures level crossing safety risks are eliminated or minimised, so far as is reasonably practicable, in accordance with Commonwealth rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC.

Based on the methodology that was audited by ONRSR, higher order treatments, such as grade separation, are not considered justified on the majority of State and regional roads as the cost to grade separate would be grossly disproportionate to the benefits. Instead, level crossings with active controls consisting of flashing lights and bells, and boom barriers, would be installed at all classified road locations. This is the highest form of level crossing control under *AS1742.7-2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016).

ARTC also notes, however, that as part of the financial year 20/21 Federal Budget, the Australian Government has allocated \$150 million for additional grade separations in NSW, with the NSW government contributing an additional \$37.5 million. This will be additional to grade separations that are already included in project scope. The specific projects to be implemented with this funding are being identified by the Australian Government in conjunction with the NSW Government.

ARTC will continue to work collaboratively with Transport for NSW to progress road–rail interface solutions during detailed design. In accordance with amended mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these

stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Provision in design for passage of agricultural machinery

Issue

Council requests the EIS confirm that all public road–rail crossings (level crossings and bridges) incorporate design allowance for passage of the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with the Office of the National Rail Safety Regulator's (ONRSR) policies and guidelines has been used to determine proposed level crossing treatments (active or passive). The approach to this involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

Provision of fencing

Issue

Council is concerned the EIS fails to identify where construction of fencing is appropriate for public safety or security reasons, and has had no formal discussions with ARTC regarding fencing of the rail corridor where it interfaces with council land and its road reserves.

Response

ARTC has an Inland Rail Program-wide fencing strategy that would guide the detailed design of fencing for the proposal. This strategy assists with consistency of fencing across the Inland Rail Program. Fencing requirements would be confirmed during the detailed design phase, in consultation with adjacent landholders, the relevant council and other infrastructure owners. ARTC would consult with Gilgandra Shire Council in relation to their request to provide fencing at locations where the rail corridor interfaces with Council land and its road reserves.

4.2.4 Supply of extractive materials

Unrealistic Dubbo Regional LGA focused supply of ballast and capping material

Issue

Council does not agree with the viability of the ballast and capping sources strategy and does not believe that the EIS has adequately demonstrated that local sources cannot be found of either existing or future construction material resources. Council requests preparation of a detailed quarry material availability assessment and associated traffic impact assessment in conjunction with Transport for NSW and existing/potential operators of extractive sites prior to project approval. The study must include volume, quality and economic analysis to justify additional extractive sites, and traffic management plans that cater for various potential options for material sourcing and delivery.

Response

Section A6.3.4 of the EIS describes the options assessment process for the supply of construction materials for the proposal. The supply options considered were material excavated from cuttings along the proposal site, existing commercial quarries and establishment of borrow pits. The options assessment included a review of currently approved commercial quarries in the region. The assessment determined that, while proposal cuttings and borrow pits could supply general and structural fill material, it would be more feasible to obtain capping and ballast from commercial quarries.

Construction of the proposal would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS.

Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken, as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT6 provides that a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction (including access for materials). The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Uncertainty regarding necessity of additional borrow pits

Issue

Council is concerned that ARTC has been making approaches to landholders in the LGA regarding the purchase of gravel materials locally, which may be in direct conflict with Council-registered borrow/gravel pits.

Council requests assurance that no borrow pits will be established in the Gilgandra LGA without an assessment of the impact of borrow pit depletion (inclusive of existing and new borrow pits) on Council's civil works maintenance program. If the assessment determines a negative impact on the ability of Council to service its infrastructure commitment, support measures must be identified to assist Council to establish new borrow pits for long-term future use.

Response

No borrow pits are currently proposed within the Gilgandra LGA. As described above, the final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS. The establishment of any borrow pits for the proposal would be undertaken in accordance with the EIS, subject to any refinements during detailed design and construction planning, the mitigation measures and conditions of approval.

4.2.5 Council road and drainage assets

Independent road dilapidation reporting

Issue

Council expects that each local Council road impacted by construction haulage is to be subject to a road dilapidation report prior to use for construction. The report is to be prepared by an independent and suitably experienced and qualified road designer/auditor approved by Council.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during and/or following completion of construction to address any damage caused by construction.

Asset transfer register

Issue

Council expects a detailed asset transfer register be compiled in an agreed format with clear definition of the asset owner following completion of the civil works required for the proposal.

Response

ARTC acknowledges Council's request. Any detailed information requirements will be confirmed as part of the third-party agreements, which will be developed in accordance with a program-wide strategy that ARTC has already been using to guide management of third-party assets along Inland Rail; however, the commitment to develop detailed requirements regarding the ongoing management and maintenance of Council-owned assets has been confirmed by the amendment to mitigation measure TT2.

In accordance with measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Defect inspections

Issue

Council expects all assets transferred to Council will be defect inspected in consultation with, and in the attendance of, a Council representative. Any defects identified are to be logged and the rectification method agreed.

Council expects that, where the integrity of assets transferred to Council is compromised during a period of up to 10-years post construction and five-years post operations commencing, that resultant rectification be the responsibility of the proponent. This expectation of rectification extends to the downstream end of erosion protection treatments of all new culverts and all existing culverts subject to increased inundation.

Response

ARTC acknowledges Council's request. Any requirements for defect inspections and rectification would be confirmed as part of the third-party agreements. This would be undertaken in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

Requirements for construction of Council assets

Issue

Council expects all road pavement (structural and geometric) and drainage designs to be certified by a Road Designer (per Transport for NSW requirements). Other road infrastructure assets, such as traffic control devices, barriers and signs, are to be certified by a suitably qualified engineer, approved by a Road Safety Auditor, and provided to Council for concurrence prior to construction.

Council expects certified, detailed as-built drawings and electronic as-built models to be provided to Council in an agreed format.

Council expects independent construction certification/verification needs to be undertaken on all Council-owned assets or Council be advised and provided the opportunity to attend critical hold points and inspections per the ARTC and Transport for NSW specifications.

Council expects all materials used in the works on Council assets (apart from general fill and pavements) are to be new products unless otherwise agreed with Council.

Response

As noted above, ARTC acknowledges Gilgandra Shire Council's concerns in relation to interactions with Council infrastructure (including those parts of the road network managed by Council), and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Gilgandra Shire Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all relevant road and drainage design standards and requirements, including:

- ▶ *Guide to Road Design Part 3: Geometric Design* (Austroads, 2021b)
- ▶ *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)
- ▶ *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2020)
- ▶ *Guide to Road Design Part 5: Drainage—General and Hydrology Considerations* (Austroads, 2021c)
- ▶ *Guide to Road Design Part 5A: Drainage—Road Surface, Networks, Basins and Subsurface* (Austroads, 2021d)
- ▶ *Guide to Road Design Part 5B: Drainage—Open Channels, Culverts and Floodways* (Austroads, 2018).

Amended mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for roads managed by Gilgandra Shire Council.

In relation to Council's request to approve design plans, it is noted that the proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

As noted above, any detailed information requirements would be confirmed as part of the third-party agreements. This would be undertaken in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

Issue

Council expects that sites will be left restored, culverts and assets cleaned and rubbish removed after completion of works at practical completion.

Response

In accordance with mitigation measures SC9, BD12 and LP19, disturbed sites would be rehabilitated in accordance with the rehabilitation strategy. The rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of the operational footprint (such as compounds, access roads and other areas disturbed during construction within the proposal site that would not be the location of final operational infrastructure). The strategy would:

- ▶ Identify rehabilitation objectives and criteria
- ▶ Establish roles and responsibilities
- ▶ Define rehabilitation actions and requirements
- ▶ Define monitoring and maintenance requirements.

ARTC confirms that the construction contractor(s) would be contractually obligated to ensure that rehabilitation is undertaken, and that work sites and operational infrastructure are left in a suitable condition at the conclusion of construction.

Requirements for third-party agreements

Issue

The third-party agreement between ARTC and Gilgandra Shire Council details all assets, interfaces, responsibilities and funding arrangements for maintenance of shared assets. Notwithstanding the third-party agreement, a defects liability period should be imposed for up to 10-years post construction and five-years post operations commencing.

Council expects the road interface with ARTC to commence at the location where road realignments have been imposed on the local road network.

Response

ARTC acknowledges Council's request. Defect liability periods would be confirmed as part of the third-party agreements.

With reference to road interface boundaries, Council would be required to remain as road manager and maintainer of Council roads. The road interface point cannot be moved to make ARTC the owner and maintainer of new sections of Council roads.

4.2.6 Agricultural and land use

Direct impacts on agricultural land

Issue

Council disagrees with the regional analysis approach used in the EIS, caused by the mismatch of scales between this combined regional and the six individually affected LGAs. Council requests the EIS assess the impacts on agriculture using an 'impact corridor', which would more accurately reflect the local nature of impacts on agriculture.

Response

Regional analysis approach

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4³ level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy. This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas. The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which in turn stimulates further rounds of economic activity).

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy within which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified, where possible.

Local impacts

Section B12.4.2 of the EIS notes that the permanent (operational) land requirements (as estimated at the time the EIS was prepared) would result in about 1,300 hectares of land being removed from agricultural production. This represents about 0.04 per cent of agricultural land across the five LGAs that comprise the regional study area for the assessment. The amendments to the proposal, as described in the combined Preferred Infrastructure/Amendment Report, would increase the amount of agricultural land affected by the proposal's operational footprint. It is estimated that the amended proposal would affect about 1,458 hectares of agricultural land (a 158 hectare increase compared to the exhibited proposal). This represents about 0.4 per cent of agricultural land across the five LGAs that comprise the regional study area.

The agriculture and land use assessment (Technical Report 11) estimates that the economic impact of the permanent removal of agricultural land is a loss of about \$1.54 million, which is equivalent to 0.16 per cent of the annual value of agricultural production in the regional study area. As a result of the amendments to the proposal, the economic impact is now estimated to be a loss of about \$1.71 million, which is equivalent to 0.17 per cent of the annual value of agricultural production in the regional study area. These calculations considered both direct and indirect impacts on agricultural production, including impeded access (severance), interrupted management, and labour and other costs. It is noted that there is some uncertainty around the estimates, particularly for those around impeded access, interrupted management, and labour and other costs; however, this uncertainty is accounted for in

³ Statistical Area Level 4 are defined by the ABS as areas that represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

the adoption of a conservatively high value of agricultural production (\$739 per hectare). As such, the value is considered to be a conservative overestimate of the potential impacts.

While the analysis was undertaken at the regional scale, the annual value of impacts on agricultural production (operation) for the Gilgandra LGA (for the amended proposal) is estimated at \$699,987 (compared to an estimate of \$624,280 for the proposal, as described in the EIS).

Property severance impacts

Issue

Council requests that the number of landholders affected by property severance in the LGA be shown.

Response

As noted in section 4.2.2, the EIS included a breakdown of the indicative temporary and permanent land requirements. This information has been updated based on the proposed amendments to the proposal. The updated land requirements tables present the information for each LGA and are provided in Appendix D of the combined Preferred Infrastructure/Amendment Report. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

Quantification of the number of properties with the potential to be affected by severance has not been provided at the LGA level due to the complexities in property ownership and operations. In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements would include, where relevant and practicable, measures to manage severance impacts, including appropriate access solutions and amalgamation opportunities.

Issue

Council has been advised by DPIE (now DPE) that the potential creation of sterile land and the future impacts of zoning and dwelling permissibility will need to be managed by each council under its own local environmental plan. This process represents a significant volume of work for an issue caused by the proponent. Council considers this situation to be an unfair burden on staff resources.

Response

ARTC acknowledges Council's concerns. Appropriate compensation for administrative costs to Council as a result of the proposal would be confirmed as part of the third-party agreements.

The costs associated with updating Council's LEP are outside the scope of the assessment for the purposes of the EIS.

Impacts on biophysical strategic agricultural land

Issue

The impacts on biophysical strategic agricultural land are described in the EIS using regional mapping undertaken by the government. It is not clear if there was any site-specific validation of biophysical strategic agricultural land across the Inland Rail alignment or whether changes in overland flow were considered.

Council recommends that the EIS provide some ground-truthing of biophysical strategic agricultural land and assesses the indirect impacts on agricultural land (including biophysical strategic agricultural land), including overland flow and flooding impacts.

Response

Technical Report 11—Agriculture and land use assessment considers biophysical strategic agricultural land mapped at the regional scale, as developed by the NSW Government. It is agreed that there may be areas where the regional-level mapping does not fully reflect the presence of biophysical strategic agricultural land at a more local level. While the mapping provides an indication of the location of strategic agricultural land, Technical Report 11 notes that variability in natural resource conditions, climatic influences and managerial expertise can also influence economic returns. A land use conflict risk assessment was undertaken to inform the agriculture and land use assessment in accordance with the *Land use conflict risk assessment guide* (DPI, 2011) (see Appendix A of Technical Report 11). The potential impact on agricultural land, including disturbance of mapped biophysical strategic agricultural land, was identified as having a high risk rating.

As the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 does not apply to the proposal, a biophysical strategic agricultural land site verification process is not proposed.

The potential social and economic impacts of flooding (including on agricultural land and production) are summarised in section B3.4.1 of the EIS and considered in further detail in Technical Report 3—Flooding and hydrology assessment. The assessment concludes that the overall changes to flood behaviour across rural lands within the study area would be minor and are unlikely to significantly affect overall agricultural operations.

Reduction of productive agricultural land

Issue

Council expects that the EIS should have made a real estimate of sterilised agricultural land (including biodiversity stewardship sites used for retirement of the biodiversity credits) and, from that assumption, provided an estimate of the ongoing annual economic impact due to the loss of productive agricultural land.

The EIS should provide an assessment of potential sterilisation of agricultural land as a result of biodiversity offsets and that the biodiversity offset strategy should include a commitment to prioritise less or non-productive agricultural land to secure for biodiversity offsets.

Response

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program as a whole and has invited landowners within 100 kilometres of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

In accordance with the NSW Biodiversity Offsets Scheme, the *Biodiversity Assessment Method*, Biodiversity Conservation Regulation 2017 and EPBC Act, ARTC would seek credits and establish offsets for similar vegetation affected by the construction of Inland Rail in NSW, and generally, within the same areas. This limits where stewardship sites can be located, what vegetation and habitats would be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors. As a result, it is unlikely that productive agricultural land would be suitable in most instances. Where a biodiversity stewardship site is established and the total fund deposited is fulfilled, landholders would receive annual management payments and the site moves into active management.

The economic impact of the permanent removal of agricultural land for the proposal was considered by the EIS. Technical Report 11 notes that there is some uncertainty around the estimates; however, this uncertainty is accounted for in the adoption of a conservatively high value of agricultural production (\$739 per hectare). As such, the value is considered to be a conservative over-estimate of the impacts.

The matter of whether any particular area of land is used for agricultural, biodiversity offset or other lawful purposes will be a matter for the relevant landowner.

4.2.7 Water and flooding

Uncertainty regarding water demand for construction

Issue

It is understood that construction water sourcing on currently constructed Inland Rail sections has been highly problematic. This has been exacerbated by drought conditions. To better understand the risk to existing local water access licence holders, Gilgandra Shire Council requests more transparency be provided regarding the construction water demand estimate of 4,635 mega litres and the parameterisation of the water budget. The consideration of drought conditions must be detailed in the water demand assessment.

Response

In relation to the water demand estimate, final water requirements would be subject to weather conditions and the methodology selected by the construction contractor(s). Based on preliminary construction planning, it is estimated that a total of about 4,635 mega litres would be required. This would equate to an estimated average use of about 4.3 mega litres per day over the length of the proposal site. This estimate would be further refined in consultation with relevant agencies to ensure there are no unexpected impacts. Opportunities to reduce the need for water would be further explored during detailed design and construction planning.

As described in section A6.3.5 of the EIS, the viability of several potential construction water sources was investigated during the reference design process, with consideration of the existing and possible future drought conditions. Extraction of groundwater from deep aquifers was determined to be the preferred option, due to the availability of groundwater licences and the limited use of these aquifers by landholders. It was not considered feasible to take water from the shallow groundwater aquifer systems due to the recent and possible future drought conditions and the lack of availability of shallow aquifer groundwater licences.

As described in section B2.3.4 of the EIS, there would be sufficient water available under a controlled allocation for the extraction of groundwater for construction water within the Lachlan Fold Belt Murray Darling Basin Groundwater Source and the Gunnedah–Oxley Basin Murray Darling Basin Groundwater Source.

In accordance with mitigation measure WR5, the volume of water that would need to be extracted from groundwater bores for construction water and potable water (for the Narramine North and Baradine temporary workforce accommodation facilities) would be confirmed, and the appropriate approvals would be obtained, prior to extraction.

In accordance with mitigation measure WR1, however, ARTC has already commenced the exploration of other construction water supply options, including reuse of excess water from the Narrabri Gas Project or other suitable facilities in the area, and lease and/or purchase of existing water access licences from surrounding landholders. Since exhibition of the EIS, ARTC has consulted with a number of landowners along the alignment who have expressed interest in supplying water for construction. A formal expression of interest was issued, with water sought from landowners through either purchase of water or lease and/or purchase of existing water access licences. The expression of interest closed in mid-March 2021.

Potential rainfall data limitations for flood impact assessment

Issue

Council requests clarity regarding the use of input data to the flood model to ensure major flood levels are determined on best available understanding of the past approximately 100 years of climate data. The flood model uses the Narrabri rainfall dataset, which commences in 1962, and Narramine rainfall dataset, which commences in 1969. The wettest period in the past 100 years occurred in 1955, which is outside the rainfall data period. It is also unclear how much missing data each dataset includes and what influence this might have on flood modelling results.

Response

Detailed flood modelling was undertaken for the proposal, as described in Technical Report 3—Flooding and hydrology assessment and summarised in section B3 of the EIS. The assessment was undertaken in accordance with the SEARs and relevant legislation and guidelines, as described in section B3.1.1 of the EIS. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited.

It is recognised that the 1955 flood event was the largest recent flood event in this region. While the rainfall and streamflow gauge records do not include this event, the assessment has been undertaken in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019), which provides an appropriate methodology for the estimation of floods in the absence of any site-specific information. The flood models were developed adopting a calibration

and validation process that used recorded rainfall, streamflow, flood level data and information on flood behaviour provided by landowners. Design flood estimates are based on design rainfall events from the Bureau of Meteorology, model parameter values obtained from the calibration process, and procedures recommended in *Australian Rainfall and Runoff*.

Flood modelling was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

In addition, as described in the updated flooding and hydrology assessment report and section 4 of Technical Report 3, ARTC has consulted with local landowners and other stakeholders to confirm that the flood modelling is representative of observed conditions.

Omission of flood risk assessment in response to La Niña climate conditions

Issue

Council understands that flood risk for the region is known to be significantly elevated during La Niña (drought risk is elevated during El Niño) yet this does not seem to have been considered in the flood risk assessment. The climate change risk assessment should consider the impacts of climate change on the worst case scenario (i.e. the 1955 flood, which was a La Niña) but the rainfall record used in the climate change risk assessment does not extend back to this period.

Council expects the EIS to assess flood flow associated with the 'modified' one per cent annual exceedance probability (AEP) rain event against flood flow generated by 1955 rainfall conditions to determine whether the flood model is correctly parameterised to simulate the one per cent AEP flood event.

Response

As described above, the flooding and hydrology assessment has been undertaken in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019), which provides an appropriate methodology for the estimation of floods in the absence of any site-specific information, such as the 1955 flood event.

The climate change assessment involved modelling the one per cent annual exceedance probability (AEP) event with a 22.8 per cent increase in rainfall depth in accordance with *Australian Rainfall and Runoff*. This is based on the upper range projection for greenhouse gas concentrations for the year 2090.

The period of observed rainfall that forms the basis of the design rainfall intensities, developed by the Bureau of Meteorology and adopted for this assessment, is sufficient to include climatic variability such as La Niña and El Niño.

Unclear usage of sub-daily rainfall to predict flooding

Issue

Council expects the EIS to provide clarity regarding the assessment of sub-daily rainfall storm events in terms of flooding of land adjacent to the rail alignment.

Response

The design flood estimates are based on depths, durations and temporal distributions of design rainfall available from the Bureau of Meteorology. Assessment of the design rainfall is in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019) and includes consideration of sub-daily rainfall events and high-intensity short-duration events. The catchment hydrology models were used to simulate design storm events with durations ranging from 15 minutes up to 168 hours, to ensure the critical duration was represented. The adopted peak discharge and critical storm duration for each flood event for each point of interest along the proposal site are presented in Appendix C of Technical Report 3, and in the updated flooding and hydrology assessment report.

The flood model calibration report (Appendix J of the updated flooding and hydrology assessment report) provides further information about the hydrology and hydraulic models.

Resolution of flood mapping inadequate to determine impact on Council civil assets

Issue

Changes to flood-flow hydraulics have the potential to increase rates of erosion and scour, leading to higher civil works maintenance costs through time. The EIS does not contain detailed mapping at the 1:10,000 scale for the Gilgandra LGA, which would enable Council to ascertain flooding impacts on its civil infrastructure within the LGA.

Council requests identification of all existing Council infrastructure that will be affected by increased inundation depth and increased flood-flow velocity for events with AEPs of one, five and 20 per cent, including rainfall depth/amount adjustments to account for future climate change.

Response

Mapping of potential impacts following construction of the proposal is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results for a range of flood events from the 20% AEP event to the probable maximum flood (PMF) event are provided. Potential impacts to buildings, roads, existing rail lines and land use are assessed. An assessment of potential erosion and scour was also undertaken, as described in section 7.2 of Technical Report 3 and in the updated flooding and hydrology assessment report. As described above, the assessment has considered a climate change scenario in accordance with *Australian Rainfall and Runoff*.

The presentation of maps for all areas, all modelled events and all potential parameters within an EIS is challenging. In some cases, this is a matter for detailed design. Web based mapping of existing flood extents and afflux for the 1% AEP event is also available on ARTC's Inland Rail web site at <https://inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri/consultation/>

In accordance with mitigation measure FH1, the design would be further refined during the detailed design process to minimise impacts as far as practicable. Mitigation measure FH1 provides that further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would be undertaken in consultation with Gilgandra Shire Council. During this process, ARTC would provide more detailed information to Council regarding potential impacts to Council assets.

4.2.8 Waste management

Construction waste stream quantities unclear at LGA scale

Issue

The EIS does not provide a breakdown of estimated waste quantities into specific LGAs. The Gilgandra waste management facility does not hold an environmental protection licence (EPL) and can only accept up to 5,000 tonnes per annum.

Council expects the EIS to provide a breakdown of estimated waste quantities for disposal, and also expects a funding contribution from the proponent to facilitate any necessary upgrade of the Gilgandra Waste Management Facility cell or, should an EPL be required, to accept large annual quantities of construction waste.

Response

There are a number of waste facilities in the region that could be used to dispose of construction waste (depending on their existing approval and licensing arrangements), including those listed in section D2.2.4 of the EIS. The facilities that would be used, and the breakdown of estimated waste quantities that would be disposed of at those facilities, would be confirmed by the construction contractor, based on the suitability of waste and available capacity at relevant facilities. This would include consideration of existing approvals and licensed limits.

In accordance with mitigation measure WM1, detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes, and the reuse of material onsite.

Sewage treatment plant capacity implications to accommodate workforce accommodation facility

Issue

Council expects ARTC to undertake an assessment to confirm the capacity of the Gilgandra Sewage Treatment Plant (STP) and to provide a funding contribution to assist with upgrading the facility to accommodate the increase in wastewater from the operation of the workforce accommodation facility.

Response

In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation in consultation with relevant key stakeholders (including local councils). The plan would include how services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment.

During detailed design, ARTC would continue to work with Council to investigate options to establish a sewer main connection from the temporary workforce accommodation facilities to Council's sewage treatment plant. This would include consideration of anticipated sewage volumes and the capacity of the Gilgandra Sewage Treatment Plant.

4.2.9 Cultural heritage

Limitation to Aboriginal cultural heritage assessment report information for review

Issue

Only a redacted version of Technical Report 6 Aboriginal Cultural Heritage Assessment Report (ACHAR) was available for public viewing. While the ACHAR appears to have been prepared in accordance with all statutory requirements for Aboriginal heritage assessment, Aboriginal community consultation, and meeting the SEARs, the lack of appendices A, C and E has limited the review of the assessment as it pertains to Gilgandra LGA.

Council requests assurance the proposal site within Gilgandra LGA has been effectively surveyed for Aboriginal heritage and that all appropriate Gilgandra LGA Aboriginal groups were consulted with.

Response

The following appendices were removed from the public display version as they contain culturally sensitive, site-specific details and mapping:

- ▶ Appendix A—Consultation log
- ▶ Appendix C—AHIMS site cards
- ▶ Appendix E—Mapping of survey results showing sites within 400 metres of the proposal site.

A full unredacted version of the ACHAR was provided to DPIE (now DPE) and Heritage NSW for their review (see sections 5.4 and 5.9 for issues raised by DPIE and Heritage NSW, respectively).

The Aboriginal cultural heritage assessment report (Technical Report 6) was prepared in accordance with the SEARs and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water (DECCW, 2010b) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH), 2011). Consultation with Aboriginal stakeholders was undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010c). The consultation undertaken included identifying key Aboriginal stakeholders, native title claimant groups and local Aboriginal land councils (LALCs) in the study area, including the Gilgandra LGA. Aboriginal groups in the Gilgandra LGA, including the Gilgandra LALC, were offered an opportunity to register an interest in the proposal, as detailed in chapter 4 of the ACHAR.

As described in section B6.1.2 of the EIS, archaeological surveys were completed in a large number of areas identified as culturally sensitive; however, eight areas of moderate-to-high sensitivity were not able to be surveyed in the proposal site due to property access restrictions. Where property access for sites of interest was not granted by the landowner, physical survey was not able to be completed. For these areas, a predictive model was

developed. The methodology was discussed and agreed with the (then) DPIE Environment, Energy and Science (now Heritage NSW) and the registered Aboriginal parties. For the purposes of the assessment, it was conservatively assumed that these sites contained moderate-to-high archaeological potential and that the areas that fall within the proposal site would be impacted by the proposal.

As required by mitigation measures AH3, prior to construction, a targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties, in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey.

4.2.10 Biodiversity

Assigning offsets in a preferential order

Issue

Council understands that the proponent has sought interest from landholders within 100 kilometres of the alignment to potentially use their land holdings for offset creation via the Biodiversity Stewardship site process. Council supports this approach and expects offsets to be assigned in a preferential order, firstly within 20 kilometres, then 50 kilometres and, thereafter, 100 kilometres. This approach will increase local biodiversity and increase the likelihood of financial returns to those affected adjacent communities.

Response

ARTC recognises Gilgandra Shire Council's support for this approach. Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

ARTC is managing the offset strategy for the Inland Rail program as a whole and has invited landowners within 100 kilometres of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

The requirement to obtain like-for-like offsets refers to the specific number and types of ecosystem and species credits required to offset the impacts of the proposal in accordance with the Biodiversity Conservation Regulation 2017. Biodiversity offsets are not required to exactly replicate the area of impact, which includes the wider vegetation patch in which the impacts occur; however, the offsets are required to take into account the landscape attributes of ecosystem and species credits within each subregion, including connectivity, patch size and areas of retained native vegetation before and after the effects of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced in accordance with the legislated offset rules set out in the Biodiversity Conservation Regulation 2017.

The matter of whether any particular area of land is used for agricultural, biodiversity offset or other lawful purposes will be a matter for the relevant landowner.

Further information on the Inland Rail biodiversity offset credit process is provided at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

Negative impact of Biodiversity Offsets Scheme on regional development

Issue

The Inland Rail project will likely have a significant impact on the biodiversity offset scheme capacity in the Gilgandra region, which already has a shortage of available credits.

Council requests the State Government undertake a holistic assessment of the Inland Rail project and its impact on local communities from the point of view of market distortion of biodiversity offsets, and on the ability of future proponents to secure suitable offset credits for development of projects much needed by the regional economy.

Response

As noted above, ARTC has invited landowners within 100 kilometres of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits. This is expected to increase the availability of biodiversity credits.

Biodiversity offsets would be identified in accordance with the requirements of the NSW Biodiversity Offsets Scheme, the *Biodiversity Assessment Method* (DPIE, 2020b), the Biodiversity Conservation Regulation 2017 and the EPBC Act. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), ARTC may seek to apply the variation rules for retirement of some ecosystem and species credits; particularly, those credits associated with native grasslands, which may be difficult to source. Where no credits are available, ARTC would pay into the Biodiversity Conservation Fund. The Biodiversity Conservation Trust must secure offsets in line with the legislated offset rules set out in the Biodiversity Conservation Regulation.

Biosecurity

Issue

The rail alignment passes through significant agricultural areas that are key to the local, State and federal economies. On that basis, the proposal will need to be able to clearly demonstrate it has the measures to prevent pest and disease outbreaks along the alignment, and has the required plans and actions instigated to deal with any such incidents.

Council expects early involvement in the preparation of the biosecurity management plan and that it will be completed to Council's satisfaction. Public consultation, particularly with adjacent landholders, will be critical to ensure the likelihood of detrimental incidents are minimised.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015* (Cth).

A framework CEMP was provided as Appendix F of the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur, in accordance with ARTC's standard operating procedures, to meet its obligations under the *Biosecurity Act 2015*.

4.3 Narrabri Shire Council

4.3.1 Route alternatives and options

Outcome for Narrabri Shire

Issue

The proposed route does not provide an optimum outcome for Narrabri Shire. It is imperative that the serious omissions from the EIS be adequately addressed. To realise a benefit to Narrabri Shire and surrounds, Council respectfully requests that the proponent be required to demonstrate that:

1. Rail operations will not negatively impact on the local community, by ensuring (1) all rail infrastructure is located outside the higher density commercial and residential areas; and (2) all construction impacts are mitigated and any residual damage to the road network is repaired.
2. The rail infrastructure does not increase flooding.
3. All construction infrastructure and services setup are located so that should Narrabri Shire be able to benefit from their ongoing use; ownership is transferred to Council.

Response

Community impacts

No rail infrastructure is proposed within areas zoned for higher density commercial and residential areas in Narrabri. It is noted that the proposal is located on the outskirts of Narrabri. Potential impacts, such as construction noise, operational noise, traffic and transport, and socio-economic impacts, have been considered in the EIS and associated technical reports. Chapter D5 of the EIS provides details of the approach to management and mitigation of the potential impacts identified. A range of mitigation measures to minimise the potential socio-economic (including community impacts) of the proposal are provided (see section 11 of this report and the responses to other issues raised as described in the following sections).

Construction road network impacts

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes prior to, and following completion of, construction and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during and/or following completion of construction, to address any damage caused by construction.

Flooding impacts

The proposal has been, and would continue to be, designed to minimise the potential for flooding risks. In accordance with mitigation measure FH1, the design would continue to be refined (where practicable) during the detailed design process, to not worsen existing flooding characteristics for flood events, up to and including the one per cent annual exceedance probability (1% AEP) event. Further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Transfer of construction infrastructure and services that may benefit Narrabri Shire

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction (e.g. bores and sedimentation basins) would be investigated and negotiated in consultation with relevant stakeholders (including local councils). Any legislative approvals associated with retention and ongoing use of these facilities would be the responsibility of the party who takes ownership.

Alternative alignment to minimise impacts to Narrabri

Issue

A location immediately downstream of the Narrabri township, and crossing the Namoi River floodplain in the widest location available, would provide a better outcome for both the proponent and the community.

It seems counter-intuitive to cross Bohena Creek near the Newell Highway, then the Namoi River, the Island Road floodplain, Narrabri Creek and the floodplain between Wee Waa Road and Auscott Sheds, with an enormous bridge immediately downstream of the town, rather than going downstream and crossing these with one structure less than half the length of the existing small bridge across the Namoi and Narrabri Creek.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) appropriate justification and information on the design of the project and alternative rail alignments considered, particularly near the towns of Narramine and Narrabri, and how these alternatives were analysed to inform the selection of the preferred route. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of alternative alignments near Narrabri (see sections 2.4.6 and 3.2.2 of the Route Selection Summary Report) and the justification for the preferred option selected.

4.3.2 Stakeholder engagement

Agreement on local interfaces

Issue

Council believes that there has been insufficient consultation to gain agreement on the local interfaces with the proposed alignment. Council requests that further consideration is required in relation to:

- ▶ Use of local roads
- ▶ Identification of any potential local heritage items and discussions with heritage practitioners and historical societies
- ▶ All construction traffic must use the temporary haul road and it should be accessed via the Newell Highway—any use of local roads will require the approval of Council prior to construction commencing
- ▶ No use is to be made of the existing rail line through the residential sections of town until such time as the Ernst & Young submission is finalised and considered
- ▶ The proposed temporary construction camp is subject to the same conditions as those applied to the MAC (CIVEO) development
- ▶ The proposed Narrabri borrow pit may require a development application from the property owner prior to use.

Response

Use of local roads and the temporary haul road

As described in section A8.11 of the EIS, to minimise construction traffic movements and associated impacts on the public road network, haul roads would be constructed within the construction footprint. The haul roads may not be continuous along the proposal site and would vary depending on:

- ▶ The volume of material to be moved
- ▶ Property boundaries
- ▶ Environmental and other constraints (e.g. ecological and heritage features)
- ▶ Geographical limitations (e.g. watercourses that cannot be easily traversed).

The public road network would be used to access the haul roads and other construction infrastructure. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Amended mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including Narrabri Shire Council) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with councils. Consultation with Narrabri Shire Council, and preparation of the plan, would not be deferred, and would be undertaken prior to construction commencing. In accordance with the conditions of approval. Appropriate haul routes would be defined in consultation with Council and specified in the plan.

ARTC would seek all required approvals and permits to undertake the proposal, as described in chapter A3 of the EIS, and in accordance with the conditions of approval.

Local heritage items

The non-Aboriginal heritage assessment was undertaken in accordance with the SEARs and relevant heritage guidelines. Potential heritage items identified within the study area are listed in section B7.2.3 of the EIS.

As stated in section 3.3 of Technical Report 7—Non-Aboriginal heritage assessment and statement of heritage impact, consultation with local historical societies was undertaken to identify and source further information on potential heritage items. While not detailed explicitly in chapter B7 of the EIS, consultation with the Narrabri Historical Society was undertaken in late 2018 (prior to the field survey).

Use of the existing rail line in residential sections of town

Train operations on the existing sections of track in Narrabri would not change as a result of the proposal. During construction, it is proposed to use existing rail lines to deliver bulk materials, where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase, as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases. It would also ensure undue demand is not placed on available commercial suppliers.

Conditions for the proposed temporary workforce accommodation

In accordance with mitigation measure SE-C12, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation in consultation with relevant key stakeholders, including Narrabri Shire Council. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant Council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would define:

- ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy)
- ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context
- ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping, as required
- ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment
- ▶ Location, design, service and amenity requirements for mobile accommodation facilities
- ▶ Provision of adequate parking onsite
- ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal.

The conditions of approval for the proposal are a matter for DPE with input from relevant agencies.

Narrabri borrow pit application

Approval for the proposed borrow pit D, located at Jacks Creek, is being sought as part of the proposal. Development consent from Narrabri Shire Council is not required.

4.3.3 Biodiversity

Extent of vegetation clearing

Issue

The extent of vegetation clearing is excessive and there is no justification given to support this approach; nor is there a vegetation management plan to assess.

It is imperative for the proponent to ensure appropriate consultation is made with all relevant stakeholders prior to any vegetation being removed and that all legislative requirements are adhered to.

Response

Section B1.1.4 of the EIS describes the measures taken to avoid or minimise impacts to biodiversity values, including during the option development and assessment phase. Areas of existing woodland and forest vegetation were avoided as far as practicable. Areas of threatened ecological communities were also avoided where a wider investigation corridor allowed for this to occur. Where the proposed rail alignment was aligned with a paper road (a Crown road reserve with no made road) the alignment was preferentially located in native grassland in private land adjacent to the paper road (where practicable) to retain wooded vegetation with higher threatened species habitat value in the road reserve.

Technical Report 1—Biodiversity development assessment report has been prepared in accordance with the SEARs and the *Biodiversity Assessment Method* (DPIE, 2020b). The proposed approach to identifying and managing offsets to mitigate the impact of vegetation clearing is described in section B1.5.1 of the EIS. Mitigation measures BD1 and BD2 commit to continuing to minimise the potential impacts on biodiversity during detailed design and construction planning. In accordance with BD1, vegetation clearing would be limited to the minimum necessary to construct the proposal and allow for its effective operation. Mitigation measure BD2 provides that where appropriate, facilities within the multi-function compounds and temporary workforce accommodation would be located to further minimise or avoid impacts on native vegetation, where practicable.

In accordance with mitigation measure BD8 and LP16, a biodiversity management plan would be implemented during construction as part of the CEMP. The plan would include measures to protect biodiversity and minimise the potential for impacts during construction. The plan would be prepared in accordance with relevant legislation, guidelines and standards. Consultation with relevant stakeholders would be undertaken during preparation of the biodiversity management plan.

4.3.4 Flooding

Flooding impacts at Narrabri

Issue

Council is concerned about the potential for impacts at Narrabri and how the impacts were assessed and modelled. Concerns include:

- ▶ ARTC has potentially underestimated the number of buildings within Narrabri and near Bohena Creek, where the project would increase above floor level flooding by more than 10 millimetres.
- ▶ A blockage factor was not used for the bridge impact assessment and it was assumed that the bridge piers would not accumulate debris and cause additional blockage, which is not consistent with recommendations in *Australian Rainfall and Runoff* (Ball, et al., 2019).
- ▶ The impact on Mulgate Creek flooding was not estimated.
- ▶ The rail design does not comply with ARTC design objectives, with afflux exceeding the criteria at multiple properties.

Response

Underestimation of impacts in Narrabri and near Bohena Creek

The design flood level results produced from the calibrated and validated flood models were used to estimate the number of buildings at risk of flooding above floor level, with the results presented in section 7.1.3 of Technical Report 3 and summarised in section B3 of the EIS. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited.

Buildings considered by Technical Report 3 and the updated flooding and hydrology assessment include all residences, educational facilities, health facilities, community facilities, commercial/industrial premises and other structures, such as garages. The floor levels of buildings were adopted from survey, where available, or were estimated as 0.3 metres (m) above ground level. ARTC believes there is a sound basis for its flood modelling processes. There could be a range of reasons why the estimated number of buildings differ between this assessment and the *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study – Namoi River, Mulgate Creek and Long Gully* (WRM, 2019a), including differences in the study area, differences in what buildings were included in the assessment and differences in assumptions regarding floor levels.

For the Bohena Creek catchment, there are differences in the magnitude of the peak flow rate modelled between the flooding and hydrology assessment for the proposal and the *Bohena Creek Flood Study* (WRM, 2019b). Water levels and flows recorded at the Bohena Creek gauge (419905) were reviewed and considered to estimate design flows and flood levels. The streamflow data at this location has a limited number of records for the period of 1995 to 2021, with significant gaps after 2005. As such, it was considered that an at-site flood frequency assessment for this gauge may not be representative of flood events similar to the 1% AEP event.

The available observed data was used in conjunction with rainfall data to calibrate a RORB hydrology model for the Bohena Creek catchment. The RORB model was calibrated to observed events and was used to simulate the range of design flood events using the recommended procedures in *Australian Rainfall and Runoff* (Ball, et al., 2019). In addition, the Bohena Creek hydraulic TUFLOW model was calibrated against two flood events and acceptable calibration results were achieved. ARTC has undertaken additional consultation with Narrabri Shire Council and its flooding consultants regarding these differences. Based on this it is considered that the ARTC predictions are more conservative than the *Bohena Creek Flood Study* and this would be further assessed during detailed design. In addition, a site inspection with Council and local landowners would also be undertaken during detailed design to review historic flood levels as part of the refinement of flood modelling, as described below.

The proposal has been, and would continue to be, designed to minimise the potential for flooding risks. In accordance with mitigation measure FH1, the design would continue to be refined, where practicable, during the detailed design process to not worsen existing flooding characteristics for flood events, up to and including the 1% AEP event. Further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes

- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Bridge blockage factor and accumulation of debris on bridge piers

The minimum and maximum spans between bridge piers for all proposed bridges is 14 m and 33 m, respectively. This is a large opening, and it is considered unlikely to be blocked by floating debris that would significantly impede flood flows. An appropriate bridge loss coefficient was included in the models to account for bridge piers and superstructure impeding flood flows. No additional blockage factor due to debris is required in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). However, noting the sensitivity of the town of Narrabri to flooding, a sensitivity analysis was undertaken to assess potential afflux impacts due to flood debris collecting on the Narrabri bridge piers. The analysis, presented in the updated flooding and hydrology assessment report, predicts that there would be negligible afflux impacts and as such, this has not been included in the flood models.

Mulgate Creek

The updated flooding and hydrology assessment provides additional assessment for Narrabri due to regional flooding in the Namoi River and Narrabri Creek, and local catchment flooding including in Mulgate Creek and Long Gully. The updated approach is consistent with that adopted in the *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study – Namoi River, Mulgate Creek and Long Gully* (WRM, 2019a).

Compliance with quantitative design limits

The proposal has been designed to, as a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event. In particular, the proposal has been designed to comply with the proposed quantitative design limits.

The updated flooding and hydrology assessment report includes revised quantitative design limits.

ARTC acknowledges that constructing the proposal across the floodplain, which includes productive farmland and other areas, would affect the existing hydrological regime. The proposal seeks to minimise these impacts by including bridges and culverts in the railway embankment. As described above, in accordance with mitigation measure FH1, the design would be further refined during the detailed design process to minimise impacts as far as practicable.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

Compliance with legislative and planning requirements

Issue

Council is concerned about compliance with relevant floodplain management plans and legislative instruments. Council expects that ARTC has and will continue to, adhere to all applicable legislative requirements throughout the planning process. Concerns include:

- ▶ The proposed rail embankment crosses the Lower Namoi Valley floodplain, which is a declared floodplain under the Water Management (General) Regulation 2018. Under this plan, any flood works on the floodplain are regulated by the Floodplain Management Plan for the Lower Namoi Valley Order 2020. ARTC has stated that the project is not a 'flood work' as defined by the plan; however, the rail embankment on the Namoi River floodplain would appear to fit within this definition and, therefore, would be a flood work. Although the project is a State significant infrastructure project and is not subject to the conditions of the plan, it would be expected that the Minister would need to consider the criteria stated for this type of flood work. The project would generally not be permitted within the AD zone.
- ▶ The flood level impacts at residential and commercial properties shown in the EIS would indicate that the project would not comply with the Narrabri LEP.
- ▶ Narrabri Shire Council has recently completed a Floodplain Management Plan for Narrabri. The current recommendation within the plan would mean that the project would not be approved as it proposes flood impacts exceeding 10 mm on external property.

Response

The documents noted in Narrabri Shire Council's submission do not directly apply to the proposal as a State significant infrastructure project. Nevertheless, an assessment of the consistency of the proposal with these plans has been undertaken and is provided in the updated flooding and hydrology assessment report.

4.3.5 Heritage

Local input to the heritage assessment

Issue

Council is concerned that some of the sites and/or artefacts were identified from roadways or by using a desktop-only assessment and that ground-truthing of this information was not undertaken throughout the entire investigative process.

Council notes that the information presented in the EIS is confusing, particularly with regard to the visual assessment for key construction infrastructure.

Council is concerned that the majority of the conclusions were made based on desktop reviews and existing literature and no consultation with local heritage practitioners, historical societies and the like was completed. No reference to previous heritage studies completed by Council was made.

Response

As described in section B7.1.2 of the EIS, site surveys were undertaken for heritage and potential heritage items where public access was provided. Where access through private property was not available, items were viewed from public areas and roadside locations. Seven potential heritage items, identified during the survey, could not be thoroughly inspected due to access restrictions (see section 5.1 of Technical Report 7—Non-Aboriginal heritage assessment and statement of heritage impact). Descriptions of heritage items obtained during the site survey are provided in section 5.3 of Technical Report 7.

Previous heritage assessments and studies reviewed as part of the non-Aboriginal heritage assessment desktop assessment are listed in section 4.5 of Technical Report 7. These included local heritage studies undertaken by Coonabarabran and Coonamble Shire Councils, and reports prepared as part of the Regional Forestry Agreement assessments. Local heritage studies undertaken by Narrabri Shire Council were not identified during the desktop searches.

As noted in section 4.3.2, consultation with local historical societies was undertaken to identify and source further information on potential heritage items. This included consultation with the Narrabri Historical Society.

Ground truthing

Issue

The heritage assessment failed to ground truth all items listed in the *Non-Indigenous Cultural Heritage Study for Stage 2 of the Brigalow Belt South Bioregion* (Curby and Humphreys, 2002).

Response

The Curby and Humphreys report was reviewed as part of the desktop assessment (see section 4.5.2 of Technical Report 7). The report identified eight sites as being within, or in close proximity to, the broader study area. Locations provided in the report were indicative only and presented as dots on a large-scale map.

As noted in section 3.4.3 of Technical Report 7, due to the inherent difficulties in locating sites in the Pilliga forests, a representative from Forestry Corporation NSW attended the heritage survey and provided information on known heritage sites. Of the eight sites identified from the Curby and Humphreys (2002) report, four sites were re-located and recorded as part of the survey. The other four were either outside the study area or were not able to be re-located.

Travelling stock routes

Issue

Outdated documentation is referenced in relation to travelling stock routes.

Response

Section 4.2.4 of Technical Report 7 provides the historical background of travelling stock reserves in the study area. At the time of the assessment, the *Draft Travelling Stock Reserves Plan of Management* (Local Land Services, 2018) was on public exhibition. This plan has subsequently been finalised.

The final Plan of Management includes a Best Management Practice Toolkit developed by NSW Local Land Services. This includes an approach to identifying, classifying and managing conservation values of travelling stock reserves. The classification system for conservation values in the toolkit relates solely to biodiversity values and not heritage values. As such, the approach to assessing the heritage significance of the reserves that was applied for non-Aboriginal heritage assessment remains valid, and no updates are required.

Impacts of compounds and workforce accommodation

Issue

No reference is given to any potential heritage impacts of the proposed construction and accommodation compounds.

Response

Potential impacts on non-Aboriginal heritage from general construction activities are summarised in section B7.3 of the EIS. Potential impacts on non-Aboriginal heritage from proposed key construction infrastructure (multi-function compounds, temporary workforce accommodation and borrow pits) are described in Part C of the EIS. The proposed key construction infrastructure would not impact on listed non-Aboriginal heritage items (see sections C1.2.1, C2.3.1 and C3.3.1 of the EIS).

As described in Table B7.5 of the EIS, the establishment of the temporary construction compound could impact on the locally listed Woodvale Park Private Cemetery and potential heritage item at Convict Road, Baradine. In accordance with mitigation measure NAH2, and subsequent to public exhibition of the EIS, the location of the Woodvale Park Private Cemetery site has been confirmed and the access road moved to avoid impacts on the item (refer to the combined Preferred Infrastructure/Amendment Report).

As required by mitigation measure NAH1, detailed design and construction planning would avoid direct impacts on identified items/sites of non-Aboriginal heritage significance as far as reasonably practicable.

Council input

Issue

Council requests input into the development of the heritage management plan. Council also requests input and the ability to review the draft interpretation prior to the final production of any sign within Narrabri Shire and all associated web site content.

Response

As required by mitigation measure NAH7, a heritage management plan would be prepared and implemented as part of the CEMP. The plan would be prepared in consultation with the relevant heritage agencies (local councils) and take into account the outcomes of further investigations and surveys during detailed design.

Mitigation measure NAH4 has been amended to include a requirement to consult with local councils and key stakeholders during preparation of the non-Aboriginal heritage interpretation strategy.

Thematic survey

Issue

Council requests that a thematic survey of the proposed alignment be carried out and provided to Council. All identified cemeteries and isolated grave sites are to be surveyed and inventoried. Details of the removal of any graves/cemeteries are to be provided to Council before any such removal takes place. A heritage interpretation strategy is to be prepared, particularly where heritage items are proposed to be removed or archaeology site excavated.

Response

As described in section B7.1.2 of the EIS section 3 of Technical Report 7, a survey of the proposal site and a buffer zone of 500 metres (m) (either side of the proposal site) was undertaken. The following cemetery/grave sites were identified in the study area:

- ▶ Woodvale Park private cemetery, listed as a heritage item under the Gilgandra Local Environmental Plan 2011
- ▶ 'The Aloes' homestead and graves, identified as a potential heritage site with local significance
- ▶ The graves of the Dingwell children, identified as a potential heritage site with local significance.

Subsequent to public exhibition of the EIS, the proposal has been refined and amended to avoid impacts to the Woodvale Park private cemetery and the graves of the Dingwell children (refer to the combined Preferred Infrastructure/Amendment Report).

As described in section B7.3.1 of the EIS, 'The Aloes' homestead and graves would be avoided. In accordance with mitigation measure NAH9, the item would be fenced and marked on site plans within the CEMP as an area to be avoided during construction.

As such, no graves within the study area are expected to be impacted by the proposal. In accordance with mitigation measure NAH8, an unexpected finds procedure would be developed and included in the heritage management plan to provide a consistent method for managing any unexpected heritage or archaeological items and unexpected human remains.

Archival recording

Issue

A copy of the archival photographic recording of the 'two-storey barn, Bohena Creek' should be given to Council for its records. The assessment has not considered scarcity or rarity of 19th century and early 20th century heritage places.

Response

In accordance with mitigation measure NAH5, an archival photographic recording of the two-storey barn/shed at Bohena Creek would be undertaken in accordance with *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006) and *How to prepare archival records of heritage items* (NSW Heritage Office, 1998a). The guidelines require the distribution of copies of the archival record to relevant local government authorities and/or local history collections or museums; as such, a copy would be provided to Narrabri Shire Council.

The significance assessment for the two-storey barn/shed at Bohena Creek is provided in section 6.21 of Technical Report 7. The use and history of the structure has not been clearly established based on the historical information obtained to date; however, a cautious approach has been taken and the item has been identified as having potential historical significance. To assess rarity, comparative example heritage items are required. Without knowledge of the actual historical use and background of the barn/shed, it is difficult to identify relevant comparison heritage places, and establish how rare, or otherwise, the item is. As such, a conservative approach has been adopted and the assessment considered the item to be of local heritage significance. Establishing its rarity would not alter the assessment of impacts or the management measures proposed.

Natural world

Issue

The natural world has not been considered as part of 'heritage' in this assessment unless it is noted under a specific piece/s of legislation or policy.

Response

The non-Aboriginal heritage assessment was undertaken in accordance with the SEARs and with reference to the requirements of relevant legislation, policies and assessment guidelines. A search of national, State and local heritage registers was undertaken to identify heritage items in the study area and the findings are listed in section B7.2.2 of the EIS.

Cumulative impacts

Issue

There is no heritage assessment of cumulative impacts within the Shire.

Response

The potential for cumulative heritage impacts was considered by Technical Report 7 and summarised in chapter D1 of the EIS. No cumulative non-Aboriginal heritage impacts were identified.

4.3.6 Traffic and transport

Council has not received sufficient information on the concept design

Issue

The concept design referred to in the EIS has not been issued to Council for review, which is necessary to make a response to the EIS. No opportunity has been provided to Council to input regarding the design to ensure the proposal is acceptable.

Response

There is no requirement under the EP&A Act for the designs for State significant infrastructure projects to be provided to councils for review or approval. Notwithstanding this, ARTC notes that concept designs for the proposed road realignments/closures were provided to Narrabri Shire Council during discussions held in 2020. ARTC acknowledges Council's concerns and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Narrabri Shire Council on material aspects of the proposal that are of relevance and interest to Council in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

Construction traffic access routes

Issue

The EIS does not provide details of construction traffic access routes and Council has not been consulted regarding construction access planning (noted under 'key concerns' on page 11).

A condition is required to ensure the haul route is accessed off the Newell Highway, to minimise the impact to local residential streets and for the safety of the community. Local streets should only be used where no alternative is permissible. Any use of local roads will require the approval of Council prior to construction commencing. This should form part of determining the traffic management plan.

Point 'g' on page 13 of Council's submission notes the local roads that have been identified in the EIS for construction access routes, observing that these roads front the hospital, aged care and other sensitive uses. Sensitive uses and emergency access routes must be avoided.

Where new access to local roads is required, temporary intersections/vehicle access points are to be constructed in accordance with Council specifications.

Response

The proposed strategy for construction access is described in section A8.11 of the EIS. Construction access routes are further described in section 5.2.4 of Technical Report 10—Traffic and transport assessment. To minimise construction traffic movements and associated impacts on the public road network, haul roads would be constructed within the construction footprint. The haul roads may not be continuous along the proposal site and would vary depending on:

- ▶ The volume of material to be moved
- ▶ Property boundaries
- ▶ Environmental and other constraints (e.g. ecological and heritage features)
- ▶ Geographical limitations (e.g. watercourses that cannot be easily traversed).

Use of the public road network to access the haul roads and other construction infrastructure would be required. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include consideration of sensitive land uses such as hospitals and aged care facilities.

ARTC would obtain all required approvals and permits to undertake the proposal, as described in chapter A3 of the EIS, and in accordance with the conditions of approval. Any vehicle access points would be designed to meet the relevant Australian, ARTC and road manager standards.

Use of existing track through Narrabri

Issue

The EIS states that ‘access for trains travelling from west to north is possible via the existing track through Narrabri’, despite Council’s previous objection to this. No details of how unacceptable impacts will be mitigated are provided. Council is currently working with Ernst & Young to resolve the issue. No approval for use of this section of track should be issued until such time as the submission is finalised.

Response

Train operations on the existing sections of track in Narrabri would not change as a result of the proposal. During construction it is proposed to use existing rail lines to deliver bulk materials, where practicable. This would include delivery of rail and sleepers, commencing during the pre-construction phase, as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases. It would also ensure undue demand is not placed on available commercial suppliers.

Traffic, transport and access management plan

Issue

There is insufficient traffic analysis and consultation acknowledged by the EIS to confirm routes and impacts on the transport network, making it imperative that a traffic, transport and access management plan is required and approved by Council as a prerequisite to the project approval.

Response

As noted above, in accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would be developed in consultation with relevant stakeholders, including local councils (as well as Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators). The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction.

As State significant infrastructure, the Planning Secretary would be responsible for approving the CEMP and its sub-plans.

Location of workforce accommodation

Issue

The EIS implies that the location of the workforce accommodation camp has been agreed; however, as it is yet to be finalised, it is imperative that a location be agreed prior to the project commencement as the associated permanent infrastructure and services needs to provide an ongoing benefit and not displace or detract. It is expected that the site is subject to the same conditions as those applied to the MAC (CIVEO) development.

Response

The proposed location for the temporary workforce accommodation was identified based on consultation with Narrabri Shire Council and consideration of other matters as described in section A8.9.4 of the EIS, including:

- ▶ Access to the proposal site
- ▶ Flood levels
- ▶ Appropriate land zoning
- ▶ Availability of suitable land
- ▶ Availability of services (e.g. power, water and sewage) (as required).

In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The requirements for the plan, and required contents, are as described in section 4.3.2.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

In addition, in accordance with mitigation measure LV-CI2, the temporary workforce accommodation plan would include requirements for the design and visual screening of facilities to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.

In relation to the suggested conditions, it is noted that the proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

Pavement testing and condition

Issue

The EIS indicates that there would be a significant increase in traffic (particularly heavy vehicles) on the network during construction. Accordingly, pavement testing will be required on any local road that is proposed as a construction route and a contribution be made by the proponent for maintenance and repair.

Currently there is insufficient detail to ensure that no construction approvals (e.g. section 138) are issued until such time as the condition survey is completed. It should also be noted that this condition survey needs to be conducted with the assistance of Narrabri Shire Council officers, as some pavements may need upgrading prior to use by construction traffic.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 provides that input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes prior to and following completion of construction and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced professional. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during and/or following completion of construction to address any damage caused by construction.

Borrow pit D

Issue

The EIS indicates that it is proposed to locate borrow pit D on Perimeter Road. Details of the volume to be extracted from the borrow pit are required as this may require a development application from the property owner.

Response

Details of the estimates volumes that are proposed to be extracted from borrow pit D are provided in section A8.9.1 of the EIS. The indicative total volume of fill proposed to be excavated from borrow pit D is 955,000 cubic metres. This total volume may not be excavated from the borrow pit, with final volumes likely to be lower, subject to further geotechnical investigations during detailed design. As such, the indicative volume represents the maximum potential size for the borrow pit. Extraction at the borrow pit would not exceed the volume requirements specified as part of the environment protection licence for construction of the proposal.

Approval for the proposed borrow pit D, located at Jacks Creek, is being sought as part of the proposal. Development consent from Narrabri Shire Council is not required.

Road closures

Issue

The EIS indicates that short-term closures would be undertaken at night to minimise the potential for traffic and access impacts. Council requests that all proposed road closures be subject to review and alternate access to be provided for local traffic.

Response

As noted above, mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Measures to manage alternative access arrangements would be defined by, and implemented in accordance with, the traffic, transport and access management plan (required by mitigation measure TT6). Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction where reasonable and feasible.

4.3.7 Land use and property

Consultation with Narrabri Shire Council

Issue

Council has not been consulted in its role of landowner, other than the receipt of a notification.

Response

ARTC recognises Narrabri Shire Council as a key stakeholder for the proposal. As described in chapter A4 of the EIS, engagement with community and key stakeholders was carried out as part of the following key periods:

- ▶ Inland Rail announcement and preliminary consultation—2015 to end 2017
- ▶ Route option assessment—February 2018 to July 2019
- ▶ Preliminary design development and environmental assessment—July 2019 to October 2020.

Consultation with Council included discussions in 2020 during which information on the reference design was provided, and the commencement of discussions in April 2021 regarding Council-operated assets, land acquisition and access.

Further information on the consultation activities undertaken during these periods, including consultation with Narrabri Shire Council, is provided in chapter A4 and in the consultation report in Appendix C of the EIS.

ARTC acknowledges the need for ongoing consultation with Narrabri Shire Council. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders (including local councils) with opportunities for input to design and construction planning in accordance with the communication management plan for the proposal. Mitigation measure SE1 provides for the development and implementation of a proposal-specific communication management plan to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquiries and complaints are managed, and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

The communication management plan would define the requirements for the complaints management system to be implemented during construction.

Utilities investigation

Issue

There has been no discussion on utilities, network service severance and whether it is possible to maintain the existing services. It is assumed that the proponent will undertake a 'utilities investigation', similar to the road audit they are currently completing, as part of the detailed design, which includes gaining agreement on a suitable approach to maintain all services.

Response

Section A8.12 of the EIS describes the need for utility relocation, adjustment or protection. A utilities management framework was prepared as part of the EIS (see Appendix J of the EIS) to define a consistent approach to the assessment and management of public utility relocations/adjustments across all proposal activities, including ongoing consultation with asset owners and relevant stakeholders.

In accordance with mitigation measure LP13, the location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, would be confirmed prior to construction. This would include (as required), undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers, in accordance with the utilities management framework provided in Appendix J of the EIS.

Impacts on adjoining landowners

Issue

The EIS does not appear to address conflicts of use whereby an adjoining landowner (to the route) is adversely affected by the construction and/or operation of the rail and its infrastructure, such as redirection of water flows, redirection of air flow, dust and noise. This needs to be addressed prior to completion of the detailed design.

Response

The EIS has assessed the potential impacts of the proposal on the environment and community in accordance with the SEARs. This includes assessing the potential for air quality and noise impacts on the nearest sensitive receivers, as required by relevant assessment guidelines. The flooding assessment considered potential impacts on land surrounding the proposal site, including adjoining land.

ARTC respects the communities in which it operates. ARTC does not discount the fact that people living near the proposal have the potential to be affected during construction and operation. The EIS recognises that a proposal of this scale would inevitably have some impacts on the local environment and community, particularly during construction and as a result of establishing a significant new section of freight rail corridor. As described in chapters A7, A8 and D5 of the EIS, the proposal would incorporate environmental management and design features to ensure that potential impacts are managed and mitigated as far as practicable.

The majority of the potential construction-related impacts would be effectively mitigated by the implementation of best-practice construction management, including the implementation of the environmental management approaches described in section D5.2 and the amended mitigation measures described in section 11.2 of this report.

In addition, new mitigation measure LP5 provides that where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements, property-specific measures would be identified and implemented in consultation with landholders to address identified issues, where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

Residual land

Issue

Due to the resultant lot size of residual land it may be necessary to limit future uses; for example, a small lot may not be commercially viable and may be proposed to be used as lifestyle/rural residential in an area not suitable for such development. Council may require such lots to be amalgamated and/or rezoned before being made available for sale, even when firstly put to the former owner. Accordingly, all resultant lot sizes must comply with the zoning and approval must be sought from Council before any non-compliant residual land is made available for sale.

Response

ARTC acknowledges this issue and would continue to engage with Narrabri Shire Council in relation to the approach to residual land as part of the land acquisition process.

Travelling stock reserve

Issue

The proposed mitigation measure to investigate opportunities to refine the design, to avoid construction footprint impacts on travelling stock reserve R9489 'Narrabri West', should be clarified to provide more certainty that current and future uses can be maintained after construction.

Response

The minor encroachment of the construction footprint on travelling stock reserve R9489, identified in section B12.5.2 of the EIS, is associated with a buffer area applied for potential utility works; however, since exhibition of the EIS, the design has been refined to respond to submissions and minimise environmental impacts, as described in the combined Preferred Infrastructure/Amendment Report. This has included minor refinements to the construction footprint. The amended construction footprint no longer encroaches on travelling stock reserve R9489. As a result, the associated mitigation measure (former mitigation measure LP12 in the EIS) has now been removed from the list of mitigation measures (see section 11 of this report).

Connectivity

Issue

There is little evidence of the consideration of maintaining or enhancing pedestrian and recreational connectivity. This needs to be considered and opportunities to improve liveability factors such as: land use; built form; quality and conservation of public spaces and natural environments; cultural characteristics; efficiency of transport networks; accessibility to work; education, health and community services; and social and recreational opportunities should be included.

Response

The potential impacts on active transport (including pedestrian facilities) were considered by Technical Report 10—Traffic and transport assessment. Section B11.2.3 of the EIS notes that pedestrian and cyclist activity is low, adjacent to the proposal site, with no dedicated facilities along main and local roads. Cycling is catered for in road shoulders, where these exist.

The majority of the proposal is located in remote rural areas. Public level crossings would be provided to facilitate road crossings across the new rail corridor (as described in section A7.3.7 of the EIS) and these would allow pedestrian or cycle connectivity along the existing road network. Potential impacts on community amenity are considered by Technical Report 13—Social assessment and are summarised in chapter B14. Further consideration of connectivity and liveability is outside the scope of the proposal and EIS.

4.3.8 Landscape and visual amenity

Assessment of potential impacts

Issue

There is insufficient information in the EIS and available in the public domain to adequately assess the landscape and visual amenity. While there are now mock aerial images available (outside the EIS) this does not replace the need for landscape sectional and perspective plans and landscape management plan to be submitted for approval. Council requests the opportunity to review and comment on these plans.

Response

The potential landscape and visual impacts of the proposal were assessed in accordance with the SEARs and relevant assessment guidelines, as summarised in section B13.1.1 of the EIS, and described in further detail in section 3 of Technical Report 12—Landscape and visual assessment. The assessment was undertaken based on the reference design, which provided adequate information to undertake the assessment, including the locations of structures, extents of vegetation clearance, proposed road alignments, etc.

As described in section A7.6.2 of the EIS, and in accordance with mitigation measure LV2, an urban design and landscape plan would be prepared by a suitably qualified consultant in consultation with relevant stakeholders (including local councils). The urban design and landscape plan would guide the appropriate urban design responses for key infrastructure and landscaping approaches. The plan would be context specific and include vision and place-specific objectives and principles to ensure the design is well integrated into its surrounding environment. The plan would be prepared in accordance with the urban design and landscaping objectives identified for the proposal and relevant guidelines, policies and strategies (as listed in section A7.6.2). These include *ARTC's Inland Rail Landscape and Rehabilitation Strategy* and the *Inland Rail Landscape and Rehabilitation Framework*, which have been developed to establish governing landscape objectives and principles, as well as outline landscape and rehabilitation treatment solutions for various phases of the overall Inland Rail program.

As State significant infrastructure, the Planning Secretary would be responsible for approving plans in accordance with the conditions of approval.

Proposed treatment for crossing the Narrabri–Walgett Line

Issue

It is unclear what the proposed treatment for crossing the Narrabri–Walgett Line would look like. There does not appear to be any information on this.

Response

Detailed design would be undertaken in accordance with the urban design objectives developed for the design, the urban design and landscape plan, and relevant guidelines and requirements, as noted in the above response. The proposed treatment would be defined as part of detailed design.

4.3.9 Noise and vibration

Working hours

Issue

Council objects to the proponent's assumption that construction will occur outside the NSW EPA's recommended standard hours, particularly where the analysis clearly indicates that households will be affected. Under no circumstances should the proponent be permitted to undertake construction activities seven days a week. Allowing extended hours on Saturday, Sunday and public holidays should not be permitted where households will be affected.

Hours of construction need to be limited to the recommended standard hours unless it can be demonstrated that noise limits will not be exceeded and there is no disruption.

Response

As described in section A8.8.2 of the EIS, a small increase in working hours above the *Interim Construction Noise Guideline* (DECC, 2009) recommended standard hours is proposed to shorten the length of construction, as far as practicable, and minimise associated disruptions to the community. The following primary proposal construction hours are proposed:

- ▶ Monday to Friday: 6am to 6pm
- ▶ Saturday: 6am to 6pm
- ▶ Sundays: 6am to 6pm
- ▶ Public holidays: no work.

No work would be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except in the following circumstances:

- ▶ Where potentially affected receivers agree that the work can be undertaken
- ▶ Where construction noise levels do not exceed the rating background level by more than 5 dB(A) at residential receivers
- ▶ No more than the noise management levels specified in the *Interim Construction Noise Guideline* (Table 3) would be experienced at non-residential sensitive receivers.

Discrete construction activities may also be undertaken outside the primary proposal construction hours as follows:

- ▶ Work where there are no sensitive receivers with the potential to be affected by noise and vibration impacts
- ▶ Work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line), which may need to be carried out on a 24-hour basis
- ▶ Other out-of-hours construction activities, including delivery of oversized plant or structures and emergency work
- ▶ Other discrete construction activities, such as large concrete pours and girder or deck installations at some bridges would also occur; however, these would be limited to 48 hours at any one location.

Work outside the *Interim Construction Noise Guideline* recommended standard hours would be undertaken with appropriate noise management controls and management measures, implemented in accordance with the conditions of approval and the proposed mitigation measures. Mitigation measure CNV5 provides that an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures, and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels.

All work outside the primary proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the out-of-hours work protocol. The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders (including the NSW EPA) and the community with the potential to be impacted, and would be incorporated into the construction noise and vibration management plan.

Potential impacts from specific construction activities would be managed in accordance with location and activity-specific construction noise and vibration impact statements (mitigation measure CNV1), and a construction noise and vibration management plan prepared and implemented as part of the CEMP in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework (mitigation measure CNV3).

In accordance with mitigation measure CNV4, the proposal would be constructed with the aim of achieving the construction noise management levels and vibration criteria identified by the construction noise and vibration assessment (Technical Report 8). All feasible and reasonable noise and vibration measures would be implemented. Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan, and the construction noise and vibration impact statements. Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.

Mitigation measures

Issue

While the analysis identifies noise levels above the acceptable standards, the proposal does not provide sufficient mitigation measures to ensure the acceptable levels are not exceeded. To suggest that 48 hours of continuous impact is reasonable and that they will notify affected community members when they will get 'respite' from the noise and/or vibration is offensive and demonstrates a lack of commitment to any obligations.

Ongoing monitoring must be effective, and readings should be made public throughout the construction period.

Response

ARTC respects the communities in which it operates. ARTC does not discount the fact that people living close to the proposal site rail lines will experience noise during construction. While some noise is unavoidable, ARTC is proposing a range of measures to mitigate noise impacts, as described in the previous response.

Some discrete construction activities would need be undertaken outside the primary proposal construction hours, as described in section A8.8.2 of the EIS. These would include work where there are no sensitive receivers and work during rail corridor possessions (as noted above) (typically 72 hours, four times a year). The period of 48 hours refers to the discrete construction activities, such as large concrete pours and girder or deck installations at some bridges; however, these would be limited to 48 hours at any one location.

As noted above, work outside the Interim Construction Noise Guidelines recommended standard hours would be undertaken with appropriate noise management controls and management measures, implemented in accordance with the conditions of approval and the proposed mitigation measures. Mitigation measure CNV5 provides that an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures and communication requirements.

In relation to noise monitoring during construction, mitigation measures CNV1 and CNV3 have been amended to confirm that the location and activity-specific construction noise and vibration impact statements and the construction noise and vibration management plan would define noise and vibration monitoring responsibilities and requirements.

Noise impacts of temporary workforce accommodation

Issue

The noise impact from the temporary workforce accommodation would adversely affect a significant portion of residences. This is further reason for determining an alternate location for the accommodation site that can provide a lasting legacy for the community.

Response

As described in section C2.3.7 of the EIS, there would be the potential for impacts to sensitive receivers during establishment and use of the Narrabri West temporary workforce accommodation. These potential impacts would be managed in accordance with a range of mitigation measures, including the construction noise and vibration management plan (mitigation measure CNV3).

The rationale for the proposed location and mitigation measures to manage potential impacts at this location are described in section 4.3.2. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would define how the accommodation is designed to minimise the impacts on existing communities.

Noise catchment areas

Issue

No acoustic analysis has been undertaken for noise catchment areas 1 and 2. This is recommended given the baseline data used is from three two-week monitoring windows between November 2018 and October 2019, without any qualification of the relevance of the periods chosen, and that there is an obvious impact above acceptable levels.

Response

Technical Report 8—Noise and vibration assessment—construction and other operations included an assessment of the potential impacts in noise catchment areas NCA1 and NCA2, which cover the extents of the proposal within the Narrabri local government area.

As described in section 4 of Technical Report 8, noise monitoring was undertaken at 21 locations. These locations were selected to provide a good representation of the existing noise environment and were identified with reference to topography, distance from the proposal site, and contribution from other noise activities, such as industry, road or rail noise. The monitoring indicated relatively consistent background and ambient noise environments along the proposal site, with localised noise sources, such as road traffic, farm activities and natural noise (birds/insects) observed. As a result, noise catchment areas were established based on the nearby number of receivers rather than existing noise levels.

Feasible and reasonable mitigation

Issue

Reference is made to applying mitigation measures ‘where feasible and reasonable’, which implies limited commitment to ensuring acceptable limits will be adhered to. Further, the EIS shows no attempt to clarify individual household sensitivities in the affected areas and how these may be monitored and appropriately addressed. It would not be unusual for some households to include shift workers, elderly and those hyper-sensitive to noise and/or vibration. Not to mention livestock and the ecological impacts. This must be investigated and alleviated.

Response

Noise and vibration sensitive receiver types for construction assessments are classified in accordance with the *Interim Construction Noise Guideline* (DECC, 2009). Noise and vibration sensitive receiver types for operational assessments are classified in accordance with the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). The relevant criteria consider the typical variety of activities and expectations for each receiver classification. Potential impacts of noise to livestock and fauna are considered by Technical Report 11—Agriculture and land use assessment and Technical Report 1—Biodiversity development assessment report.

The approach to impact management and mitigation is also consistent with these guidelines and ARTC is committed to minimising impacts as far as practicable.

In accordance with mitigation measure CNV3, a construction noise and vibration management plan would be prepared and implemented as part of the CEMP in accordance with the *Inland Rail NSW Construction Noise and Vibration Management Framework*. The framework was developed specifically for NSW Inland Rail proposals and fulfils the recommendation in the *Interim Construction Noise Guideline* (DECC, 2009) for organisations to detail best-practice, project-specific approaches to minimise noise impacts from pre-construction activities and construction, and provide the public with transparency.

The terms ‘feasible’ and ‘reasonable’ are used by the *Interim Construction Noise Guideline* to define the requirement to develop and implement measures to address identified impacts. A definition of these terms as they apply to construction noise measures is provided in section 1.4 of the guidelines. The requirement to develop ‘feasible and reasonable’ operational noise mitigation measures is also defined by the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013).

In accordance with mitigation measures ONV1 and ONV2, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners.

In accordance with mitigation measure ONV5, operational noise and vibration compliance monitoring would be undertaken once Inland Rail has commenced operation, at representative locations, to compare actual noise performance against that predicted by the operational noise and vibration review. The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.

Compensation for impacts

Issue

It is expected that compensation for any adverse impacts will be addressed, despite the limitations of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). This includes, but is not limited to, provision of noise/acoustic barriers, double glazing, etc. and other measures for households adversely impacted during the ongoing operation of the rail service.

Response

Potential noise impacts associated with the proposal have been considered and assessed by the EIS. Appropriate mitigation measures would be implemented during detailed design, construction and operation of the proposal to mitigate the potential impacts on the local community.

ARTC commits to implementing the mitigation measures and undertaking the proposal, in accordance with the conditions of approval, to address the identified impacts.

ARTC would continue to work with all potentially affected stakeholders to minimise potential impacts in accordance with the mitigation measures and conditions of approval. As noted above, in accordance with mitigation measure ONV1, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. Mitigation measure ONV2 provides that feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy.

Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners. ARTC would be responsible for the costs of implementing these measures.

4.3.10 Waste management

Council requires more information on the proposed transportation and disposal of waste

Issue

While it is noted that volumes of waste have been estimated (e.g. for workforce accommodation), no consideration of the proposed waste management can be undertaken as there has been no consultation; nor are details of the waste management plan found in the EIS.

Response

As described in chapter D2 of the EIS, the proposal would be designed, constructed and operated so that wastes are managed according to the waste minimisation hierarchy:

- ▶ Avoidance, where possible
- ▶ Treated, as required, and reused onsite
- ▶ Recycled, either within the proposal or offsite
- ▶ Where other alternatives are not possible, unavoidable waste would be disposed of at appropriately licensed waste management facilities.

There are a number of waste facilities in the region that could be used to dispose of unavoidable construction waste (depending on their existing approval and licensing arrangements), including those listed in section D2.2.4 of the EIS. The facilities that would be used, and the breakdown of estimated waste quantities that would be disposed of at those facilities, would be confirmed by the construction contractor, based on the suitability of waste and available capacity at relevant facilities. This would include consideration of existing approvals and licensed limits.

In accordance with mitigation measure WM1, detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes, and the reuse of material onsite.

Mitigation measure WM3 provides for a construction waste management plan to be prepared and implemented as part of the CEMP. Requirements in relation to the required contents of the waste management plan are provided in the outline CEMP in Appendix I of the EIS.

4.3.11 Socio-economic assessment and cumulative impacts

Local employment opportunities

Issue

The use of a fly-in-fly-out workforce is discouraged where the jobs can be filled from the local region. Council is keen to assist in enabling local training opportunities to meet the proponent's needs along with other relocation and establishment requirements.

An assessment of current capabilities should be undertaken to ensure that local training organisations can deliver the upskilling required. This will ensure that any local person who wants to benefit from the construction of Inland Rail will not be hindered by not being able to access basic and required training.

Response

ARTC would continue to work with Narrabri Shire Council, and other local and regional service providers, to maximise the potential local and regional benefits of the proposal. ARTC is committing to number of measures in relation to local employment opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.

In accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). Mitigation measure SE11 provides for the development and implementation of a workforce management plan. The workforce management plan would include measures to manage local employment requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of construction workforce in the region and other local data and information, including the latest economic development plans. This is confirmed by new mitigation measure SE5, which provides that, prior to construction, ARTC would confirm workforce requirements.

Mitigation measure SE11 has been amended to confirmed that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Location of multi-function compound

Issue

Council has been in discussion with Inland Rail representatives regarding their proposed employment precinct project—the Northern NSW Inland Port. Council requests that, as part of the strategic intent of Inland Rail leaving legacy items for current and future generations, the multi-function site compound proposed to be developed at Narrabri West be repositioned to Council's Northern NSW Inland Port site.

Response

The proposed location for the temporary workforce accommodation was identified based on consultation with Narrabri Shire Council and consideration of other matters, as outlined in section A8.9.4 of the EIS, including:

- ▶ Access to the proposal site
- ▶ Flood levels
- ▶ Appropriate land zoning
- ▶ Availability of suitable land
- ▶ Availability of services (e.g. power, water and sewage) (as required).

The alternative location proposed by Council would not be feasible based on the criteria listed above.

In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, Council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council. Narrabri Shire Council's support for Inland Rail is noted. ARTC acknowledges that Council has invested significant effort into the ongoing development of the Northern NSW Inland Port, which has been complemented by Australian and NSW Government contributions.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, of which Council was a part recipient. To this end, ARTC remains committed to working with Council as the business case investigations associated with the Northern NSW Inland Port progress, to determine the feasibility of future opportunities associated with Inland Rail.

Future use of groundwater bores

Issue

Council requests, as a further important legacy item to benefit the community, that the groundwater bores proposed for construction of the proposal be located in strategic locations to allow community organisations such as the NSW Rural Fire Service to access water to fight forest fires. Further community benefits could be attained by providing water supply for residential consumption and to Council's Northern NSW Inland Port site for commercial/industrial use and economic growth.

Response

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction (such as bores) would be investigated and negotiated in consultation with relevant stakeholders (such as local councils). Any legislative approvals associated with retaining and ongoing use of these facilities would be the responsibility of the party who takes ownership.

Temporary workforce accommodation

Issue

Council suggests that existing surplus rooms available in the Narrabri township be taken up prior to the development of any new facility for the temporary workforce accommodation. If a new facility is required, then strong consideration should be given to the legacy aspect of that development. Council requests that it be consulted to ensure the most appropriate design and location is established for this potential long-term community benefit.

Response

The EIS recognises, as described in section A8.9.4, that there is an existing temporary workforce accommodation facility at Narrabri (Civeo's Narrabri Village). The proposed temporary workforce accommodation facility within the Narrabri West multi-function compound would only be developed if sufficient accommodation is not available at Narrabri Village.

The amount of accommodation that would be provided at the proposed Narrabri West facility would depend on the availability of other accommodation available within Narrabri, including at Narrabri Village. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation in consultation with relevant key stakeholders, including Narrabri Shire Council. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant Council development codes and guidelines, and the principles and requirements described in section 4.3.2.

Where a new temporary workforce accommodation facility is required, the industry approach for these facilities is that the buildings and associated infrastructure would be hired for the duration of construction. Following construction, the buildings and associated infrastructure would be removed; however, ARTC would discuss with Council the potential to leave access roads and in-ground utility infrastructure connections leading to the facility.

Whole-of-government task force

Issue

Council requests that a whole-of-government task force be established to address the indirect stresses and impacts from construction of the proposal on a range of sectors, such as education and training, medical, policing and childcare.

Response

ARTC acknowledges the potential for social and community impacts, particularly during construction of the proposal. ARTC commits to implementing the mitigation measures that have been developed as an outcome of the social assessment undertaken to support the EIS, as well as the conditions of approval. The need for, and development of, a government task force is a matter for the NSW government.

The NSW Government has been involved in community planning and engagement activities along the proposal alignment, in response to the development of the EIS, which included facilitation and attendance of a series of technical working groups.

ARTC has also established a Project Co-ordination Group (PCG) in each state, including NSW, which comprises of representatives from ARTC, major state transport agencies and the Australian Government, to address major policy matters relevant to Inland Rail and serve as forums for resolution of outstanding issues. The PCGs are supported by technically focused working groups that involve a wide range of agencies and councils to focus on the practical aspects of interface issues with other rail corridors, roads and publicly owned infrastructure.

ARTC has also established a series of sub-working groups with State agencies, including a working group specifically for the Pilliga East State Forest. There are also a number of meetings that happen with the NSW Government on a regular basis to discuss issues as they arise, with different areas of the business each working with the various levels of government on a daily basis.

ARTC would establish a Stakeholder Engagement Coordination Group, comprised of four sub-groups along the proposal alignment. The group would meet quarterly and include key stakeholders including, but not limited to, ARTC, ARTC's construction contractor, councils, emergency services, and Australian and NSW Government agencies.

Proposal for grade separation

Issue

The design includes a grade separation of Inland Rail over the Walgett Branch line, at a height that does not allow for double stacking from the Northern NSW Inland Port site. Council requests that ARTC raise the height of the Inland Rail line now, to avoid the need for future retrofitting and associated infrastructure costs.

Response

The viaduct structure crossing the Walgett Branch Line is proposed (by the current reference design) to be 5.5 metres high. This decision reflects the current standards of the Country Rail Network (including the Walgett Branch Line), which does not operate double-stacked trains.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, of which Council was a part recipient. To this end, ARTC remains committed to working with Council to ensure interfaces with Inland Rail provide optimum community outcomes.

Connectivity options

Issue

Connectivity options need to be agreed to ensure the value-adding opportunities prevail. This includes future-proofing road infrastructure needs; water management infrastructure, e.g. channelling to enhance flood mitigation and water reuse; and communications corridors. Leveraging the Interface Improvement Program currently being finalised with Ernst & Young is an important outcome.

Response

As noted in the above response, ARTC is committed to working with Narrabri Shire Council to ensure interfaces with Inland Rail provide optimum community outcomes.

Issue

To assist Inland Rail to achieve its project benefits it needs to access the Inland Rail infrastructure in a northerly and southerly direction directly from the Walgett Branch Line. Narrabri Shire has been advocating for this complementary infrastructure over an extended period and believes that both the Narrabri Shire community and Inland Rail will jointly benefit from this addition. By not constructing access to Inland Rail off the Walgett Branch Line, the rollingstock will be operated through the town of Narrabri, which would have a negative impact on the community.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value-for-money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

4.4 Narramine Shire Council

4.4.1 Social and economic issues

Issue

Council raised a number of concerns in its submission about the assessment approach and the proposed mitigation measures and approach, particularly the application of post-approval managements plans, including:

- ▶ Council is dissatisfied with the weakness of the mitigation measures for socio-economic impacts at the LGA level and is concerned that most are deferred to post approvals, such as the workforce accommodation plan, workforce management plan, etc. Council expected tangible mitigations to be presented in the EIS and does not think they should be deferred to post approvals.
- ▶ Council is dissatisfied with the deferment of critical issues, such as those relating to workforce accommodation, workforce management, traffic and transport, etc. to the post-approval phase. Council is reliant on the detail in those plans to achieve social and economic benefits from the proposal. Council is also concerned that their involvement in these plans during their development and ultimate implementation may not be sufficiently robust to ensure appropriate social and economic benefits are realised.
- ▶ Council requests an early and meaningful role in the preparation of all post-approval plans that affect the LGA.
- ▶ Council considers that the requirement outlined in *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) that allows for Council involvement near the end of the plan development process, with only 10 business days to comment, is unsatisfactory. Council requests that DPIE (now DPE) provide significant resources to Council to review post-approval work plans within this time frame or remove the 10-day turnaround on review of plans, and alter it to reflect the scale of the project and obvious impact on Council resources.

Response

The EIS (including Technical Report 13—Social assessment) has been prepared in accordance with the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. The assessment presented in the EIS is based on a reference design and indicative construction methodology; and is considered sufficient to assess the environmental impacts and inform the risks and issues potentially associated with the proposal. The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures provided in section 11 of this report and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

ARTC's approach to environmental management is described in section D5.2 of the EIS, including its commitment to manage its environmental responsibilities and environmental performance. DPE has clear guidelines on the process for the development of post-approval matters such as the CEMP and associated management plans. Much of the detail cannot be finalised until a construction contractor is appointed, as they will be responsible for the day-to-day activities on site. Further detail on the post approval process in NSW can be found at planningportal.nsw.gov.au/major-projects/assessment/post-approval. The proposed post-approval plans would be prepared in accordance with the mitigation measures, conditions of approval, discipline-specific guidelines, consultation with key stakeholders and the guidance presented in the technical reports that support the EIS.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts, as far as practicable, and enhancing the benefits Inland Rail will deliver at a local, regional and national scale. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail. As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction. It would be developed in consultation with local councils.

The post-approval management plans would be prepared, and consultation undertaken, in accordance with the mitigation measures and conditions of approval. ARTC acknowledges the issues raised by Narromine Shire Council and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Narromine Shire Council on aspects of the proposal that are of relevance and interest to Council in accordance with the communication management plan for the proposal (required by mitigation measure SE1). Mitigation measure SE11 has been amended to confirm that the workforce management plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers. Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with Council. It is appropriate for these issues to be dealt with at the detailed design and construction planning stage.

There are no minimum timeframes for stakeholder comments on post-approval documents identified in either *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) or *Environmental Management Plan Guideline: Guideline for Infrastructure Projects* (DPIE, 2020d). Council would be consulted as soon as practicable on the development of the proposed plans.

Economic impact: differentiating between local, regional, State and national benefits and costs

Issue

Council is fully aware and appreciative of the expected economic benefits to the nation, NSW and to the region of both the construction and operation of the proposal and the overall Inland Rail project; however, Council is disappointed that the EIS and social assessment fail to specifically assess the likely economic benefits or costs of the proposal to the Narromine LGA.

Council does not believe that the scale selected for the regional analysis, compared to the six individually affected LGAs, is appropriate. Council contends that no meaningful interpretation of local (LGA-based) economic or social costs and benefits of either the construction or operation phase of the proposal can be obtained from the data presented for such a large region. Council requests that further detail be provided in the EIS and social assessment to assess the realistic economic, social and environmental costs and benefits that can be expected for the Narromine LGA.

Response

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4⁴ level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy. This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas.

The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which, in turn, stimulates further rounds of economic activity).

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy within which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified where possible.

ARTC would continue to work with local councils to identify and realise local economic and social benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narromine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the project.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in December 2020, which can be accessed at inlandrail.artc.com.au/moving-ahead-with-inland-rail/.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. In addition, mitigation measure SE7 commits to developing a proposal-specific industry participation plan to manage the potential employment and regional economic benefits of the proposal.

Local benefits as opposed to benefits to Dubbo

Issue

Council is concerned that the social assessment and EIS do not clearly articulate the extent to which Dubbo (as the major regional centre closest to the study area) will influence positive economic activity at the expense of the Narromine LGA. It is important to Narromine Shire Council that as one of the small LGAs bearing the most impacts of the proposal, that its community should receive as much of the economic benefit of the proposal as possible; particularly, in the use of local suppliers and services, and in capturing spending by the construction workforce.

Council expects the social assessment and EIS to detail the extent to which local procurement measures will favour possibly larger businesses in Dubbo over smaller businesses in the Narromine LGA and what the subsequent result on realistic economic benefit to the Narromine LGA, as opposed to the study area, would be.

⁴ Statistical Area Level 4 are defined by the ABS as areas that represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

Council expects the social assessment and EIS to detail to what extent potential construction workers are likely to remain in or move to Dubbo and commute daily to work rather than stay in the Narromine workers accommodation facility, or rent or buy in Narromine. Council also asks for clarification as to whether the construction companies would be required to limit employees' or contractors' journey to work time or distance, as this would be beneficial for road safety and would then encourage workers to live in local housing or the workers accommodation facility in Narromine, rather than in Dubbo.

Response

ARTC is committed to working with local communities to meet their needs and deliver customer benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

As noted above, the Parkes to Narromine project demonstrates the types of benefits that Inland Rail is bringing to local economies. Further information can be found in ARTC's *Moving ahead with Inland Rail* report.

Detailed procurement planning would be the responsibility of the construction contractor(s). Procurement processes are bound by strict guidelines and laws, and are not a standard part of the environmental approval process; however, in accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan*. The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c), including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

An estimated breakdown of the workforce by expected place of residence or travel patterns would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

As discussed in section B14.3.2 of the EIS, there is the potential for a small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally; however, this is expected to be a small increase in demand, which is considered unlikely to increase the price of rental properties in these locations. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Workforce health and safety procedures would be established by the construction contractor(s) in accordance with the *Work Health and Safety Act 2011* (NSW). These would consider matters such as safe driving and fatigue.

Planning for economic development

Issue

Council noted that two local economic development strategies were not referenced in the social assessment or EIS. Council requests that the details in the plans form the basis for the local details regarding local product and service procurement that will be included in the workforce management plan. Council expects early involvement in this plan and that it will be completed to Council's satisfaction.

Response

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of construction workforce in the region and other local data and information, including the latest economic development plans. This is confirmed by new mitigation measure SE5, which provides that, prior to construction, ARTC would confirm workforce requirements.

Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Employment, workforce and training

Issue

Council notes that the social assessment and EIS make reference to ARTC's commitment to creating opportunities for the development of local workers and request that it be confirmed that this will mean local to the LGA and not to the project study area in its entirety. Council expects to have early involvement in the post-approval workforce management plan to ensure that these local targets are properly informed, reasonable and achievable for both its community and for the efficient implementation of the proposal.

Response

ARTC is committing to number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.

In accordance with mitigation measure SE7, and as noted above, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would include an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

In accordance with mitigation measure SE11, the workforce management plan would include measures to manage local employment and procurement requirements, including recruitment, skills and training measures. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers.

Issue

Council is concerned that the incoming workforce and its subsequent demand for local retail and local services will put significant pressure on the employment of 'key workers' currently employed in local aged care and disability services in Narromine. Council and other services already have difficulty in attracting and retaining such staff. The creation of other (possibly higher-paid) employment opportunities for these people will be in direct competition with the aged care and disability services that rely on these key workers.

Response

While some local key workers may be attracted to local construction positions, these opportunities would be relatively short term and most roles would require specific technical skills, certification and experience. It is unlikely that there would be a significant overlap between the requirements for the construction workforce and the skills and experience required for aged care and disability services. In accordance with mitigation measures SE11 and SE12 the workforce management plan would include recruitment, skills and training measures to upskill the local workforce who may be unemployed or underemployed and assist them to develop skills that would improve their suitability for employment.

Issue

Council is disappointed that the social assessment section on local and indigenous businesses does not contain information relevant to each LGA. The information presented is generic to the region and does not indicate the diversity of skills, experiences, contacts and issues relevant to each LGA. Council expects that much better detail relating to each LGA will be provided in the workforce management plan.

Council expects that the plan will contain a specific Aboriginal Business Development Strategy with early input by the local Aboriginal community and Council.

Council requests that training providers relevant to Narromine are listed, including TAFE, Joblink and Sureways.

Response

The social assessment provides a high-level consideration of the types of local and Indigenous businesses in the region, to indicate capacity and capability. ARTC would continue to work with Narromine Shire Council, and other local and regional service providers, to maximise potential local and regional benefits.

ARTC is committing to prepare and implement an industry participation plan and a proposal-specific workforce management plan. The industry participation plan (mitigation measure SE7) would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation. In accordance with mitigation measure SE11, and as noted above, the workforce management plan would include measures to manage local employment and procurement requirements.

The workforce management plan would provide relevant detailed data at the LGA level. The additional training providers Council has provided are noted. The workforce management plan, when it is prepared, will include a full, up-to-date list of relevant training providers. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers.

Failure of risk assessment to capture severity of socio-economic impacts

Issue

Council expressed dissatisfaction with the social risk ratings given to a number of potential social and economic impacts of the proposal, as shown in the social assessment, which has meant they were not afforded for detailed scrutiny in the remainder of the social assessment. Council requests that the ratings be reviewed and justified in the EIS.

Response

The social assessment was undertaken in accordance with the SEARs and guidelines for social impact assessment in NSW. The methodology applied to undertake the assessment is described in section 3.2.4 of Technical Report 13—Social assessment. Data triangulation methods were applied to identify and assess the potential impacts. Social impact assessment and the assignment of significance ratings is a matter of professional judgement.

The social assessment acknowledges that the degree to which community members would experience social impacts would vary based on factors such as perceptions and individual values, sensitivity to change, distance from the proposal, and the duration that people experience the impacts for. Appropriate mitigation measures have been identified to address the potential impacts related to the areas of concern noted in the submission.

The risk ratings presented in the social assessment have been reviewed and confirmed. Justifications for each rating, as relevant to Council's comments, are provided below.

Housing and accommodation

Due to the nature of rail construction work, the skillsets required to construct the proposal would change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities.

As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small scale.

In accordance with SE11, the workforce management plan would include measures to manage potential impacts of the non-resident construction workforce on local and regional communities, including strategies to promote wellbeing of the workforce.

Access and connectivity

The potential social impacts resulting from access and connectivity changes have been assessed based on the findings of Technical Report 10—Traffic and transport, which identifies a range of management measures to address potential traffic changes during construction, including delays and disruptions, road safety risks and potential delays for school bus routes. These include consultation with relevant local stakeholders (e.g. local bus operators) to notify them of potential delays and changes to routes. The likelihood and consequence ratings identified in the social assessment are, therefore, considered appropriate.

Impacts on social infrastructure due to non-resident construction workforce

Temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). It is expected that each temporary accommodation facility would also have a dedicated health space that could be used for onsite occupational health and safety requirements. The layout, staffing and amenities provided would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2.

The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council. As a result of these factors, along with the frequent turnover and short-term, temporary nature of construction roles noted above, which would reduce the likelihood that many construction workers would relocate to the region with their families, the social assessment found that there could be demand on local social infrastructure services; however, if this did occur, it would be small scale and minimal.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

In accordance with mitigation measure SE11, the workforce management plan would include measures for managing increased demand on health and emergency services resulting from the non-resident construction workforce. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4).

Impacts on emergency service response times

The potential for impacts on emergency response times is noted in section B14.3.5 of the EIS. As noted in the EIS, access for emergency vehicles would be maintained along the public road network throughout the construction period, with suitable alternative access arrangements provided, where required. Emergency services would be consulted regularly during construction to minimise impacts of the proposal on their operations. As a result of these factors, it is considered that there may be changes to emergency response times and the consequence would be minor.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers to inform providers about the locations of level crossings, and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

Presentation and use of socio-economic data and assumptions—estimate of non-resident workforce and families accompanying workers

Issue

The social assessment gives an estimate of the peak number of construction workforce expected for the proposal but does not provide an estimate of the likely numbers of resident 'local' and non-resident workforce expected in each LGA, or estimate the proportion of the workforce who may bring family members with them to reside in the LGA.

Council expects that despite the social assessment stating that it was not possible to estimate the proportion of local and non-resident workforce, a sensitivity analysis should be developed and applied to a revised assessment of impact on the demand on housing and accommodation, employment of the local workforce and likely effects on local services, e.g. health and schools.

Response

The social assessment provides a high-level consideration of potential workforce numbers. An estimated breakdown of the workforce would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

As noted above, due to the nature of rail construction work, the skillsets required will change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

ARTC would continue to work with Narromine Shire Council, and other local and regional service providers, to maximise potential local and regional benefits, and minimise the potential impacts. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan (mitigation measure SE11).

Use of population projections

Issue

Council is concerned that the assumptions about the future population size of Narromine are based on a projected decline in population to 2041. Council perceives a positive indication of growth in the construction, agricultural and mining sectors in the LGA (including the Inland Rail project), and expects to see a reverse in the decline of population in future Census data. Council plans for a 1 per cent increase in population each year, rather than a decline, and expects this figure to be used in the assumptions in the social assessment and ongoing management plans.

Council believes that if a more realistic view of population size was adopted, a more realistic assessment of impacts on housing and local services as a result of the proposal can be developed.

Response

ARTC acknowledges that there are a range of scenarios that can influence fluctuations in population at the local level, often in quite short time periods. Since the EIS was finalised, it is evident that many regional towns across NSW have experienced in-migration as a result of the COVID-19 pandemic, which has affected housing availability.

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA, to inform the baseline for each LGA in the regional study area, based on ABS and DPIE (now DPE) data (population projections). This is standard practice for social impact assessments. These population projections are consistently used as the basis for long-term planning by all levels of government across NSW.

Section 7.5.4 of Technical Report 13 acknowledges the potential temporary increase in population as a result of the influx of construction workers. Notwithstanding the basis of the population projections used by the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities. This assumption is made on the basis that temporary workforce accommodation would be made available to non-resident workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites.

As noted above, ARTC would continue to work with Narromine Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

In accordance with new mitigation measure SE5, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Provision of baseline social and economic data

Issue

Council does not accept that the social assessment has not included particular baseline social and economic data for each LGA. Council has provided a list of data it believes should be provided in both the social assessment and future relevant management plans.

Response

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA, to inform the baseline for each LGA in the regional study area, based on ABS and DPIE (now DPE) data. This is standard practice for social impact assessments and is consistent with the assessment guidelines. In accordance with the assessment guidelines, this primary data was supported by secondary data obtained via consultation with local stakeholders and other research, as described in section 6 of Technical Report 13.

The data listed in Appendix A to Narromine Shire Council's submission is noted and would be considered during development of the workforce management plan, as appropriate. As noted above, and in accordance with new mitigation measure SE5, ARTC would undertake an analysis of the availability of construction workforce in the region, and would develop updated population data and forecasts to inform the workforce management plan. In accordance with amended mitigation measure SE11, the workforce management plan would be developed in consultation with local councils and service providers.

Cost burden on councils

Issue

Council perceives a large gap between the costs of the proposal that the LGA will be required to sustain and the economic benefits and tangible savings that will accrue. This presents an unfair situation and Council expects its community to be compensated fairly and transparently for this burden.

Response

Potential impacts associated with the proposal have been considered and assessed by the EIS. Appropriate mitigation measures would be implemented during detailed design, construction, and operation of the proposal to mitigate the potential impacts on the local community.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts, as far as practicable, and enhancing the benefits Inland Rail will deliver at the local, regional and national levels. ARTC commits to implementing the mitigation measures and undertaking the proposal in accordance with the conditions of approval, to address the identified impacts. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail.

ARTC acknowledges Narromine Shire Council's concerns regarding the perceived gap between costs and benefits at the LGA level and is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

Social assessment consultation

Issue

Council identified several key groups that it believes were not consulted as part of the social assessment and requests that they be specifically consulted. These included:

- ▶ Western NSW Local Health District
- ▶ Primary healthcare and allied health providers in Narromine
- ▶ Allied health providers in Narromine
- ▶ NSW Police
- ▶ NSW Ambulance
- ▶ Rural Fire Service
- ▶ Fire and Rescue NSW
- ▶ State Emergency Service.

Response

As described in section 5 of Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. This was considered appropriate given the level of information available during preparation of the social assessment. The committee included representatives of NSW Police, NSW Ambulance, Rural Fire Service, Fire and Rescue NSW and the NSW State Emergency Service. The committee confirmed that ARTC should consult with local emergency management committees as the design progresses to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision. This consultation would occur as detailed design progresses.

Council was consulted in relation to the capacity of local services (including health services) to meet demand from the construction workforce. The workforce management plan (mitigation measure SE11) would include appropriate processes and measures to manage potential increased demand on health and emergency service providers due to a non-resident construction workforce. It is expected that this would assist regional and local emergency and health services to understand potential demands on their services, and that they are supported and assisted to plan their resources appropriately. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

A description of the consultation undertaken for the social assessment, including the groups and organisations consulted, is provided in section 5 of Technical Report 13. Broader consultation for the proposal is described in chapter A4 of the EIS and section 3.4 of this report. ARTC would continue to liaise with relevant stakeholders and organisations in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

Impact on housing and accommodation

Issue

Council is supportive of the development of the Narromine north and south workers accommodation facility; however, is concerned that the social assessment makes an erroneous assumption that there will be negligible impact on the local housing market.

Council challenges the assumptions made in the EIS relating to housing choices and availability, and considers that a proportion of incoming construction workers will choose to move to their own house in each of the LGAs, even if temporarily. It is also likely that professionals and managers will choose not to live in a workforce accommodation facility for extended periods of time. The extent to which this is likely to occur specifically, in Narromine and Trangie, in both rentals and purchases, must be assessed.

The outcomes of this data, in conjunction with the workforce scenarios that have been requested, should form the basis for a realistic analysis of the impact of the temporary workforce on the current and future housing market, and particular community groups in Narromine. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

Response

As noted above, it is expected that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities. As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market; however, as noted in section B14.3.2 of the EIS, there is potential for a small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small scale.

Section 7.5.4 of Technical Report 13 acknowledges the potential temporary increase in population as a consequence of the influx of construction workers; however, as noted above, notwithstanding the basis of the population projections used in the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities.

As noted above, ARTC would continue to work with Narromine Shire Council, and other local and regional service providers, to minimise the potential impacts of construction on local communities and services.

ARTC would undertake an analysis of the availability of construction workforce in the region and would develop updated population data and forecasts. This would inform the workforce management plan (required by mitigation measures SE11 to SE13), which would also include measures to manage potential impacts of the non-resident construction workforce on local and regional communities. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Local tourism accommodation

Issue

The social assessment does not include detail on the likely number of smaller establishments and beds available in the LGA. This data must be shown to make further assumptions about housing availability and impact on local accommodation.

The social assessment should more rigorously assess the demand for, and impact on, tourism accommodation in each individual LGA, rather than make a generic regional statement. The social assessment must include a realistic analysis of the impact of the incoming workforce on local tourism accommodation in Narromine. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

Response

As described in section 7.4 of Technical Report 13, the capacity of the temporary workforce accommodation has been planned to be sufficient for the peak workforce. The accommodation would be available to non-resident construction workers at low or no cost. In ARTC's experience, where temporary workforce accommodation is available or provided, use of tourist accommodation by construction workers tends to be limited.

Based on these factors and those noted in the above responses, it is considered likely that the majority of construction workers would choose to stay in the temporary workforce accommodation facilities rather than tourist accommodation facilities. While there may be minor demand for tourist accommodation facilities during the design and construction phases, as a result of staff visiting the region for short periods of time, the social assessment found there is likely to be sufficient capacity in the existing regional tourism accommodation such that its use by visitors and tourists is unlikely to be affected. To monitor this potential impact, mitigation measure SE13 provides that the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Infrastructure contributions (legacy items)

Issue

To offset the impact of the Narromine workforce accommodation facilities on the local community and the expected impacts on local housing and the economy, Council expects that a certain level of local infrastructure be provided by the proponent.

Response

The provision of local infrastructure is not part of the scope of the proposal for which approval is being sought. The Inland Rail program provides for rail infrastructure and does not include other infrastructure works, except where necessary or appropriate to deliver the rail infrastructure.

ARTC would, however, continue to consult and engage with Narromine Shire Council regarding the potential for Council to retain proposal infrastructure for community benefit. This could include the potential for retaining bores after construction or leaving some of the infrastructure associated with the temporary workforce accommodation. Any approvals, operating costs and maintenance associated with retaining and using this infrastructure would be the responsibility of the party that takes ownership.

Workforce accommodation facility

Issue

Council is fully supportive of the proposed workers accommodation facility in Narromine South and is mindful that the Narromine North facility may not be required; however, there is insufficient detail provided in the EIS. Council seeks a commitment from ARTC to clarify a number of issues and to confirm the inclusion of certain facilities in the proposed facility before project approval is given. Items identified include details of design materials, operating arrangements and utility connections. Without this detail the likely impacts on the community cannot be properly assessed.

Response

A description of the proposed temporary workforce accommodation is provided in sections A8.9.4 and C2.1 of the EIS. The potential impacts associated with the facilities is provided in chapter C2 of the EIS. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant Council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would define:

- ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy)
- ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context
- ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping, as required
- ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment
- ▶ Location, design, service and amenity requirements for mobile accommodation facilities, including amenities for workers
- ▶ Provision of adequate parking onsite
- ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

In addition, in accordance with mitigation measure LV-CI2, the temporary workforce accommodation plan would include requirements for the design and visual screening of facilities to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.

Temporary workforce accommodation plan

Issue

Council expects the temporary workforce accommodation plan to be completed to Council's satisfaction, and requests early involvement in the development of the plan. It expects that the items/issues listed in Appendix D to Council's submission be included in the plan.

Response

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of the temporary accommodation facilities. The plan would be developed in consultation with relevant key stakeholders, including Narromine Shire Council.

Infrastructure to remain onsite after workforce accommodation facility closure

Issue

To offset the impact of the workforce accommodation facility on the local community, Council expects ARTC to commit to leave infrastructure (sewerage, water supply, electricity, drainage, telecoms, access and parking) to benefit local community and to detail these in the temporary workforce accommodation plan.

Response

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction would be investigated and negotiated in consultation with relevant stakeholders (including local councils). Any legislative approvals associated with retention and ongoing use of these facilities would be the responsibility of the party who takes ownership.

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation facilities. The plan would be developed in consultation with relevant key stakeholders, including the relevant local council. It would also describe how sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy.

The industry approach for temporary workforce accommodation facilities is that the buildings and associated infrastructure would be hired for the duration of construction. Following construction, the buildings and associated infrastructure would be removed; however, ARTC would discuss with Council the potential to leave access roads and in-ground utility infrastructure connections leading to the facility.

Impacts on social infrastructure

Issue

Council requests that the demand and likely impact on its own local recreational facilities be better assessed, and requests consideration of measures to support the integration of the incoming workers into the local community.

Response

The social assessment (Technical Report 13) identified that the construction workforce has the potential to generate some demand for local recreation facilities. ARTC recognises its responsibility to deliver and operate Inland Rail, while minimising social impacts as far as practicable, and would continue to work with Narromine Shire Council, and other local and regional service providers, to minimise the potential impacts of construction on local communities and services.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including wellbeing services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan. Mitigation measures SE11 to SE13 provide for the development and implementation of the workforce management plan to manage potential impacts of the non-resident construction workforce on local and regional communities. The plan would be prepared in consultation with local councils and service providers using up-to-date data on local facilities.

It is noted that temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). The amenities provided at the facilities would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2.

Impacts on emergency services

Issue

Council considers that local emergency services will experience real impact as a result of the construction activities and the influx of construction workers. Potential impacts need to be properly understood and resourced. Council expects much more rigour in the assessment of impacts on local emergency services and expects to see accurate descriptions of all services, and their current level of service or response times, realistic assessment of impacts, and specific mitigation measures.

Council expects that the workforce management plan will contain a specific emergency services section, developed with the early involvement of Council and to the satisfaction of the local emergency service providers.

Response

As described in Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. Consultation with the committee confirmed that, while they did not anticipate much increased demand on local emergency services during construction, there may be a need to increase resources at some smaller towns; and there may be affects due to changes to road conditions, such as changes to response times, as noted in section B14.3.5 of the EIS.

The committee confirmed that ARTC should consult with the respective local emergency management committees as the design progressed to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

In accordance with mitigation measure SE11, the workforce management plan would include measures for managing increased demand on health and emergency services resulting from the non-resident construction workforce. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately.

The workforce management plan would include appropriate processes and measures to manage potential increased demand on emergency services providers due to a non-resident construction workforce.

It is expected that engagement would occur with the relevant regional and local emergency health services in the pre-construction phase when timing and impacts are able to be confirmed. This would assist service providers to understand potential demands on their services and plan their resources appropriately.

Impacts on health services

Issue

Council is concerned that the Western NSW Local Health District was not consulted as part of the social assessment. Council expects a more detailed assessment of the impacts of the incoming workforce on local health providers and expects to see accurate descriptions of current health services, a realistic assessment of impacts on health services of the incoming workforce, and specific mitigations. Specific strategies should be developed in consultation with local GP services to ensure local servicing is maintained and provision for workers is serviced.

Council expects that the workforce management plan will contain a specific health impact section, developed with the early involvement of Council, Western NSW Local Health District, and local primary and allied health providers.

Response

As described in section 7.7.3 of Technical Report 13, local stakeholders consulted during the assessment reported varying levels of capacity in local and regional health services to meet any increase in demand that may occur during construction. The report recognises that there are existing challenges for local health service delivery, and that larger centres in the region are better resourced with health and wellbeing services and facilities. The EIS and Technical Report 13 acknowledge that, if inadequately managed, there is potential for the construction workforce to exacerbate these challenges in local towns.

ARTC commits to proactively managing the potential for impacts on local services during construction. A new mitigation measure (SE5) has been developed to confirm this commitment. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm the requirements for, and availability of, support services (including health and wellbeing services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Mitigation measures SE11 and SE13 commit to developing and implementing the workforce management plan, in consultation with councils and service providers to manage potential impacts of the non-resident construction workforce on local and regional communities, including:

- ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services
- ▶ Processes for managing potential increased demands due to non-resident workforce.

The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4).

Cumulative social and economic impacts

Issue

Council requests that a more detailed assessment of the cumulative impact of regional infrastructure projects be presented, considering the timelines for each project and the estimates of expected construction workforce numbers and peaks, so that the full scale of the cumulative workforces and their impacts on local community and housing can be understood.

Response

Figure D1.2 in section D1.3 of the EIS shows the potential timing of the projects considered at the time the cumulative assessment was prepared. This demonstrates that, by the time the proposal is expected to start construction, several projects are likely to be complete, with some overlapping with the timing of the proposal.

Section 9.2.2 of Technical Report 13 acknowledges the potential for cumulative labour demands due to the concurrent construction of some projects in the region. The consequences of this would depend on the workforce profile and state of the labour market at any point in time.

As noted above, the social assessment provides a high-level consideration of potential workforce numbers. An estimated breakdown of the workforce would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services to meet the needs of the non-resident construction workforce. This would inform the development of the workforce management plan, which, in accordance with mitigation measure SE11, would be implemented to manage the needs and impacts of the non-resident workforce.

Information regarding affected properties

Issue

Council requests that wherever properties within the LGA are assessed in any of the EIS sections that summary table(s) be presented showing the relevant properties and effects within each LGA.

Response

The EIS included tables in Appendix F that provided a breakdown of the indicative preliminary land requirements for construction (temporary land requirements) and operation (permanent land requirements for the proposal's operational features). This information has been updated based on the proposed amendments to the proposal, as summarised in section 3.1 of this report and described in more detail in the combined Preferred Infrastructure/Amendment Report. The updated land requirements tables are provided in the combined Preferred Infrastructure/Amendment Report. The updated tables present the information for each LGA.

Social impacts of traffic and transport/road safety

Issue

Insufficient data and evidence have been presented for each potential level crossing to justify the risk rating and dismissal of mitigation measures. Council challenges the conclusions made in the EIS and considers that the total of the disruptions and possible accidents at all the crossings is considered major for the LGA.

Council requests that a full analysis be presented for each crossing before a final decision is made about its status as an active or passive level crossing. The social costs of possible accidents and fatalities needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards. Options considered included grade separations, level crossings, consolidation, relocation, diversion and realignment. From both a rail safety and policy perspective, the overarching objective across the Inland Rail program is to, as far as reasonably practicable, minimise the number of level crossings across the alignment.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with the *Office of the National Rail Safety Regulator Policy: Level Crossings* (ONRSR, 2019) has been used to develop proposed level crossing treatments.

This approach involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking a cost-benefit analysis to assess whether higher levels of protection are justified (e.g. upgrade passive protection to active, active to grade separation).

ALCAM is the nationally accepted risk tool for level crossings, which looks at a range of factors including road and rail volumes and speeds, heavy vehicle use, sighting distances and road/rail geometry. The road inputs are validated by the relevant road manager through the stakeholder consultation process. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, the focus of which was on ensuring level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

The ALCAM assessment has been carried out separate to the EIS. The requirement to minimise safety risks is an ongoing process that must be adhered to in future design changes.

In accordance with amended mitigation measure TT4, level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. In addition, in accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

ARTC will also provide a presentation to Council on the level crossing treatment assessments undertaken for those public level crossings located within the Narromine LGA.

Issue

Council requests that it be given early opportunity to contribute to the post-approval traffic, transport and access management plan and that it be developed to the satisfaction of Council and local bus operators.

Response

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including Council) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Issue

Council disputes the EIS statements about the likely level crossing waiting times and traffic queue lengths, especially as it is only presented for one crossing location. Council requests data regarding the cumulative costs of the additional waiting time for traffic (especially for agricultural machinery and local commercial traffic) over the life of the proposal in each LGA. This needs to be factored into the local economic costs.

Response

An assessment of potential delays to road traffic at level crossing was undertaken as detailed in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 metres (m) during the proposal's opening year (2026); while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 m.

As described in section 3.3 of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of a higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS, at 66 m and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. As a result, further assessment and reporting is not considered necessary. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

It is estimated that Inland Rail would be trafficked by an average of 10 trains per day (both directions) in 2027, increasing to about 14 trains per day in 2040. As a result, it is unlikely that vehicles could make more than one passage over different sections of the rail line and be impacted by having to wait for the same or successive trains.

Issue

No assessment has been made of the logistics and difficulties of moving agricultural machinery across level crossings. Council requests that further information be given in the EIS. This also needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types that need to be catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including AS 1742.7:2016 *Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings, Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

ARTC acknowledges the issue of access for agricultural machinery, which would continue to be addressed as the design and construction planning progresses. The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

Issue

No analysis has been made of the additional travel time for journeys required from road closures. Consideration of the additional travel time required over the life of the proposal as a result of closures in the LGA needs to be factored into the local economic costs.

Response

Section A7.4.1 of the EIS noted that in the Narromine LGA, one Council-managed made road (Dappo Road) and a number of tracks and paper roads would be closed as part of the proposal.

Potential impacts due to these road closures are described in section 6.2.2 of Technical Report 10—Traffic and Transport Assessment. As noted in the assessment, while road closures may result in additional travel distance for road users, at the majority of locations where road closures are proposed, the impacts would be minor (about 1 to 2 kilometres).

As described in the combined Preferred Infrastructure/Amendment Report, and summarised in section 3.4 of this report, however, a number of amendments to the exhibited proposal are proposed to further minimise the potential environmental impacts of the proposal and to respond to matters raised in submissions received. As a result of these amendments, Brooks Road, Nalders Access Road and Bardens Road would no longer be closed, further minimising impacts to travel distance as a result of the proposal.

Given the number and scale of road closures proposed, and the low traffic volumes on those roads, any traffic-related delays would be minor and localised in nature.

4.4.2 Traffic and transport issues

Unclear approval process for increased train length

Issue

Council requests that the EIS detail the approval process required to permit the commencement of 3,600-metre long trains on Inland Rail and specify thresholds of incremental changes not needing consent or approval.

Response

The operation of 3,600-metre (m) long trains would be subject to a separate assessment and approval process under the EP&A Act. While components of the proposal would include infrastructure to accommodate possible future augmentation, including a possible future requirement for 3,600-m long trains, this is not part of the proposal for which approval is being sought.

In relation to this and any other changes following approval, as described in section D5.4.2 of the EIS, proposed changes would be reviewed for consistency with the results of the assessments described in the EIS, relevant mitigation measures, performance outcomes and the conditions of approval. If any proposed changes are not consistent with the approvals and assessment results, appropriate modifications to the project approval would be sought in accordance with the requirements of the EP&A Act and the terms of the approval for the proposal.

Operational degradation of existing rail lines—poor connectivity with Inland Rail

Issue

Council requests the EIS demonstrate why the proposal has provided minimal connectivity to Inland Rail; particularly, in high production agricultural areas where there is an opportunity for road freight movements to be shifted to rail. The provision of operationally efficient connections to existing regional lines will be of outstanding benefit to both existing and new markets domestically and for export.

The EIS must demonstrate, through an appropriate cost-benefit analysis and economic model, the operational cost of additional train kilometres travelled due to inefficient connections and potential impact to accessing existing and new markets.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value for money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

The social and economic assessments were undertaken in accordance with the SEARs and with reference to the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2013a). The approach adopted for the assessment reflects the recognised industry approach to undertaking an EIS. Due to the nature of the incremental assessment approach adopted for the EIS, a project-specific cost-benefit analysis has not been undertaken as the results would not capture the full benefits that are expected to be delivered upon completion of Inland Rail.

Impacts to Council/public roads

Issue

The EIS fails to provide a complete assessment of the impact to Council roads during construction and operation. There should be no lasting impacts to Council-controlled and other classified roads as a result of the proposal. Council requests that a rail possession strategy and traffic, transport and access management plan be prepared in consultation with both Transport for NSW and Council to minimise transfer of rail freight impacts to the road network and construction traffic impacts on the road network.

Council requests that any infrastructure approval contain the nominated conditions of approval.

Response

Impacts to Narromine Shire Council roads

ARTC acknowledges Narromine Shire Council's concerns in relation to interactions with Council's infrastructure (including those parts of the road network managed by Narromine Shire Council) and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The reference design and indicative construction planning undertaken to date for the proposal incorporates a number of features and proposed measures to minimise construction traffic movements and the associated impacts on the local road network, in particular gravel roads. This includes the proposal to construct high-quality haul roads within the construction footprint (see section A8.11.2 of the EIS). This would enable materials and personnel to be transported within the proposal site, as far as practicable, minimising traffic on local roads. In addition, it is proposed to use existing rail lines to deliver bulk construction materials where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase, as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases.

ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of the proposal on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT10 provides that a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes prior to and following completion of construction. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.

Conditions of approval

The conditions of approval for the proposal are a matter for DPE with input from relevant agencies. ARTC will consider in detail any proposed conditions of approval at an appropriate time in the assessment process. ARTC considers that the intent of the recommendations has been addressed in the mitigation measures noted above.

Failure of risk assessment due to likely material haulage route variation

Issue

Council does not consider the haulage route assessment in the EIS to be representative of a practical material supply strategy for construction of the proposal. Council is concerned that the lack of acknowledgement regarding the likelihood of altered haulage routes of quarry materials eventuating has resulted in an ineffective risk assessment process for transport and road impacts.

Council requests an early and meaningful role in the preparation of the traffic, transport and access management plan and the designation of bulk material haulage routes.

Response

Construction would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would be developed in consultation with relevant stakeholders, including Narromine Shire Council.

Failure to address importance of impacts caused by level crossings

Issue

Council considers that the key assumptions adopted for the review of proposed level crossings, and the assessment methodology, is inconsistent with the remainder of the EIS and appear severely flawed.

Council requests that the proponent prepare and make public a Level Crossing Report for the proposal, which must be developed in consultation with Transport for NSW and Council, and that the design of any level crossing on a public road be submitted to Transport for NSW and Council for review and endorsement.

Council also requests that the Level Crossing Report include the cumulative impacts of multiple level crossings, across the wider program of works and operations related to Inland Rail, on transit times throughout the region that may impact the route selection for road traffic, particularly Higher Mass Limits vehicles during peak harvest and intercity freight.

Response

An assessment of potential delays to road traffic at level crossings was undertaken as detailed in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 m during the proposal's opening year (2026), while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 m.

As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area, and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the levels and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of a higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train

speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 m and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. As a result, the assessment is considered appropriate. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

Notwithstanding the above, Council's request for a level crossing report is acknowledged. In accordance with new mitigation measure, TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

Issue

Council believes that the criteria and methodology used to determine the need for a grade separation, as stated in the traffic and transport assessment, unfairly disadvantages regional areas. Council requests to have the proposed active level crossings at Narromine–Eumungerie Rail Road and Tomingley–Narromine Road upgraded to include grade separation.

All classified State roads and other regional roads that are, in essence, State significant, should have grade separation with Inland Rail.

Response

As described in section A6.2 of the EIS, option development has been an integral part of the overall design process for the proposal. An iterative process of option selection, design development, and evaluation has been undertaken to define the proposal. The approach to considering treatment options for the interaction of public roads and the rail corridor is described in section 5.1.1 of Technical Report 10—Traffic and transport assessment, and summarised in section A6.3.3 of the EIS. This approach has taken into account relevant NSW and Australian level crossing policies, which emphasise the need to minimise the number of level crossings, as far as reasonably practicable.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations, with regard to existing level crossings and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that, where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised that a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It is noted that the approach ensures level crossing safety risks are eliminated or minimised, so far as is reasonably practicable in accordance with Commonwealth rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC.

Based on the methodology, which was audited by ONRSR, higher order treatments, such as grade separation, are not considered justified on the majority of State and regional roads, as the cost to grade separate would be grossly disproportionate to the benefits. Instead, level crossings with active controls consisting of flashing lights and bells, and boom barriers, would be installed at all classified road locations. This is the highest form of level crossing control under *AS1742.7-2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016).

ARTC also notes, however, that as part of the financial year 20/21 Federal Budget, the Australian Government has allocated \$150 million for additional grade separations in NSW, with the NSW government contributing an additional \$37.5 million. This will be additional to grade separations, which are already included in the Inland Rail scope. The specific projects to be implemented with this funding are being identified by the Australian Government in conjunction with the NSW Government.

ARTC will continue to work collaboratively with Transport for NSW to progress road–rail interface solutions during detailed design. In accordance with amended mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW), prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Issue

Council expects that the existing passive level crossing at Dandaloo Road at Narromine on the Parkes–Narromine Railway (located about 8 kilometres north of the southern end of the proposal) is likely to receive increased rail movements. Council requests to have this crossing upgraded to an active level crossing.

Response

Following further review of the design it is confirmed that the existing passive level crossing on Dandaloo Road would be upgraded to an active level crossing if the Narromine West connection is constructed. As described in section A7.3.5 of the EIS, the Narromine West connection is a possible future connection that would provide connectivity between the Parkes to Narromine Line and the Narromine to Cobar Line. Approval for the connection is being sought as part of the proposal and it may be constructed at a later date.

In addition, the existing passive level crossing on Narwonah Siding Road would also be upgraded to an active level crossing. These design changes are described and assessed in the combined Preferred Infrastructure/Amendment Report.

Undisclosed consultation process for Dappo Road closure

Issue

Council requests confirmation of the extent of community consultation undertaken regarding the proposed closure of the eastern end of Dappo Road and provide reasoning for not making provision for a rail crossing at this location.

Response

The permanent closure of Dappo Road is required to reduce the number of level crossings required for the proposal, consistent with government policies and requirements. Potential impacts due to this road closure are described in section 6.2.2 of Technical Report 10—Traffic and transport assessment. As noted in the assessment, while the road closure may result in additional travel distance for road users, the potential impacts would be minor, as connectivity to the local road network would be maintained via Webbs Siding Road, which is located about 1 km to the north.

ARTC has had initial meetings with Narromine Shire Council to discuss the consultation and closure process of Dappo Road. ARTC would continue to consult with Council during the detailed design phase. In accordance with amended mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

All road closures would be undertaken in accordance with the *Roads Act 1993* (NSW).

Traffic impacts to Webbs Siding Road

Issue

Council requests the EIS commit to undertaking an assessment of impacts of heavy vehicle traffic to the road surface for the proposed temporary detour via Webbs Siding Road, and an assessment of impacts by all traffic to residents of Webbs Siding Road and others.

Response

Potential impacts on the road network due to construction traffic are described in section 6.1.1 of Technical Report 10—Traffic and transport assessment and are summarised in section B11.3.1 of the EIS. The assessment considered potential impacts due to the temporary short-term closure of Webbs Siding Road, among other public roads, so that girder/bridge deck components can be installed safely. As described in the assessment, to minimise the potential for traffic and access impacts, short-term closures would be undertaken during the night over a

maximum two-day period. Where required, detours would be established. Any closures would be managed in accordance with the traffic, transport and access management plan, the preparation of which is committed to through mitigation measure TT6.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented, as needed, during and/or following completion of construction to address any damage caused by construction.

Unintended consequential impacts for road traffic

Issue

The lack of grade separation of Inland Rail and the Newell Highway south of Narromine is already causing heavy vehicles to avoid delays and divert to other routes that affect Narromine traffic, with Narromine–Eumungerie Rail Road used as a pseudo bypass of Dubbo. The commencement of these unintended bypass routes occurs as far away as Forbes. Council expresses its dissatisfaction with the lack of impact assessment in the EIS of consequences caused by traffic emanating from other Narromine to Narrabri rail sections.

Response

As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area, and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. As construction of the Parkes to Narromine section of Inland Rail was completed in September 2020, the traffic counts would also have reflected any potential changes to traffic due to changes to this section of the rail. To understand the potential impacts of a higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 and 74 m, respectively.

In accordance with mitigation measure TT11, the operation of all proposed level crossings on classified roads would be reviewed after Inland Rail commences operation to confirm that the:

- ▶ Level of protection is appropriate
- ▶ Proposed infrastructure is appropriate for the traffic conditions.

Vehicle stacking and storage at level crossings

Issue

Council expects that the design will consider sufficient allowance for vehicle stacking (especially heavy vehicles) and storage at level crossings on public and private roads, especially at intersections and driveways/crossovers.

Response

ARTC confirms that stacking distances have been considered as part of the design of level crossings and would continue to be incorporated into the design of the proposal during the detailed design phase. All level crossings would be designed to comply with *Australian Standard (AS) 1742.7:2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016), as committed to through mitigation measure TT4, which includes stacking distance requirements. At level crossing locations where the new rail corridor is parallel to the road corridor, the minimum distance between the outer rail to the edge of the travelled way of the through road would not be less than 31 m, to accommodate a B-double design vehicle. Where the largest gazetted vehicle is larger than a B-double, this distance would need to be increased in accordance with AS 1742.7.

Provision in design for passage of agricultural machinery

Issue

Council requests the EIS confirm that all public road/rail crossings (level crossings and bridges) incorporate design allowance for passage of the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5.

Response

As described in sections A6.3.3 and A7.3.7, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with the Office of the National Rail Safety Regulator's (ONRSR) policies and guidelines has been used to determine proposed level crossing treatments (active or passive). The approach to this involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

4.4.3 Supply of extractive materials

Unrealistic Dubbo Regional LGA focused supply of ballast and capping material

Issue

Council does not agree with the viability of the ballast and capping sources strategy and does not believe that the EIS has adequately demonstrated that local sources cannot be found of either existing or future construction material resources. Council requests preparation of a detailed quarry material availability assessment and associated traffic impact assessment in conjunction with Transport for NSW and existing/potential operators of extractive sites prior to project approval. The study must include volume, quality and economic analysis to justify additional extractive sites and traffic management plans that cater for various potential options for material sourcing and delivery.

Response

Section A6.3.4 of the EIS describes the options assessment process for the supply of construction materials for the proposal. The supply options considered were material excavated from cuttings along the proposal site, existing commercial quarries and establishment of borrow pits. The options assessment included a review of currently approved commercial quarries in the region. The assessment determined that while proposal cuttings and borrow pits could supply general and structural fill material, it would be more feasible to obtain capping and ballast from commercial quarries.

Construction of the proposal would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS.

Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

Mitigation measure TT6 provides that a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction (including access for materials). The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Suitability of large borrow pits to be approved under the critical State significant infrastructure approval process

Issue

The proposal includes three large borrow pits within the Narromine LGA. Council does not consider the rigour of the borrow pit assessment to be appropriate for the scale of each development. It is noted that had approval been sought for any single borrow pit it would have been assessed as 'designated development' and required development consent under Part 4, Division 2 of the EP&A Act. The full assessment that would have been given to the likely impact of such an activity on the environment would have been to a much higher standard.

Response

The proposal is declared critical State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

The EIS and supporting technical reports, including the proposed borrow pits, were prepared in accordance with the requirements of the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS. The adequacy of the assessment requirements is a matter for DPE.

4.4.4 Council road and drainage assets

Independent road dilapidation reporting

Issue

Council expects that each local Council road impacted by construction haulage is to be subject to a road dilapidation report prior to use for construction. The report is to be prepared by an independent and suitably experienced and qualified road designer/auditor approved by Council.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.

Asset transfer register

Issue

Council expects a detailed asset transfer register be compiled in an agreed format, with clear definition of the asset owner following completion of the civil works required for the proposal.

Response

ARTC acknowledges Narromine Shire Council's request. Any detailed information requirements would be confirmed as part of the third-party agreements, which would be undertaken in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail. The commitment to develop detailed requirements regarding the ongoing management and maintenance of Council-owned assets has been confirmed by the amendment to mitigation measure TT2. In accordance with measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Defect inspections

Issue

Council expects all assets transferred to Council will be defect inspected in consultation with, and in the attendance of, a Council representative. Any defects identified are to be logged and the rectification method agreed.

Council expects that where the integrity of assets transferred to Council is compromised during a period of up to 10 years post construction and 5 years post operations commencing, resultant rectification be the responsibility of the proponent. This expectation of rectification extends to the downstream end of erosion-protection treatments of all new culverts and all existing culverts subject to increased inundation.

Response

ARTC acknowledges Narromine Shire Council's request. Any requirements for defect inspections and rectification would be confirmed as part of the third-party agreements, which would be undertaken in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

Requirements for construction of Council assets

Issue

Council expects all road pavement (structural and geometric) and drainage designs to be certified by a Road Designer (per Transport for NSW requirements). Other road infrastructure assets, such as traffic control devices, barriers and signs, are to be certified by a suitably qualified engineer, approved by a Road Safety Auditor and provided to Council for concurrence prior to construction.

Council expects certified detailed as-built markups and electronic as-built models are to be provided to Council in an agreed format.

Council expects independent construction certification/verification needs to be undertaken on all Council-owned assets; or, Council be advised and be provided the opportunity to attend critical hold points and inspections, per the ARTC and Transport for NSW specifications.

Council expects all materials used in the works on Council assets (apart from general fill and pavements) are to be new products unless otherwise agreed with Council.

Response

As noted above, ARTC acknowledges Narromine Shire Council's concerns in relation to interactions with Council infrastructure (including those parts of the road network managed by Council), and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Narromine Shire Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all relevant road and drainage design standards and requirements, including:

- ▶ *Guide to Road Design Part 3: Geometric Design* (Austroads, 2021b)
- ▶ *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)
- ▶ *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2020)
- ▶ *Guide to Road Design Part 5: Drainage – General and Hydrology Considerations* (Austroads, 2021c)
- ▶ *Guide to Road Design Part 5A: Drainage – Road Surface, Networks, Basins and Subsurface* (Austroads, 2021d)
- ▶ *Guide to Road Design Part 5B: Drainage – Open Channels, Culverts and Floodways* (Austroads, 2018).

Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including Council and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders. This would include changes to roads managed by Narromine Shire Council.

In relation to Council's request to approve design plans, it is noted that the proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

Issue

Council expects that sites will be left restored, culverts and assets cleaned, and rubbish removed after completion of works at practical completion.

Response

In accordance with mitigation measures SC9, BD12 and LP19, disturbed sites would be rehabilitated in accordance with the rehabilitation strategy. The rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of the operational footprint (such as compounds, access roads and other areas disturbed during construction within the proposal site that would not be the location of final operational infrastructure). The strategy would:

- ▶ Identify rehabilitation objectives and criteria
- ▶ Establish roles and responsibilities
- ▶ Define rehabilitation actions and requirements
- ▶ Define monitoring and maintenance requirements.

ARTC confirms that the construction contractor(s) would be contractually obligated to ensure that rehabilitation is undertaken, and that work sites and operational infrastructure are left in a suitable condition at the conclusion of construction.

Requirements for third-party agreements

Issue

The third-party agreement between ARTC and Narromine Shire Council details all assets, interfaces, responsibilities and funding arrangements for maintenance of shared assets.

Notwithstanding the third-party agreement, a defects liability period be imposed for up to 10 years post construction and 5 years post operations commencing.

Council expects the road interface with ARTC to commence at the location where road realignments have been imposed on the local road network.

Response

ARTC acknowledges Narromine Shire Council's request. Defect liability periods would be confirmed as part of the third-party agreements.

With regard to road interface boundaries, Council would be required to remain as road manager and maintainer of Council roads. The road interface point cannot be moved to make ARTC the owner and maintainer of new sections of Council roads.

4.4.5 Agricultural and land use impacts

Direct impacts on agricultural land

Issue

Council disagrees with the regional analysis approach used in the EIS, caused by the mismatch of scales between this combined regional and the six individually affected LGAs.

Council requests the EIS assess the impacts on agriculture using an 'impact corridor', which would more accurately reflect the local nature of impacts on agriculture.

Response

Regional analysis approach

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4⁵ level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy. This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas.

The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which, in turn, stimulates further rounds of economic activity).

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy in which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified, where possible.

Local impacts

Section B12.4.2 of the EIS notes that the permanent (operational) land requirements (as estimated at the time the EIS was prepared) would result in about 1,300 hectares (ha) of land being removed from agricultural production. This represents about 0.04 per cent of agricultural land across the five LGAs that comprise the regional study area for the assessment. The amendments to the proposal, as described in the combined Preferred Infrastructure/Amendment Report, would increase the amount of agricultural land affected by the proposal's operational footprint. It is estimated that the amended proposal would affect about 1,458 ha of agricultural land (a 158 ha increase compared to the exhibited proposal). This represents about 0.4 per cent of agricultural land across the five LGAs that comprise the regional study area for the assessment.

The agriculture and land use assessment (Technical Report 11) estimates that the economic impact of the permanent removal of agricultural land is a loss of about \$1.54 million, which is equivalent to 0.16 per cent of the annual value of agricultural production in the regional study area. As a result of the amendments to the proposal, the economic impact is now estimated to be a loss of about \$1.71 million, which is equivalent to 0.17 per cent of the annual value of agricultural production in the regional study area. These calculations considered both direct and indirect impacts on agricultural production, including impeded access (severance), interrupted management and labour and other costs. It is noted that there is some uncertainty around the estimates, particularly for those around impeded access, interrupted management and labour and other costs; however, this uncertainty is accounted for in the adoption of a conservatively high value of agricultural production (\$739 per hectare). As such, the value is considered to be a conservative overestimate of the impacts.

While the analysis was undertaken at the regional scale, the annual value of impacts on agricultural production (operation) for the Narramine LGA (for the amended proposal) is estimated at \$356,186 (compared to an estimate of \$308,155 for the proposal as described in the EIS).

Property severance impacts

Issue

Council requests that the number of landholders affected by property severance in the LGA be shown.

Response

As noted in section 4.2.2, the EIS included a breakdown of the indicative temporary and permanent land requirements. This information has been updated based on the proposed amendments to the proposal. The updated land requirements tables present the information for each LGA and are provided in Appendix D of the combined Preferred Infrastructure/Amendment Report. Further assessment of potential property impacts, including

⁵ Statistical Area Level 4 are defined by the ABS as areas which represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

Quantification of the number of properties with the potential to be affected by severance has not been provided at the LGA level due to the complexities in property ownership and operations. The acquisition process commenced in April 2021. In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements would include, where relevant and practicable, measures to manage severance impacts, where practicable, including appropriate access solutions and amalgamation opportunities.

Issue

Council has been advised by DPIE (now DPE) that the potential creation of sterile land and the future impacts of zoning and dwelling permissibility will need to be managed by each council under its own local environmental plan. This process represents a significant volume of work for an issue caused by the proponent. Council considers this situation to be an unfair burden on staff resources.

Response

Section B12.4.3 of the EIS considers potential impacts on future use, subdivision and development potential. ARTC would continue to engage with Narromine Shire Council in accordance with the third-party agreement in relation to costs to Council.

The costs associated with updating Council's LEP are outside the scope of the assessment for the purposes of the EIS.

Impacts on biophysical strategic agricultural land

Issue

The impacts on biophysical strategic agricultural land are described in the EIS using regional mapping undertaken by the government. It is not clear if there was any site-specific validation of biophysical strategic agricultural land across the Inland Rail alignment or whether changes in overland flow were considered.

Council recommends that the EIS provide some ground-truthing of biophysical strategic agricultural land and assesses the indirect impacts on agricultural land (including biophysical strategic agricultural land) including overland flow and flooding impacts.

Response

Technical Report 11—Agriculture and land use assessment considers biophysical strategic agricultural land mapped at the regional scale, as developed by the NSW Government. It is agreed that there may be areas where the regional-level mapping does not fully reflect the presence of biophysical strategic agricultural land at a more local level. While the mapping provides an indication of the location of strategic agricultural land, Technical Report 11 notes that variability in natural resource conditions, climatic influences and managerial expertise can also influence economic returns. A land use conflict risk assessment was undertaken to inform the agriculture and land use assessment in accordance with the *Land use conflict risk assessment guide* (DPI, 2011) (see Appendix A of Technical Report 11). The potential impact on agricultural land, including disturbance of mapped biophysical strategic agricultural land, was identified as having a high risk rating.

As the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 does not apply to the proposal, a biophysical strategic agricultural land site verification process is not proposed.

The potential social and economic impacts of flooding (including on agricultural land and production) are summarised in section B3.4.1 of the EIS and considered in further detail in Technical Report 3—Flooding and hydrology assessment. The assessment concludes that the overall changes to flood behaviour across rural lands within the study area would be minor and are unlikely to significantly affect overall agricultural operations.

Reduction of productive agricultural land

Issue

Council expects that the EIS should have made a real estimate of sterilised agricultural land (including biodiversity stewardship sites used for retirement of the biodiversity credits) and from that assumption provided an estimate of the ongoing annual economic impact due to the loss of productive agricultural land.

Council recommends the EIS provide an assessment of potential sterilisation of agricultural land as a result of biodiversity offsets and that the biodiversity offset strategy should include a commitment to prioritise less or non-productive agricultural land to secure for biodiversity offsets.

Response

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program as a whole and has invited landowners within 100 km of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

In accordance with the *Biodiversity Assessment Method* (DPIE, 2020b), Biodiversity Conservation Regulation 2017 and EPBC Act, ARTC would seek credits and establish offsets for similar vegetation affected by the construction of Inland Rail in NSW and generally within the same areas. This limits where stewardship sites can be located, what vegetation and habitats would be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors. As a result, it is unlikely that productive agricultural land would be suitable in most instances. Where a biodiversity stewardship site is established and the total fund deposited is fulfilled, landholders would receive annual management payments and the site moves into active management.

The economic impact of the permanent removal of agricultural land for the proposal was considered by the EIS. Technical Report 11 notes that there is some uncertainty around the estimates; however, this uncertainty is accounted for in the adoption of a conservatively high value of agricultural production (\$739 per hectare). As such, the value is considered to be a conservative over-estimate of the impacts.

The matter of whether any particular area of land is used for agricultural, biodiversity offset or other lawful purposes will be a matter for the relevant landowner.

4.4.6 Water and flooding impacts

Uncertainty regarding water demand for construction

Issue

It is understood that construction water sourcing on other constructed Inland Rail sections has been highly problematic. This has been exacerbated by drought conditions. To better understand the risk to existing local water access licence holders, Narromine Shire Council requests more transparency be provided regarding the construction water demand estimate of 4,635 mega litres and the parameterisation of the water budget. The consideration of drought conditions must be detailed in the water demand assessment.

Response

Section A6.3.5 of the EIS describes the options assessment process for the supply of construction water for the proposal. Supply options considered were local potable water supply networks, existing watercourses, shallow groundwater aquifers and deep groundwater aquifers. The assessment determined that deep groundwater aquifers would be the most feasible source for construction water. Other options would continue to be explored during detailed design and construction planning, including use of treated water from the Narrabri Gas Project, leasing or purchase of existing licences from nearby landholders, and excess water from other facilities in the area.

Opportunities to reduce the need for water would be further explored during detailed design and construction planning, including use of additives, alternative compaction/construction techniques, improved reuse of excavated material, and use of different materials for haul roads.

Final water requirements would be subject to weather conditions and the methodology selected by the construction contractor(s). Based on preliminary construction planning, it is estimated that a total of about 4,635 mega litres (ML) would be required. This would equate to an estimated average use of about 4.3 ML per day over the length of the proposal site. This estimate would be further refined in consultation with relevant agencies to ensure there are no unexpected impacts.

Stormwater management

Issue

Council expects stormwater management during both construction and operation to consider the conveyance capacity of Council's existing stormwater system assets where discharges are proposed. Upgrades to any Council assets would be the responsibility of the proponent.

Response

ARTC does not propose to hand back infrastructure to Narromine Shire Council that requires additional management (and associated costs) as a result of the proposal. Any Council assets impacted by construction of the proposal would be constructed/modified and funded by ARTC. The proposal (including rail-related road drainage structures and temporary construction drainage infrastructure) would be designed and constructed in accordance with the conditions of approval, and all relevant design standards and requirements. TT2 commits ARTC to seeking input from relevant stakeholders (including local councils) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Any arrangements related to maintenance would be subject to third-party agreements between ARTC and the relevant road manager. ARTC and its construction contractor would be responsible for the design and construction of the proposal.

Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

Potential rainfall data limitations for flood impact assessment

Issue

Council requests clarity regarding the use of input data to the flood model to ensure major flood levels are determined on best available understanding of the past about 100 years of climate data. The flood model uses the Narrabri rainfall dataset, which commences in 1962, and Narromine rainfall dataset, which commences in 1969. The wettest period in the past about 100 years occurred in 1955, which is outside the rainfall data period. It is also unclear how much missing data each dataset includes and what influence this might have on flood modelling results.

Response

Detailed flood modelling was undertaken for the proposal, as described in Technical Report 3—Flooding and hydrology assessment and summarised in section B3 of the EIS. The assessment was undertaken in accordance with the SEARs, and relevant legislation and guidelines, as described in section B3.1.1 of the EIS. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited.

It is recognised that the 1955 flood event was the largest recent flood event in this region. While the rainfall and streamflow gauge records do not include this event, the assessment has been undertaken in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019), which provides an appropriate methodology for the estimation of floods in the absence of site-specific information. The flood models were developed adopting a calibration and validation process that used recorded rainfall, streamflow, flood level data and information on flood behaviour provided by landowners.

Design flood estimates are based on design rainfall events from the Bureau of Meteorology, model parameter values obtained from the calibration process, and procedures recommended in *Australian Rainfall and Runoff*. Flood modelling was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

In addition, as described in section 4 of Technical Report 3 and in the updated flooding and hydrology assessment report, ARTC has consulted with local landowners and other stakeholders to confirm that the flood modelling is representative of observed conditions.

Omission of flood risk assessment in response to La Niña climate conditions

Issue

Council understands that flood risk for the region is known to be significantly elevated during La Niña (drought risk is elevated during El Niño) yet this does not seem to have been considered in the flood risk assessment. The climate change risk assessment should consider the impacts of climate change on the worst-case scenario (i.e. the 1955 flood, which was a La Niña) but the rainfall record used in the climate change risk assessment does not extend back to this period.

Council expects the EIS to assess flood flow associated with the 'modified' annual exceedance probability (AEP) rain event against flood flow generated by 1955 rainfall conditions to determine whether the flood model is correctly parameterised to simulate the one per cent AEP flood event.

Response

As noted above, the rainfall and streamflow gauge records do not include the 1955 flood event; however, the flooding and hydrology assessment was undertaken in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019), which provides an appropriate methodology to estimate floods in the absence of site-specific information (such as the 1955 flood event) both under the existing climate and with potential changes in climate.

The climate change assessment involved modelling the one per cent annual exceedance probability (1% AEP) event with a 22.8 per cent increase in rainfall depth, in accordance with *Australian Rainfall and Runoff*. This is based on the upper range projection for greenhouse gas concentrations for the year 2090.

The period of observed rainfall that forms the basis of the design rainfall intensities developed by the Bureau of Meteorology, and adopted for this assessment, is sufficient to include climatic variability such as La Niña and El Niño.

Unclear usage of sub-daily rainfall to predict flooding

Issue

Council expects the EIS to provide clarity regarding the assessment of sub-daily rainfall storm events in terms of flooding of land adjacent to the rail alignment.

Response

The design flood estimates are based on depths, durations and temporal distributions of design rainfall available from the Bureau of Meteorology. Assessment of the design rainfall is in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019) and includes consideration of sub-daily rainfall events and high intensity short duration events. The catchment hydrology models were used to simulate design storm events, with durations ranging from 15 minutes up to 168 hours, to ensure the critical duration was represented. The adopted peak discharge and critical storm duration for each flood event for each point of interest along the proposal site are presented in Appendix C of Technical Report 3, and in the updated flooding and hydrology assessment report.

The flood model calibration report (Appendix J of the updated flooding and hydrology assessment report) provides further information about the hydrology and hydraulic models.

Potential flooding issue

Issue

The flood modelling suggests that the project impacts flow coming out of the Sappa Bulga ranges and this results in extensive flood impacts where the new rail line joins the old Narromine-Parkes rail line, including the area near Narwonah Siding. It is unclear how significant these impacts are in terms of inundation level, inundation duration and flood water velocity. Council expects a more detailed flood assessment to be undertaken during detailed design to ensure flooding at this location is well understood and managed accordingly.

Response

Mapping of potential impacts following construction of the proposal is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results for a range of flood events from the 20% AEP event to the probable maximum flood (PMF) event are provided. Potential impacts to buildings, roads, existing rail lines and land use are assessed.

The modelling and mapping have considered flows from the Sappa Bulga ranges; in particular, those associated with Yellow Creek and the resulting impacts near Narwonah Siding.

In accordance with mitigation measure FH1, the design would be further refined during the detailed design process to minimise impacts as far as practicable. Mitigation measure FH1 provides that further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths, and storage effects of construction and operational infrastructure.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Future impact on Narromine town levee alignment

Issue

The EIS mentions the future development of a town levee bank to protect Narromine. The levee bank alignment and feasibility options are at an advanced stage and consideration of the potential impacts of Inland Rail need to be assessed. Council expects further detailed discussion and consideration regarding this important issue for Narromine residents and that discussion be held with representatives from DPIE (now DPE).

Response

ARTC is aware of the future plans for a levee bank to protect Narromine. The options presented in the *Narromine Town Levee Concept Design* (SMEC, 2019) involve the formation of a levee downstream from the Macquarie River breakout towards Backwater Cowal. Further discussion about how the proposal relates to the proposed Narromine levee is provided in the updated flooding and hydrology assessment report.

In accordance with mitigation measure FH1, the design would continue to be refined during the detailed design process, where practicable, to not worsen existing flooding characteristics. This would include further consideration of the proposed Narromine town levee, and be undertaken in consultation with Narromine Shire Council, local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

4.4.7 Cultural heritage impacts

Limitation to Aboriginal cultural heritage assessment report information for review

Issue

Only a redacted version of Technical Report 6 Aboriginal Cultural Heritage Assessment Report (ACHAR) was available for public viewing. While the ACHAR appears to have been prepared in accordance with all statutory requirements for Aboriginal heritage assessment, Aboriginal community consultation, and meeting the SEARs, the lack of Appendices A, C and E has limited the review of the assessment as it pertains to Narromine LGA.

Council requests assurance that the proposal site within Narromine LGA has been effectively surveyed for Aboriginal heritage and that all appropriate Narromine LGA Aboriginal groups were consulted with.

Response

The following appendices were removed from the public display version as they contain culturally sensitive, site-specific details and mapping:

- ▶ Appendix A—Consultation log
- ▶ Appendix C—AHIMS site cards
- ▶ Appendix E—Mapping of survey results showing sites within 400 m of the proposal site.

A full unredacted version of the ACHAR was provided to DPIE (now DPE) and Heritage NSW for their review (see sections 5.4 and 5.9 for issues raised by DPIE and Heritage NSW, respectively).

The Aboriginal cultural heritage assessment report (Technical Report 6) was prepared in accordance with the SEARs and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water (DECCW, 2010b) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH), 2011). Consultation with Aboriginal stakeholders was undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010c). The consultation undertaken included identifying key Aboriginal stakeholders, native title claimant groups and Local Aboriginal Land Councils (LALCs) in the study area, including the Narromine LGA. Aboriginal groups in the Narromine LGA, including the Narromine LALC, were offered an opportunity to register an interest in the proposal, as detailed in chapter 4 of the ACHAR.

As described in section B6.1.2 of the EIS, archaeological surveys were completed in a large number of areas identified as culturally sensitive; however, eight areas of moderate-to-high sensitivity were not able to be surveyed in the proposal site due to property access restrictions. Where property access for sites of interest was not granted by the landowner, physical survey was not able to be completed. For these areas, a predictive model was developed. The methodology was discussed and agreed with the (then) DPIE Environment, Energy and Science (now Heritage NSW) and the registered Aboriginal parties. For the purposes of the assessment, it was conservatively assumed that these sites contained moderate-to-high archaeological potential and that the areas that fall within the proposal site would be impacted by the proposal.

As required by mitigation measures AH3, prior to construction, a targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey.

4.4.8 Biodiversity impacts

Assigning offsets in a preferential order

Issue

Council understands that the proponent has sought interest from landholders within 100 kilometres of the alignment to potentially utilise their land holdings for offset creation via the Biodiversity Stewardship site process. Council supports this approach and expects offsets to be assigned in a preferential order, firstly within 20 kilometres, then 50 kilometres and thereafter 100 kilometres. This approach will increase local biodiversity and increase the likelihood of financial returns to those affected adjacent communities.

Response

ARTC recognises Narromine Shire Council's support for this approach. Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

ARTC is managing the offset strategy for the Inland Rail program as a whole and has invited landowners within 100 km of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

The requirement to obtain like-for-like offsets refers to the specific number and types of ecosystem and species credits required to offset the impacts of the proposal in accordance with the Biodiversity Conservation Regulation 2017. Biodiversity offsets are not required to exactly replicate the area of impact, which includes the wider vegetation patch in which the impacts occur; however, the offsets are required to take into account the

landscape attributes of ecosystem and species credits within each subregion, including connectivity, patch size and areas of retained native vegetation, before and after the effects of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced, in accordance with the legislated offset rules set out in the Biodiversity Conservation Regulation 2017.

The matter of whether any particular area of land is used for agricultural, biodiversity offset or other lawful purposes will be a matter for the relevant landowner.

Further information on the Inland Rail biodiversity offset credit process is provided at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

Negative impact of Biodiversity Offsets Scheme on regional development

Issue

The Inland Rail project will likely have a significant impact on the biodiversity offset scheme capacity in the region, which already has a shortage of available credits.

Council requests the State Government undertake a holistic assessment of the Inland Rail Project and its impact on local communities from the point of view of market distortion of biodiversity offsets, and on the ability of future proponents to secure suitable offset credits for development of projects much needed by the regional economy.

Response

As noted above, ARTC has invited landowners within 100 km of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits. This is expected to increase the availability of biodiversity credits.

Biodiversity offsets would be identified in accordance with the requirements of the NSW Biodiversity Offsets Scheme, *Biodiversity Assessment Method* (DPIE, 2020b), the Biodiversity Conservation Regulation 2017 and the EPBC Act. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), ARTC may seek to apply the variation rules for retirement of some ecosystem and species credits, particularly those credits associated with native grasslands that may be difficult to source. Where no credits are available, ARTC would pay into the Biodiversity Conservation Fund. The Biodiversity Conservation Trust must secure offsets in line with the legislated offset rules set out in the Biodiversity Conservation Regulation.

Biosecurity

Issue

The proposed rail alignment passes through significant agricultural areas that are key to the local, State and federal economies. On that basis, the proposal will need to be able to clearly demonstrate it has the measures to prevent pest and disease outbreaks along the alignment, and has the required plans and actions instigated to deal with any such incidents.

Council expects early involvement in the preparation of the Biosecurity Management Plan, and that it will be completed to Council's satisfaction. Public consultation, particularly with adjacent landholders, will be critical to ensure the likelihood of detrimental incidents are minimised.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction, as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

A framework CEMP was provided as Appendix F of the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures. During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur in accordance with ARTC's standard operating procedures to meet its obligations under the *Biosecurity Act 2015*.

4.5 Warrumbungle Shire Council

4.5.1 Social and economic issues

Issue

Council raised a number of concerns in its submission, about the assessment approach and the proposed mitigation measures and approach, particularly the application of post-approval managements plans, including:

- ▶ Council is dissatisfied with the weakness of the mitigation measures for socio-economic impacts at the LGA level and is concerned that most are deferred to post approvals, such as the workforce accommodation plan, workforce management plan, etc. Council expected tangible mitigations to be presented in the EIS and does not think they should be deferred to post approvals.
- ▶ Council is dissatisfied with the deferment of critical issues, such as those relating to workforce accommodation, workforce management, traffic and transport, etc, to the post-approval phase. Council is reliant on the detail in those plans to achieve social and economic benefits from the proposal. Council is also concerned that their involvement in these plans, during their development and ultimate implementation, may not be sufficiently robust to ensure appropriate social and economic benefits are realised.
- ▶ Council requests an early and meaningful role in the preparation of all post-approval plans that affect the LGA.
- ▶ Council considers that the requirement outlined in *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) that allows for Council involvement near the end of the plan development process, with only 10 business days to comment, is unsatisfactory. Council requests that DPIE (now DPE) provide significant resources to Council to review post-approval work plans within this timeframe or remove the 10-day turnaround on review of plans, and alter it to reflect the scale of the project and obvious impact on Council resources.

Response

The EIS (including Technical Report 13—Social assessment) has been prepared in accordance with the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. The assessment presented in the EIS is based on a reference design and indicative construction methodology, and is considered sufficient to inform the risks and issues potentially associated with the proposal. The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures provided in section 11 of this report and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

ARTC's approach to environmental management is described in section D5.2 of the EIS, including its commitment to manage its environmental responsibilities and environmental performance. DPE has clear guidelines on the process for the development of post-approval matters such as the CEMP and associated management plans. Much of the detail cannot be finalised until a construction contractor is appointed, as they will be responsible for the day-to-day activities onsite. Further detail on the post-approval process in NSW can be found at: planningportal.nsw.gov.au/major-projects/assessment/post-approval. The proposed post-approval plans would be prepared in accordance with the mitigation measures, conditions of approval, discipline-specific guidelines, consultation with key stakeholders and the guidance presented in the technical reports that support the EIS.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts, as far as practicable, and enhancing the benefits Inland Rail will deliver at a local, regional and national scale. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail. As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction. It would be developed in consultation with local councils.

The post-approval management plans would be prepared, and consultation undertaken, in accordance with the mitigation measures and conditions of approval. ARTC acknowledges the issues raised by Warrumbungle Shire Council and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Warrumbungle Shire Council on aspects of the proposal that are of relevance and interest to Council in accordance with the communication management plan for the proposal (required by mitigation measure SE1). Mitigation measure SE11 has been amended to confirm that the workforce management plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers. Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with Council.

There are no minimum timeframes for stakeholder comments on post-approval documents identified in either *Defining engagement terms: Post approval guidance for Infrastructure Projects* (DPIE, 2020c) or *Environmental Management Plan Guideline: Guideline for Infrastructure Projects* (DPIE, 2020d). Council would be consulted as soon as practicable on the development of the proposed plans.

Economic impact: differentiating between local, regional, State and national benefits and costs

Issue

Council is fully aware and appreciative of the expected economic benefits to the nation, NSW and to the region of both the construction and operation of the proposal and the overall Inland Rail project; however, Council is disappointed that the EIS and social assessment (Technical Report 13) fail to specifically assess the likely economic benefits or costs of the proposal to the Warrumbungle LGA.

Council does not believe that the scale selected for the regional analysis, compared to the six individually affected LGAs, is appropriate. Council contends that no meaningful interpretation of local (LGA-based) economic or social costs and benefits of either the construction or operation phase of the proposal can be obtained from the data presented for such a large region. Council requests that further detail be provided in the EIS and social assessment to assess the realistic economic, social and environmental costs and benefits that can be expected for the Warrumbungle LGA.

Response

The potential socio-economic benefits were assessed by the economic assessment (Technical Report 14) undertaken by KPMG for the EIS.

There is limited relevant data about the industrial structure and linkages at the sub-national level. There is only local employment data available below the Australian Bureau of Statistics (ABS) SA4⁶ level. The industrial linkages are required to model small regions, as exports and imports dominate at this level; however, no data about these flows or industries/businesses exist at the LGA level.

The computable general equilibrium model used by KPMG for the economic assessment has been developed over a number of years, to create a robust database of the economy's industrial structure at the SA4 level. These models are ideally suited to analysing the impact of an expenditure shock on the regional, State and national economy. This is because they explicitly capture the size and industrial structures of the economy at these levels; and the inter-relationships between industries, households and governments within and between regions, including those overseas. The model used by KPMG explicitly captures supply-chain linkages as well as other flow-on effects and feedback responses by all economic agents (e.g. impacts on jobs and incomes flowing through to household consumption, which, in turn, stimulates further rounds of economic activity).

⁶ Statistical Area Level 4 are defined by the ABS as areas that represent large labour markets or aggregations of small labour markets based on geographical, social and economic similarities. They are aggregated SA3s, and are the largest sub-State regions in the Main Structure of the ASGS.

For the purposes of the regional impact analysis, the regional economic catchment area is defined as the ABS labour market region boundaries of the Australian Statistical Geography Standard, which captures the integrated regional economy within which the proposal is located. The proposal is located within the New England and North West labour market region, which is defined as the regional economic catchment area for the EIS.

As such, economic benefits cannot be quantified by the model for the LGAs; however, the potential local impacts on, and benefits for, the workforce, business and industry are considered by the economic assessment and quantified, where possible.

ARTC would continue to work with local councils to identify and realise local economic and social benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narromine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the project.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in December 2020, which can be accessed at inlandrail.artc.com.au/moving-ahead-with-inland-rail/.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. In addition, mitigation measure SE7 commits to developing a proposal-specific industry participation plan to manage the potential employment and regional economic benefits of the proposal.

Local benefits, as opposed to benefits, to Dubbo

Issue

Council is concerned that the social assessment and EIS do not clearly articulate the extent to which Dubbo (as the major regional centre closest to the study area) will influence positive economic activity at the expense of the Warrumbungle LGA. It is important to Warrumbungle Shire Council that, as one of the small LGAs bearing the most impacts of the proposal, its community should receive as much of the economic benefit of the proposal as possible, particularly in the use of local suppliers and services, and in capturing spending by the construction workforce.

Council expects the social assessment and EIS to detail the extent to which local procurement measures will favour possibly larger businesses in Dubbo over smaller businesses in the Warrumbungle LGA and what the subsequent result on realistic economic benefit to the Warrumbungle LGA as opposed to the study area would be.

Council expects the social assessment and EIS to detail to what extent potential construction workers are likely to remain in or move to Dubbo and commute daily to work rather than stay in the workers accommodation facility, or rent or buy in Warrumbungle. Council also asks for clarification as to whether the construction companies would be required to limit employees or contractors' journey to work time or distance, as this would be beneficial for road safety and would then encourage workers to live in local housing or the workers accommodation facility in Warrumbungle rather than in Dubbo.

Response

ARTC is committed to working with local communities to meet their needs and deliver customer benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

As noted above, the Parkes to Narromine project demonstrates the types of benefits that Inland Rail is bringing to local economies. Further information can be found in ARTC's *Moving ahead with Inland Rail* report.

Detailed procurement planning would be the responsibility of the construction contractor(s). Procurement processes are bound by strict guidelines and laws, and are not a standard part of the environmental approval process; however, in accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013* (Cth), the Australian Industry Participation National Framework and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* and the *Inland Rail Indigenous Participation Plan*, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

An estimated breakdown of the workforce by expected place of residence or travel patterns would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

As discussed in section B14.3.2 of the EIS, there is the potential for a small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally; however, this is expected to be a small increase in demand, which is considered unlikely to increase the price of rental properties in these locations. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Workforce health and safety procedures would be established by the construction contractor(s) in accordance with the *Work Health and Safety Act 2011* (NSW). These would consider matters such as safe driving and fatigue.

Planning for economic development

Issue

Council noted that the local economic development strategy was not referenced in the social assessment or EIS. Council requests that the details within the plans form the basis for the local details regarding local product and service procurement that will be included in the workforce management plan. Council expects early involvement in this plan, and that it will be completed to Council's satisfaction.

Response

Mitigation measure SE11 provides for the development and implementation of a workforce management plan. In accordance with mitigation measure SE12, the plan would include measures to manage local employment and procurement requirements, including but not limited to:

- ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets
- ▶ How the contractor would work with regional stakeholders to upskill local residents.

The workforce management plan would be informed by an analysis of the availability of construction workforce in the region and other local data and information, including the latest economic development plans. This is confirmed by new mitigation measure SE5, which provides that, prior to construction, ARTC would confirm workforce requirements.

Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Employment, workforce and training

Issue

Council notes that the social assessment and EIS make reference to ARTC's commitment to creating opportunities for the development of local workers, and request that it be confirmed that this will mean local to the LGA and not to the project study area in its entirety. Council expects to have early involvement in the post-approval workforce management plan to ensure that these local targets are properly informed, reasonable and achievable for both its community and for the efficient implementation of the proposal.

Response

ARTC is committing to a number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.

In accordance with mitigation measure SE7, and as noted above, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the *Australian Jobs Act 2013*, the Australian Industry Participation National Framework, and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c). The industry participation plan would include an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

In accordance with mitigation measure SE11, the workforce management plan would include measures to manage local employment and procurement requirements, including recruitment, skills and training measures. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Issue

Council is disappointed that the social assessment section on local and Indigenous businesses does not contain information relevant to each LGA. The information presented is generic to the region and does not indicate the diversity of skills, experiences, contacts and issues relevant to each LGA. Council expects that much better detail relating to each LGA will be provided in the workforce management plan.

Response

The social assessment provides a high-level consideration of the types of local and Indigenous businesses in the region, to indicate capacity and capability. ARTC would continue to work with Warrumbungle Shire Council, and other local and regional service providers, to maximise potential local and regional benefits.

ARTC is committing to prepare and implement an industry participation plan and a proposal-specific workforce management plan. The industry participation plan (mitigation measure SE7) would identify appropriate measures to achieve the objectives of the *Australian Jobs Act 2013* (Cth) and the *Inland Rail Indigenous Participation Plan* (ARTC, 2020c), including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation. In accordance with mitigation measure SE12, and as noted above, the workforce management plan would include measures to manage local employment and procurement requirements.

The workforce management plan would provide relevant detailed data at the LGA level. The workforce management plan, when it is prepared, will include a full, up-to-date list of relevant training providers. As noted above, mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

Failure of risk assessment to capture severity of socio-economic impacts

Issue

Council expressed dissatisfaction with the social risk ratings given to a number of potential social and economic impacts of the proposal, as shown in the social assessment, which has meant they were not afforded for detailed scrutiny in the remainder of the social assessment. Council requests that the ratings be reviewed and justified in the EIS.

Response

The social assessment was undertaken in accordance with the SEARs and guidelines for social impact assessment in NSW. The methodology applied to undertake the assessment is described in section 3.2.4 of Technical Report 13—Social assessment. Data triangulation methods were applied to identify and assess the potential impacts. Social impact assessment and the assignment of significance ratings is a matter of professional judgement.

The social assessment acknowledges that the degree to which community members would experience social impacts would vary based on factors such as perceptions and individual values, sensitivity to change, distance from the proposal and the duration that people experience the impacts for. Appropriate mitigation measures have been identified to address potential impacts related to the areas of concern noted in the submission.

The risk ratings presented in the social assessment have been reviewed and confirmed. Justifications for each rating, as relevant to Council's comments, are provided below.

Housing and accommodation

Due to the nature of rail construction work, the skillsets required to construct the proposal would change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities. As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small scale.

In accordance with SE11, the workforce management plan would include measures to manage potential impacts of the non-resident construction workforce on local and regional communities, including strategies to promote wellbeing of the workforce.

Access and connectivity

The potential social impacts resulting from access and connectivity changes have been assessed based on the findings of the *ARTC Inland Rail Narromine to Narrabri Traffic and Transport Assessment* (JacobsGHD, 2020b), which identifies a range of management measures to address potential traffic changes during construction, including delays and disruptions, road safety risks and potential delays for school bus routes. These include consultation with relevant local stakeholders (e.g. local bus operators) to notify them of potential delays and changes to routes. The likelihood and consequence ratings identified in the social assessment are, therefore, considered appropriate.

Impacts on social infrastructure due to non-resident construction workforce

Temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). It is expected that each temporary accommodation facility would also have a dedicated health space that could be used for onsite occupational health and safety requirements. The layout, staffing and amenities provided would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and in consultation with relevant key stakeholders, including local councils.

As a result of these factors, along with the frequent turnover and short-term, temporary nature of construction roles noted above, which would reduce the likelihood that many construction workers would relocate to the region with their families, the social assessment found that there could be demand on local social infrastructure services. If this did occur, however, it would be small scale and minimal.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

In accordance with mitigation measure SE11, the workforce management plan would include measures for managing increased demand on health and emergency services resulting from the non-resident construction workforce. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4).

Impacts on emergency service response times

The potential for impacts on emergency response times is noted in section B14.3.5 of the EIS. As noted in the EIS, access for emergency vehicles would be maintained along the public road network throughout the construction period, with suitable alternative access arrangements provided, where required. Emergency services would be consulted regularly during construction to minimise impacts of the proposal on their operations. As a result of these factors, it is considered that there may be changes to emergency response times and the consequence would be minor.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

Presentation and use of socio-economic data and assumptions—estimate of non-resident workforce and families accompanying workers

Issue

The social assessment gives an estimate of the peak number of construction workforce expected for the proposal but does not provide an estimate of the likely numbers of resident 'local' and non-resident workforce expected in each LGA; or, estimate the proportion of the workforce who may bring family members with them to reside in the LGA.

Council expects that, despite the social assessment stating that it was not possible to estimate the proportion of local and non-resident workforce, a sensitivity analysis should be developed and applied to a revised assessment of impact on the demand on housing and accommodation, employment of the local workforce and likely effects on local services, e.g. health and schools.

Response

The social assessment provides a high-level consideration of potential workforce numbers. An estimated breakdown of the workforce would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

As noted above, due to the nature of rail construction work, the skillsets required will change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

ARTC would continue to work with Warrumbungle Shire Council and other local and regional service providers to maximise potential local and regional benefits, and minimise the potential impacts. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan (mitigation measure SE11).

Use of population projections

Issue

Council is concerned that the assumptions about the future population size of Warrumbungle LGA are based on a projected decline in population to 2041. Council perceives a positive population growth as a result of COVID-19 related population movements. Council considers that the focus should, instead, be on the nearly doubling of Baradine's population by the arrival of 500 workers.

Council expects that the post-approval workforce management plan will include a model of Baradine's and the wider Warrumbungle LGA's demographics, prepared to Council's satisfaction, and be based on relevant construction industry workforce anticipated demographics.

Council believes that if a more realistic view of population size was adopted, a more realistic assessment of impacts on housing and local services as a result of the proposal can be developed.

Response

ARTC acknowledges that there are a range of scenarios that can influence fluctuations in population at the local level, often in quite short time periods. Since the EIS was finalised, it is evident that many regional towns across NSW have experienced in-migration as a result of the COVID-19 pandemic, which has affected housing availability.

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA to inform the baseline for each LGA in the regional study area, based on ABS and DPE data (population projections). This is standard practice for social impact assessments. These population projects are consistently used as the basis for long-term planning by all levels of government across NSW.

Section 7.5.4 of Technical Report 13 acknowledges the potential temporary increase in population as a result of the influx of construction workers. Notwithstanding the basis of the population projections used in the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities. This assumption is made on the basis that temporary workforce accommodation would be made available to non-resident workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites.

As noted above, ARTC would continue to work with Warrumbungle Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

In accordance with new mitigation measure SE5, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Provision of baseline social and economic data

Issue

Council does not accept that the social assessment has not included particular baseline social and economic data for each LGA. Council has provided a list of data it believes should be provided in both the social assessment and future relevant management plans.

Response

Section 6 of Technical Report 13 includes relevant published population trends and projections for each LGA, to inform the baseline for each LGA in the regional study area, based on ABS and DPIE (now DPE) data. This is standard practice for social impact assessments and is consistent with the assessment guidelines. In accordance with the assessment guidelines, this primary data was supported by secondary data obtained via consultation with local stakeholders and other research, as described in section 6 of Technical Report 13.

The data listed in Appendix A to Council's submission is noted and would be considered during development of the workforce management plan, as appropriate. As noted above, and in accordance with new mitigation measure SE5, ARTC would undertake an analysis of the availability of construction workforce in the region and would develop updated population data and forecasts to inform the workforce management plan. In accordance with amended mitigation measure SE11, the workforce management plan would be developed in consultation with local councils and service providers.

Cost burden on councils

Issue

Council perceives a large gap between the costs of the proposal that the LGA will be required to sustain and the economic benefits and tangible savings that will accrue. This presents an unfair situation and Council expects its community to be compensated fairly and transparently for this burden.

Response

Potential impacts associated with the proposal have been considered and assessed by the EIS. Appropriate mitigation measures would be implemented during detailed design, construction and operation of the proposal to mitigate the potential impacts on the local community.

ARTC recognises its responsibility to deliver and operate Inland Rail while minimising social impacts as far as practicable and enhancing the benefits Inland Rail will deliver at a local, regional and national level. ARTC commits to implementing the mitigation measures and undertaking the proposal in accordance with the conditions of approval, to address the identified impacts. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail.

ARTC acknowledges Warrumbungle Shire Council's concerns regarding the perceived gap between costs and benefits at the LGA level, and is committed to ongoing consultation with Council to resolve issues and opportunities surrounding the delivery of the proposal.

Social assessment consultation

Issue

Council identified several key groups that it believes were not consulted as part of the social assessment and requests that they be specifically consulted. These included:

- ▶ Western NSW Local Health District
- ▶ Primary healthcare and allied health providers in Baradine and Coonabarabran
- ▶ Allied health providers in Baradine and Coonabarabran
- ▶ Central West Regional Emergency Management Committee
- ▶ Coonabarabran Local Aboriginal Land Council
- ▶ Baradine Local Aboriginal Land Council
- ▶ Baradine Central School
- ▶ NSW Police
- ▶ NSW Ambulance
- ▶ Rural Fire Service
- ▶ Fire and Rescue NSW
- ▶ State Emergency Service
- ▶ 2357 Partnership
- ▶ Baradine Show Society
- ▶ Organisations that currently use the Baradine Showground
- ▶ Baradine Showground licence users groups
- ▶ Baradine Bowling Club
- ▶ Baradine Hotel
- ▶ Warrumbungle Aerodrome Advisory Committee.

4.5.1.1 Response

As described in section 5 of Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. This was considered appropriate given the level of information available during preparation of the social assessment. The committee included representatives of NSW Police, NSW Ambulance, Rural Fire Service, Fire and Rescue NSW, and the NSW State Emergency Service. The committee confirmed that ARTC should consult with local emergency management committees as the design progresses, to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision. This consultation would occur as detailed design progresses.

Council was consulted in relation to the capacity of local services (including health services) to meet demand from the construction workforce.

The workforce management plan (mitigation measure SE11) would include appropriate processes and measures to manage potential increased demand on health and emergency service providers due to a non-resident construction workforce. It is expected this would assist regional and local emergency and health services to understand potential demands on their services, and that they are supported and assisted to plan their resources appropriately. Mitigation measure SE11 has been amended to confirm that the plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.

A description of the consultation undertaken for the social assessment, including the groups and organisations consulted, is provided in section 5 of Technical Report 13. Broader consultation for the proposal is described in chapter A4 of the EIS and section 3.4 of this report. This consultation included consulting the nominated groups with the potential to be affected by, or likely to have an interest in, the proposal. The Local Aboriginal Land Councils have also been consulted as part of the Aboriginal heritage assessment, as described in section B6.1.2 of the EIS and Technical Report 6—Aboriginal cultural heritage assessment.

ARTC would continue to liaise with relevant stakeholders and organisations in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

Impact on housing and accommodation

Issue

Council is supportive of the proposed Baradine workforce accommodation facility; however, does not believe that the EIS has adequately addressed the capacity for communities along or near the rail corridor to house construction workers. Council is concerned that the social assessment makes an erroneous assumption that there will be negligible impact on the local housing market.

Council challenges the assumptions made in the EIS relating to housing choices and availability and considers that a proportion of incoming construction workers will choose to move to their own house in each of the LGAs, even if temporarily. It is also likely that professionals and managers will choose not to live in a workforce accommodation facility for extended periods of time. The extent to which this is likely to occur specifically in Baradine and Coonabarabran, in both rentals and purchases, must be assessed.

The outcomes of this data, in conjunction with the workforce scenarios that have been requested, should form the basis for a realistic analysis of the impact of the temporary workforce on the current and future housing market, and particular community groups in Baradine and Coonabarabran. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

Response

As noted above, it is expected that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities. As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market; however, as noted in section B14.3.2 of the EIS, there is potential for a small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally. The result of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small-scale.

Section 7.5.4 Technical Report 13 acknowledges the potential temporary increase in population as a result of the influx of construction workers; however, as noted above, notwithstanding the basis of the population projections used in the social assessment, it has been assumed that the majority of workers would choose to stay in the temporary workforce accommodation facilities.

As noted above, ARTC would continue to work with Warrumbungle Shire Council, and other local and regional service providers, to minimise the potential impacts of construction on local communities and services.

ARTC would undertake an analysis of the availability of construction workforce in the region and would develop updated population data and forecasts. This would inform the workforce management plan (required by mitigation measures SE11 to SE13), which would also include measures to manage potential impacts of the non-resident construction workforce on local and regional communities. In accordance with mitigation measure SE13, the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Local tourism accommodation

Issue

The social assessment does not include detail on the likely number of smaller establishments and beds available in the LGA. This data must be shown to make further assumptions about housing availability and impact on local accommodation.

The social assessment should more rigorously assess the demand for, and impact on, tourism accommodation in each individual LGA, rather than make a generic regional statement. The social assessment must include a realistic analysis of the impact of the incoming workforce on local tourism accommodation in Baradine and Coonabarabran. The workforce management plan should have a specific housing and accommodation section that specifically focuses on these issues.

Response

As described in section 7.4 of Technical Report 13, the capacity of the temporary workforce accommodation has been planned to be sufficient for the peak workforce. The accommodation would be available to non-resident construction workers at low or no cost. In ARTC's experience, where temporary workforce accommodation is available or provided, use of tourist accommodation by construction workers tends to be limited.

Based on these factors, and those noted in the above responses, it is considered likely that the majority of construction workers would choose to stay in the temporary workforce accommodation facilities rather than tourist accommodation facilities. While there may be minor demand for tourist accommodation facilities during the design and construction phases, as a result of staff visiting the region for short periods of time, the social assessment found there is likely to be sufficient capacity in the existing regional tourism accommodation such that its use by visitors and tourists is unlikely to be affected. To monitor this potential impact, mitigation measure SE13 provides that the workforce management plan would include a monitoring mechanism for use of local tourist accommodation and rental housing by workers.

Infrastructure contributions (legacy items)

Issue

To offset the impact of the Baradine workforce accommodation facility on the local community, and the expected impacts on local housing and the economy, Council expects that a certain level of local infrastructure be provided by the proponent to Council. Council expects that these items are included and negotiated with Council in a specific Infrastructure Contribution Management Plan or other relevant post-approval plans.

Response

The provision of local infrastructure is not part of the scope of the proposal for which approval is being sought. The Inland Rail program provides for rail infrastructure and does not include other infrastructure works, except where necessary or appropriate to deliver the rail infrastructure.

ARTC would, however, continue to consult and engage with Council regarding the potential for Council to retain proposal infrastructure for community benefit. This could include the potential for retaining bores post construction, or leaving some of the infrastructure associated with the temporary workforce accommodation. Any approvals, operating costs and maintenance associated with retaining and using this infrastructure would be the responsibility of the party that takes ownership.

Workforce accommodation facility

Issue

Council is supportive of the general location of the Baradine workforce accommodation facility; however, it finds that there is insufficient detail provided in the EIS. Council seeks a commitment from ARTC to clarify a number of issues, and to confirm the inclusion of certain facilities in the proposed facility before project approval is given. Items identified include details of design materials, operating arrangements and utility connections. Without this detail the likely impacts on the community cannot be properly assessed.

Response

A description of the proposed temporary workforce accommodation is provided in sections A8.9.4 and C2.1 of the EIS. The potential impacts associated with the facilities is provided in chapter C2 of the EIS. In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and the following overarching principles:

- ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities
- ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity.

The plan would define:

- ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy)
- ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context

- ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping, as required
- ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment
- ▶ Location, design, service and amenity requirements for mobile accommodation facilities
- ▶ Provision of adequate parking onsite
- ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy.

The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

In addition, in accordance with mitigation measure LV-CI2, the temporary workforce accommodation plan would include requirements for the design and visual screening of facilities to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.

Temporary workforce accommodation plan

Issue

Council expects the temporary workforce accommodation plan to be completed to Council's satisfaction, and requests early involvement in the development of the plan. It expects that the items/issues listed in Appendix C to Council's submission be included in the temporary workforce accommodation plan.

Response

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of the temporary accommodation facilities. The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

Infrastructure to remain onsite after workforce accommodation facility closure

Issue

To offset the impact of the workforce accommodation facility on the local community, Council expects ARTC to commit to leave infrastructure (sewerage, water supply, electricity, drainage, telecoms, access and parking) to benefit the local community, and to detail these in the temporary workforce accommodation plan.

Response

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction would be investigated and negotiated in consultation with relevant stakeholders (including local councils). Any legislative approvals associated with retention and ongoing use of these facilities would be the responsibility of the party who takes ownership.

As described above, in accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of the temporary accommodation facilities. The plan would be developed in consultation with key stakeholders, including the relevant local council. It would also describe how sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy.

The industry approach for temporary workforce accommodation facilities is that the buildings and associated infrastructure would be hired for the duration of construction. Following construction, the buildings and associated infrastructure would be removed; however, ARTC would discuss with Council the potential to leave access roads and in-ground utility infrastructure connections leading to the facility.

Impacts on social infrastructure

Issue

Council requests that the demand and likely impact on its own local recreational facilities be better assessed, and requests consideration of measures to support the integration of the incoming workers into the local community.

Response

The social assessment (Technical Report 13) identified that the construction workforce has the potential to generate some demand for local recreation facilities. ARTC recognises its responsibility to deliver and operate Inland Rail, while minimising social impacts as far as practicable, and would continue to work with Warrumbungle Shire Council and other local and regional service providers to minimise the potential impacts of construction on local communities and services.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including wellbeing services and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan. Mitigation measures SE11 to SE13 provide for the development and implementation of the workforce management plan to manage potential impacts of the non-resident construction workforce on local and regional communities. The plan would be prepared in consultation with local councils and service providers using up-to-date data on local facilities.

It is noted that temporary workforce accommodation facilities typically include some recreational amenities for construction workers to access between shifts (such as gymnasiums). The amenities provided at the facilities would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2.

Issue

Council would like to know if there is a proposal to use Baradine Aerodrome in any way, particularly for the use of flying any workforce into the area. If the Aerodrome is proposed to be used in any way, then a robust assessment must be made of the impact on this site, its access and neighbouring properties.

Response

Use of Baradine Aerodrome does not form part of the proposal for which approval is sought.

Issue

Council is concerned that the following have not been addressed and requests that an assessment is made of:

- ▶ Impacts to local tourism operators and Baradine Discovery Centre
- ▶ Siding Spring Observatory—all night works to be approved by Council and the Dark Sky Committee.

Response

The importance of tourism to the LGAs in the study area is recognised by Technical Report 13—Social assessment. The social assessment considers potential impacts on business, industry and employment, including tourism, and the results are described in Technical Report 13 and summarised in chapter B14 of the EIS. The Pilliga Forest Discovery Centre, located at 50 Wellington Street in Baradine, would not be directly impacted by the proposal.

Lighting impacts during construction were considered in section B13.3 of the EIS and detailed in Technical Report 12—Landscape and visual impact assessment. In accordance with mitigation measure LV4, temporary and permanent lighting would be designed and sited in accordance with the *AS/NZS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting and Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (Department of Planning and Environment, 2016), and in consultation with the Siding Spring Observatory Dark Sky Planning Committee. Generally, lighting would be designed to minimise offsite light spill.

As described in section 4.4 of the EIS, and in accordance with mitigation measure SE1, ARTC would continue to engage with stakeholders in accordance with the Inland Rail Communications and Engagement Strategy, and the proposal-specific communication management plan.

Impacts on emergency services

Issue

Council is concerned that the New England Regional Emergency Management Committee was not consulted in the social assessment. Council considers that local emergency services will experience real impact as a result of the construction activities and the influx of construction workers. Potential impacts need to be properly understood and resourced. Council expects much more rigour in the assessment of impacts on local emergency services and

expects to see accurate descriptions of all services, and their current level of service or response times, realistic assessment of impacts, and specific mitigation measures.

Council expects that the workforce management plan will contain a specific emergency services section, developed with the early involvement of Council and to the satisfaction of the local emergency service providers.

The proposal's emergency plan should also take full account of the possible impacts of COVID on the relatively small and connected town of Baradine, and Council expects early input into the development of this plan.

Response

As described in Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. Consultation with the committee confirmed that while they did not anticipate much increased demand on local emergency services during construction, there may be a need to increase resources at some smaller towns, and there may be affects due to changes to road conditions, such as changes to response times, as noted in section B14.3.5 of the EIS.

The committee confirmed that ARTC should consult with the respective local emergency management committees as the design progressed to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2, the communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings and changes to access routes and road conditions. Mitigation measure TT7 provides that consultation with relevant stakeholders (including emergency services) would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. In accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

In accordance with mitigation measure SE11, the workforce management plan would include measures for managing increased demand on health and emergency services resulting from the non-resident construction workforce. The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services, and given support and assistance to plan their resources appropriately. The plan would include appropriate processes and measures to manage potential increased demand on emergency service providers due to a non-resident construction workforce.

Workforce planning would be based on the most up-to-date data available at the time, which is expected to take into account the effects of COVID-19.

It is expected that engagement would occur with relevant regional and local emergency health services in the pre-construction phase, when timing and impacts are able to be confirmed. This would assist service providers to understand potential demands on their services and plan their resources appropriately. The emergency management committees (including the New England Regional Emergency Management Committee) would continue to be consulted as part of consultation for the proposal.

Impacts on health services

Issue

Council is concerned that the Western NSW Local Health District was not consulted as part of the social assessment. Council expects a more detailed assessment of the impacts of the incoming workforce on local health providers and expects to see accurate descriptions of current health services, realistic assessment of impacts on health services of the incoming workforce and specific mitigations. Specific strategies should be developed in consultation with local GP services to ensure local servicing is maintained and provision for workers is serviced.

Council expects that the workforce management plan will contain a specific health impact section, developed with the early involvement of Council, Western NSW Local Health District and local primary and allied health providers.

Response

As described in section 7.7.3 of Technical Report 13, local stakeholders consulted during the assessment reported varying levels of capacity in local and regional health services to meet any increase in demand that may occur during construction. The report recognises that there are existing challenges for local health service delivery, and that larger centres in the region are better resourced with health and wellbeing services and facilities. The EIS and Technical Report 13 acknowledge that, if inadequately managed, there is potential for the construction workforce to exacerbate these challenges in local towns.

ARTC commits to proactively managing the potential for impacts on local services during construction. A new mitigation measure (SE5) has been developed to confirm this commitment. New mitigation measure SE5 provides that, prior to construction, ARTC would confirm the requirements for, and availability of, support services (including health and wellbeing services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Mitigation measures SE11 and SE13 commit to developing and implementing the workforce management plan, in consultation with councils and service providers, to manage potential impacts of the non-resident construction workforce on local and regional communities, including:

- ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services
- ▶ Processes for managing potential increased demands due to non-resident workforce.

The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services, and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4). Western NSW Local Health District would be consulted as part of the development of the plan.

Cumulative social and economic impacts

Issue

Council requests that a more detailed assessment of the cumulative impact of regional infrastructure projects be presented, considering the timelines for each project and the estimates of expected construction workforce numbers and peaks, so that the full scale of the cumulative workforces and their impacts on local community and housing can be understood.

Response

Figure D1.2 in section D1.3 of the EIS shows the potential timing of the projects considered at the time the cumulative assessment was prepared. This demonstrates that, by the time the proposal is expected to start construction, several projects are likely to be complete, with some overlapping with the timing of the proposal.

Section 9.2.2 of Technical Report 13 acknowledges the potential for cumulative labour demands due to the concurrent construction of some projects in the region. The consequences of this would depend on the workforce profile and state of the labour market at any point in time.

As noted above, the social assessment provides a high-level consideration of potential workforce numbers. An estimated breakdown of the workforce would need to be defined by the construction contractor(s) in response to detailed construction planning. The proportion of local and non-resident construction workforce would depend on the availability of required skillset in the region at the time of construction.

Information regarding affected properties

Issue

Council requests that, wherever properties within the LGA are assessed in any of the EIS sections, a summary table(s) be presented showing the relevant properties and effects within each LGA.

Response

The EIS included tables in Appendix F that provided a breakdown of the indicative preliminary land requirements for construction (temporary land requirements) and operation (permanent land requirements for the proposal's operational features). This information has been updated based on the proposed amendments to the proposal, as summarised in section 3.1 of this report and described in more detail in the combined Preferred Infrastructure/Amendment Report. The updated land requirements tables are provided in the combined Preferred Infrastructure/Amendment Report. The updated tables present the information for each LGA.

Social impacts of traffic and transport/road safety

Issue

Insufficient data and evidence have been presented for each potential level crossing to justify the risk rating and dismissal of mitigation measures. Council challenges the conclusions made in the EIS and considers that the total of the disruptions and possible accidents at all the crossings is considered major for the LGA.

Council requests that a full analysis be presented for each crossing before a final decision is made about its status as an active or passive level crossing. The social costs of possible accidents and fatalities needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards. Options considered included grade separations, level crossings, consolidation, relocation, diversion and realignment. From both a rail safety and policy perspective, the overarching objective across the Inland Rail program is to, as far as reasonably practicable, minimise the number of level crossings across the alignment.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with the *Office of the National Rail Safety Regulator guidelines* (2019) has been used to develop proposed level crossing treatments.

This approach involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified (e.g. upgrade passive protection to active, active to grade separation).

ALCAM is the nationally accepted risk tool for level crossings, which looks at a range of factors including road and rail volumes and speeds, heavy vehicle use, sighting distances and road/rail geometry. The road inputs are validated by the relevant road manager through the stakeholder consultation process. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, the focus of which was on ensuring level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

The ALCAM assessment has been carried out separate to the EIS. The requirement to minimise safety risks is an ongoing process that must be adhered to in future design changes.

In accordance with amended mitigation measure TT4, public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. In addition, in accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

ARTC will also provide a presentation to Council on the level crossing treatment assessments undertaken for those public level crossings located within the Warrumbungle LGA.

Issue

Council requests that it be given early opportunity to contribute to the post-approval traffic, transport and access management plan and that it be developed to the satisfaction of Council and local bus operators.

Response

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including Council) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Issue

Council disputes the EIS statements about the likely level crossing waiting times and traffic queue lengths, especially as it is only presented for one crossing location. Council requests data regarding the cumulative costs of the additional waiting time for traffic (especially for agricultural machinery and local commercial traffic) over the life of the proposal in each LGA. This needs to be factored into the local economic costs.

Response

An assessment of potential delays to road traffic at level crossing was undertaken as detailed in section 6.2.1 of Technical Report 10—Traffic and Transport Assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 metres (m) during the proposal's opening year (2026), while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 m.

As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report).

The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. As a result, further assessment and reporting is not considered necessary. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

It is estimated that Inland Rail would be trafficked by an average of 10 trains per day (both directions) in 2027, increasing to about 14 trains per day in 2040. As a result, it is unlikely that vehicles could make more than one passage over different sections of the rail line and be impacted by having to wait for the same or successive trains.

Issue

No assessment has been made of the logistics and difficulties of moving agricultural machinery across level crossings. Council requests that further information be given in the EIS. This also needs to be factored into the local economic costs.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types that need to be catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Mitigation measure TT4 provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings, Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

ARTC acknowledges the issue of access for agricultural machinery, which would continue to be addressed as the design and construction planning progresses. The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

Issue

No analysis has been made of the additional travel time for journeys required from road closures. Consideration of the additional travel time required over the life of the proposal as a result of closures in the LGA needs to be factored into the local economic costs.

Response

Section A7.4.1 of the EIS noted that four Council-managed made roads (Dappo Road, Brooks Road, Nalders Access Road and Munns Road), one vehicle access track (Bardens Road) and 14 forestry tracks/roads within State forests would be closed as part of the proposal.

Potential impacts due to these road closures are described in section 6.2.2 of Technical Report 10—Traffic and Transport Assessment. As noted in the assessment, while road closures may result in additional travel distance for road users, at the majority of locations where road closures are proposed, the impacts would be minor (about 1 to 2 km).

As described in the combined Preferred Infrastructure/Amendment Report (and summarised in section 3.4 of this report), however, a number of amendments to the exhibited proposal are proposed to further minimise the potential environmental impacts of the proposal and to respond to matters raised in submissions received. As a result of these amendments, Brooks Road, Nalders Access Road and Bardens Road would no longer be closed, further minimising impacts to travel distance as a result of the proposal.

Given the number and scale of road closures proposed, and the low traffic volumes on those roads, any traffic-related delays would be minor and localised in nature.

4.5.2 Traffic and transport issues

Unclear approval process for increased train length

Issue

Council requests that the EIS detail the approval process required to permit the commencement of 3,600-metre long trains on Inland Rail and specify thresholds of incremental changes not needing consent or approval.

Response

The operation of 3,600-metre (m) long trains would be subject to a separate assessment and approval process under the EP&A Act. While components of the proposal would include infrastructure to accommodate possible future augmentation, including a possible future requirement for 3600-m long trains, this is not part of the proposal for which approval is being sought.

In relation to this and any other changes following approval, as described in section D5.4.2 of the EIS, proposed changes would be reviewed for consistency with the results of the assessments described in the EIS, relevant mitigation measures, performance outcomes and the conditions of approval. If any proposed changes are not consistent with the approvals and assessment results, appropriate modifications to the project approval would be sought in accordance with the requirements of the EP&A Act and the terms of the approval for the proposal.

Operational degradation of existing rail lines—poor connectivity with Inland Rail

Issue

Council requests the EIS demonstrate why the proposal has provided minimal connectivity to Inland Rail, particularly in high-production agricultural areas where there is an opportunity for road freight movements to be shifted to rail. The provision of operationally efficient connections to existing regional lines will be of benefit to both existing and new markets domestically and for export.

Council requests the proposal demonstrate satisfactorily to TfNSW and the community why provision for potential future connections by corridor identification and associated land acquisition has not been included within the EIS.

The EIS must demonstrate, through an appropriate cost-benefit analysis and economic model, the operational cost of additional train kilometres travelled due to inefficient connections and potential impact to accessing existing and new markets.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value-for-money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

The social and economic assessments were undertaken in accordance with the SEARs and with reference to the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2013a). The approach adopted for the assessment reflects the recognised industry approach to undertaking an EIS. Due to the nature of the incremental assessment approach adopted for the EIS, a project-specific cost-benefit analysis has not been undertaken as the results would not capture the full benefits that are expected to be delivered upon completion of Inland Rail.

Incomplete assessment of impacts to Council/public roads during construction and operation

Issue

The EIS fails to provide a complete assessment of the impact to Council roads during construction and operation. There should be no lasting impacts to Council-controlled and other classified roads as a result of the proposal. Council requests that a rail possession strategy, and traffic, transport and access management plan be prepared in consultation with both Transport for NSW and Council to minimise transfer of rail freight impacts to the road network and construction traffic impacts on the road network.

Council requests that any infrastructure approval contain the nominated conditions of approval.

Response

Impacts to Warrumbungle Shire Council roads

ARTC acknowledges Warrumbungle Shire Council's concerns in relation to interactions with Council's infrastructure (including those parts of the road network managed by Council) and recognises that Warrumbungle Shire Council is a key stakeholder for the proposal. ARTC would continue to liaise with Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The reference design and indicative construction planning undertaken to date for the proposal incorporates a number of features and proposed measures to minimise construction traffic movements and the associated impacts on the local road network, in particular gravel roads. This includes the proposal to construct high-quality haul roads within the construction footprint (see section A8.11.2 of the EIS). This would enable materials and personnel to be transported within the proposal site, as far as practicable, minimising traffic on local roads. In addition, it is proposed to use existing rail lines to deliver bulk construction materials, where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase as described in section A8.2 of the EIS. The early delivery of these materials would assist with minimising the potential for traffic and access impacts during other construction phases.

ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of the proposal on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT10 provides that a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes prior to and following completion of construction. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during and/or following completion of construction to address any damage caused by construction.

Conditions of approval

The conditions of approval for the proposal are a matter for DPE with input from relevant agencies. ARTC will consider in detail any proposed conditions of approval at an appropriate time in the assessment process. ARTC considers that the intent of the recommendations has been addressed in the mitigation measures noted above.

Failure of risk assessment due to likely material haulage route variation

Issue

Council does not consider the haulage route assessment in the EIS to be representative of a practical material supply strategy for construction of the proposal. Council is concerned that the lack of acknowledgement regarding the likelihood of altered haulage routes of quarry materials eventuating has resulted in an ineffective risk assessment process for transport and road impacts.

Council requests an early and meaningful role in the preparation of the traffic, transport and access management plan and the designation of bulk material haulage routes.

Response

Construction would require a range of materials as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design, and the materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would be developed in consultation with relevant stakeholders, including Warrumbungle Shire Council.

Failure to address importance of impacts caused by level crossings

Issue

Council considers that the key assumptions adopted for the review of proposed level crossings and the assessment methodology is inconsistent with the remainder of the EIS and appear severely flawed.

Council requests that the proponent prepare and make public a Level Crossing Report for the proposal, which must be developed in consultation with Transport for NSW and Council, and that the design of any level crossing on a public road be submitted to Transport for NSW and Council for review and endorsement.

Council also requests the Level Crossing Report include the cumulative impacts of multiple level crossings across the wider program of works and operations related to Inland Rail on transit times throughout the region, which may impact the route selection for road traffic, particularly Higher Mass Limits vehicles during peak harvest and intercity freight.

Response

An assessment of potential delays to road traffic at level crossing was undertaken as detailed in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 metres (m) during the proposal's opening year (2026), while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 m.

As described in section 3.3. of Technical Report 10, however, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing; however, the prevailing drought conditions at the time the surveys were undertaken affected the harvest period, and it is noted that the traffic surveys may not be representative of the numbers and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of a higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic

volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train speed); however, the maximum queue length in the opening year and 2040 would be greater than that described in the EIS, at 66 m and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. As a result, the assessment is considered appropriate. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

Notwithstanding the above, Council's request for a level crossing report is acknowledged. In accordance with new mitigation measure, TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

Issue

Council believes that the criteria and methodology used to determine the need for a grade separation, as stated in the traffic and transport assessment, unfairly disadvantages regional areas. Council requests, at a minimum, that all State and regional roads be grade separated. Within the Warrumbungle Shire, these roads are Baradine–Coonamble Road and Baradine–Gwabegar Road.

Response

As described in section A6.2 of the EIS, option development has been an integral part of the overall design process for the proposal. An iterative process of option selection, design development and evaluation has been undertaken to define the proposal. The approach to considering treatment options for the interaction of public roads and the rail corridor is described in section 5.1.1 of Technical Report 10—Traffic and transport assessment, and summarised in section A6.3.3 of the EIS. This approach has taken into account relevant NSW and Australian level crossing policies, which emphasise the need to minimise the number of level crossings, as far as reasonably practicable.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations with regard to existing level crossings, and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that, where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It is noted that the approach ensures level crossing safety risks are eliminated or minimised, so far as is reasonably practicable, in accordance with Commonwealth rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC.

Based on the methodology, which was audited by ONRSR, higher order treatments, such as grade separation, are not considered justified on the majority of State and regional roads as the cost to grade separate would be grossly disproportionate to the benefits. Instead, level crossings with active controls consisting of flashing lights and bells, and boom barriers, would be installed at all classified road locations. This is the highest form of level crossing control under *AS1742.7-2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016).

ARTC also notes, however, that as part of the financial year 20/21 Federal Budget, the Australian Government has allocated \$150 million for additional grade separations in NSW, with the NSW government contributing an additional \$37.5 m. This will be additional to grade separations, which are already included in the Inland Rail scope. The specific projects to be implemented with this funding are being identified by the Australian Government in conjunction with the NSW Government.

ARTC will continue to work collaboratively with Transport for NSW to progress road–rail interface solutions during detailed design. In accordance with amended mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these

stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Private level crossings

Issue

Council requests that all rural landholders who suffer from property severance be afforded the option of a private level crossing for ease of machinery and livestock movement.

Response

ARTC acknowledges the issues raised regarding access within individual properties. The EIS does not set out detailed and specific provisions in terms of rail corridor crossings (including stock crossings) within private properties, as these need to be determined in consultation with individual affected property owners/operators. Issues and potential impacts in relation to property severance, operations and access to, and within, properties are considered in chapter B12, with further detail provided in Technical Report 11—Agriculture and land use assessment and Technical Report 13—Social assessment. Additional information regarding potential locations and design considerations for private level crossings is provided in section 6.4 of the combined Preferred Infrastructure / Amendment Report.

The land use and property mitigation measures have been updated to provide more clarity about ARTC's commitments in relation to property access and crossings.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design (including on matters related to the design of the proposal such as any changes to drainage infrastructure) to identify feasible and reasonable opportunities to minimise impacts on their operations/properties, where practicable.

Amended mitigation measure LP7 provides that, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required for individual properties, ARTC would consult with relevant property owners/occupants and consult with them in advance regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

4.5.3 Supply of bulk material

Unrealistic Dubbo LGA focused supply of ballast and capping material

Issue

Council does not agree with the viability of the ballast and capping sources strategy and does not believe that the EIS has adequately demonstrated that local sources cannot be found of either existing or future construction material resources. Council requests preparation of a detailed sourcing study and associated traffic impact assessment in conjunction with Transport for NSW and existing/potential operators of extractive sites prior to project approval. The study must include volume, quality and economic analysis to justify additional extractive sites and traffic management plans that cater for various potential options for material sourcing and delivery.

Response

Section A6.3.4 of the EIS describes the options assessment process for the supply of construction materials for the proposal. The supply options considered were material excavated from cuttings along the proposal site, existing commercial quarries and establishment of borrow pits. The options assessment included a review of currently approved commercial quarries in the region. The assessment determined that while proposal cuttings and borrow pits could supply general and structural fill material, it would be more feasible to obtain capping and ballast from commercial quarries.

Construction of the proposal would require a range of materials as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The final materials supply strategy would be confirmed by the construction contractor(s) during construction planning and subject to any approvals required—this may include commercial quarries or borrow pits not identified in the EIS.

Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

Mitigation measure TT6 provides that a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction (including access for materials). The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Uncertainty regarding necessity of additional borrow pits

Issue

Council requests assurance that no borrow pits would be established in the Warrumbungle LGA without an assessment of the impact of borrow pit resource depletion (inclusive of existing and new borrow pits) on Council's civil works maintenance program. If the assessment determined a negative impact on the ability of Council to service its infrastructure commitment, support measure must be identified to assist Council establish new borrow pits for long-term future use.

Response

No borrow pits are currently proposed within the Warrumbungle LGA. As described above, the final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS. The establishment of any borrow pits for the proposal would be undertaken in accordance with the EIS, subject to any refinements during detailed design and construction planning, the mitigation measures and conditions of approval.

4.5.4 Council road and drainage assets

Independent road dilapidation reporting

Issue

Council expects that each local Council road impacted by construction haulage is to be subject to a road dilapidation report prior to use for construction. The report is to be prepared by an independent and suitably experienced and qualified road designer/auditor approved by Council.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented as needed during, and/or following completion of, construction, to address any damage caused by construction.

Asset transfer register

Issue

Council expects a detailed asset transfer register be compiled in an agreed format with clear definition of the asset owner following completion of the civil works required for the proposal.

Response

ARTC acknowledges Warrumbungle Shire Council's request. Any detailed information requirements would be confirmed as part of the third-party agreements, which will be undertaken in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

The commitment to develop detailed requirements regarding the ongoing management and maintenance of Council-owned assets has been confirmed by the amendment to mitigation measure TT2. In accordance with measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

Defect inspections

Issue

Council expects all assets transferred to Council will be defect inspected in consultation with, and in the attendance of, a Council representative. Any defects identified are to be logged and the rectification method agreed.

Council expects that, where the integrity of assets transferred to Council is compromised during a period of up to 10 years post construction and five years post operations commencing, that resultant rectification be the responsibility of the proponent. This expectation of rectification extends to the downstream end of erosion protection treatments of all new culverts and all existing culverts subject to increased inundation.

Response

ARTC acknowledges Council's request. Any requirements for defect inspections and rectification would be confirmed as part of the third-party agreements, which would be developed in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

Requirements for construction of Council assets

Issue

Council expects all road pavement (structural and geometric) and drainage designs to be certified by a Road Designer (per Transport for NSW requirements). Other road infrastructure assets, such as traffic control devices, barriers and signs, are to be certified by a suitably qualified engineer, approved by a Road Safety Auditor, and provided to Council for concurrence prior to construction.

Council expects certified, detailed as-built markups and electronic as-built models to be provided to Council in an agreed format.

Council expects independent construction certification/verification to be undertaken on all Council-owned assets, or Council be advised and be provided the opportunity to attend critical hold points and inspections per the ARTC and Transport for NSW specifications.

Council expects all materials used in the works on Council assets (apart from general fill and pavements) are to be new products unless otherwise agreed with Council.

Response

As noted above, ARTC acknowledges Warrumbungle Council's concerns in relation to interactions with Council infrastructure (including those parts of the road network managed by Council), and recognises that Council is a key stakeholder for the proposal. ARTC would continue to liaise with Warrumbungle Shire Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all relevant road and drainage design standards and requirements, including:

- ▶ *Guide to Road Design Part 3: Geometric Design* (Austroads, 2021b)
- ▶ *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)
- ▶ *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2020)
- ▶ *Guide to Road Design Part 5: Drainage—General and Hydrology Considerations* (Austroads, 2021c)
- ▶ *Guide to Road Design Part 5A: Drainage—Road Surface, Networks, Basins and Subsurface* (Austroads, 2021d)
- ▶ *Guide to Road Design Part 5B: Drainage—Open Channels, Culverts and Floodways* (Austroads, 2018).

Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including Council and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include changes to roads managed by Warrumbungle Shire Council.

In relation to Council's request to approve design plans, it is noted that the proposal is declared State significant infrastructure in accordance with Division 5.2 of the EP&A Act. As a result, the Minister for Planning is the approval authority for the proposal.

Issue

Council expects that sites will be left restored, culverts and assets cleaned, and rubbish removed after completion of works at practical completion.

Response

In accordance with mitigation measures SC9, BD12 and LP19, disturbed sites would be rehabilitated in accordance with the rehabilitation strategy. The rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of the operational footprint (such as compounds, access roads and other areas disturbed during construction within the proposal site that would not be the location of final operational infrastructure).

The strategy would:

- ▶ Identify rehabilitation objectives and criteria
- ▶ Establish roles and responsibilities
- ▶ Define rehabilitation actions and requirements
- ▶ Define monitoring and maintenance requirements.

ARTC confirms that the construction contractor(s) would be contractually obligated to ensure that rehabilitation is undertaken, and that work sites and operational infrastructure are left in a suitable condition at the conclusion of construction.

Requirements for third-party agreements

Issue

The third-party agreement between ARTC and Warrumbungle Shire Council details all assets, interfaces, responsibilities and funding arrangements for maintenance of shared assets.

Notwithstanding the third-party agreement, a defects liability period should be imposed for up to 10 years post construction and five years post operations commencing.

Council expects the road interface with ARTC to commence at the location where road realignments have been imposed on the local road network.

Response

ARTC acknowledges Council's request. Defect liability periods would be confirmed as part of the third-party agreements.

In reference to road interface boundaries, Warrumbungle Shire Council would be required to remain as road manager and maintainer of Council roads. The road interface point cannot be moved to make ARTC the owner and maintainer of new sections of Council roads.

4.5.5 Waste management

Construction waste stream quantities unclear at LGA scale

Issue

The EIS does not provide a breakdown of estimated waste quantities into specific LGAs. The Coonabarabran Waste Facility does not hold an environmental protection licence (EPL) and can only accept residential waste.

Council expects the EIS to provide a breakdown of estimated waste quantities for disposal and also expects a funding contribution from the proponent to facilitate any necessary upgrade of the Coonabarabran Waste Facility cell; or should an EPL be required to accept large annual quantities of construction waste.

Response

There are a number of waste facilities in the region that could be used to dispose of construction waste (depending on their existing approval and licencing arrangements), including those listed in section D2.2.4 of the EIS. The facilities that would be used, and the breakdown of estimated waste quantities that would be disposed of at those facilities, would be confirmed by the construction contractor based on the suitability of waste and available capacity at relevant facilities. This would include consideration of existing approvals and licensed limits.

In accordance with mitigation measure WM1, detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes, and the reuse of material onsite.

Sewage treatment plant capacity to accommodate Baradine workforce accommodation facility

Issue

Council expects ARTC to provide a funding contribution to assist upgrade of the Baradine sewage treatment plant to accommodate the increase to wastewater resulting from workers accommodation facility operation.

Response

In accordance with mitigation measure SE-CI2, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation in consultation with relevant key stakeholders (including local councils). The plan would include how services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines and minimise potential impacts on local infrastructure networks and the environment.

During detailed design, ARTC would continue to work with Council to investigate options to establish a sewer main connection from the temporary workforce accommodation facilities to Council's sewage treatment plant. This would include consideration of anticipated sewage volumes and the capacity of the Baradine Sewage Treatment Plant.

Weed and bushfire control

Issue

Council is concerned the rail corridor, if not managed appropriately, provides a significant vegetation corridor that could cause issues for the ability to control and extinguish bushfires.

Council expects early involvement in the preparation of the biosecurity management plan, and that it will be completed to Council's satisfaction. Public consultation, particularly with adjacent landholders, will be critical to ensure the likelihood of detrimental incidents are minimised.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan (which would be implemented during construction as part of the CEMP) would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

A framework CEMP was provided as Appendix F of the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

In relation to management of fire risk, in accordance with mitigation measure LP21, the flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks from construction activities. Possible measures include that works involving potential ignition sources would be subject to a risk assessment or ban on total fire ban days. During operation, any maintenance activities that represent a bushfire risk would be undertaken in accordance with ARTC's standard operating procedures.

5. Response to public authority submissions—other agencies

5.1 Crown lands

Issue

Any affected Crown land will require a licence to be in place prior to works commencing and may possibly require acquisition.

Response

Licensing requirements for Crown land would be confirmed in consultation with the Crown lands division of the NSW Department of Planning and Environment (DPE). Any required acquisition of Crown land would be undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

5.2 NSW Environment Protection Authority

5.2.1 Assessment and approvals

Environment protection licence

Issue

The proposal will require an environment protection licence (EPL) under clause 33 of Schedule 1 of the *Protection of the Environment Operations Act 1997* (NSW) for railway activities—railway infrastructure construction.

Response

This requirement is noted.

Section A3.4.2 acknowledges that the proposal is a scheduled activity and an EPL would be required to construct and operate the proposal. In relation to operation, ARTC currently holds an EPL to carry out railway systems activities on other parts of the NSW rail network (EPL no. 3142). It may be appropriate to either amend this licence to include the operation of the proposal or to obtain a new licence. This would be determined in consultation with the NSW EPA.

5.2.2 Noise and vibration

Construction noise and vibration sensitive receivers

Issue

The EPA requested clarification as to why the study area for the assessment was limited to 3 kilometres (km) either side of the proposal. The EPA noted that, due to low background noise conditions, high noise-generating activities have the potential to impact receivers at large distances. Further clarification on impacts at distances greater than 3 km was requested.

The EPA requested clarification as to why the receivers used in the construction noise assessment differed to those used in the operational noise assessment.

Response

Study area

The study area (3 km either side of the edge of the construction footprint) for the construction noise and vibration assessment (Technical Report 8—Noise and vibration assessment—construction and other operations) was established by initially undertaking simple modelling of anticipated construction equipment noise levels with reference to the adopted 35 dB(A) criteria. These distance checks were undertaken in accordance with ISO 9613-2 and were modelled using CadnaA. Absorptive ground, representative of a typical rural environment, was assumed for these calculations. Based on this, the selected study area was considered appropriate for the loudest construction activities (e.g. the maximum impact extent for earthworks was conservatively calculated to be 2.3 km).

Subsequent additional checks have been undertaken for impact piling activities proposed for some bridges using a more conservative ground absorption value ($G = 0.5$) than was adopted for the EIS assessment. This results in a revised maximum impact distance of up to 3.4 km from the location of piling works where works are undertaken outside the recommended working hours in the *Interim Construction Noise Guideline* (Department of Environment and Climate Change (DECC), 2009); however, the original 3-km study area remains valid for the majority of piling works for the following reasons:

- ▶ The buffer was based on the construction footprint, which includes additional distance from the track (and, hence, piling locations), particularly in the vicinity of road works, construction compounds and utility works. This effectively increases the width of the study area to around 4.5 km in some places.
- ▶ Taking into consideration terrain and other shielding objects results in a much smaller extent of propagation in the final models used for the impact assessment.

To ensure there are no gaps between the 3-km wide study area used by the EIS and the full extent of potential impacts from piling, the study area has been extended to 3.4 km from piling works for the updated construction noise and vibration assessment (prepared as described in section 3.2 of this report). The construction noise models have been updated and the results are provided in the updated Noise and vibration assessment—construction and other operations report.

Sensitive receivers

Following public exhibition of the EIS, a review of the receivers was undertaken. This confirmed that the sensitive receiver numbering used for the construction noise and vibration assessment (Technical Report 8) and operational assessment (Technical Report 9) are consistent.

There are differences in the sensitive receiver datasets for the following reasons:

- ▶ The construction noise and vibration assessment considers all receivers within the study area located near the construction footprint, which includes facilities located at varying distances from the track centreline (e.g. compounds, temporary workforce accommodation and borrow pits); however, the operational assessment only considers those closer to the track centreline.
- ▶ Construction noise criteria are lower than the operational noise criteria, requiring a larger study area for the construction noise assessment.
- ▶ The construction assessment considers all buildings (e.g. residential dwellings, sheds and silos), while the operational noise assessment focuses on certain buildings, mainly residential dwellings.

These differences do not affect the adequacy of the construction and operational noise assessments.

It is noted that there was an error in receiver labelling on the maps provided in Appendix F of Technical Report 8. This error has been addressed in the updated noise and vibration assessment—construction and other operations report.

Proposed construction working hours

Issue

Construction works are proposed outside the standard hours defined in the *Interim Construction Noise Guideline* (DECC, 2009). The EPA noted that work outside the standard hours should only be undertaken with appropriate justification, in accordance with the *Interim Construction Noise Guideline*, where works would not impact receivers above the noise management levels; or where there is a community agreement in place.

Limited information was provided in relation to the details of community consultation undertaken regarding the proposed extended hours. The assessment did not provide details of the mitigation measures that would be applied to receivers that do and don't have agreements in place.

The EPA requested that further information and justification be provided for work outside the standard hours.

Response

As described in section A8.8.2 of the EIS, a small increase in working hours above the *Interim Construction Noise Guideline* recommended standard hours is proposed to shorten the length of construction, as far as practicable, and minimise associated disruptions to the community. The following primary proposal construction hours are proposed:

- ▶ Monday to Friday: 6am to 6pm
- ▶ Saturday: 6am to 6pm

- ▶ Sundays: 6am to 6pm
- ▶ Public holidays: no work.

No work would be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except in the following circumstances:

- ▶ Where potentially affected receivers agree that the work can be undertaken
- ▶ Where construction noise levels do not exceed the rating background level by more than 5 dB(A) at residential receivers
- ▶ No more than the noise management levels specified in the *Interim Construction Noise Guideline* (Table 3) would be experienced at non-residential sensitive receivers.

Discrete construction activities may also be undertaken outside the primary proposal construction hours as follows:

- ▶ Work where there are no sensitive receivers with the potential to be affected by noise and vibration impacts
- ▶ Work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line), which may need to be carried out on a 24-hour basis
- ▶ Other out-of-hours construction activities, including delivery of oversized plant or structures, and emergency work
- ▶ *Other discrete construction activities, such as large concrete pours and girder or deck installations at some bridges would also occur; however, these would be limited to 48 hours at any one location.*

As described in section B8.1.2 of the EIS and section 5.4 of the consultation report (Appendix C of the EIS), ARTC undertook consultation between July 2019 and February 2020, with 118 directly affected landholders, regarding the proposed working hours. About half of the people consulted said they would support the primary proposal construction hours.

The results of the construction noise assessment were not available at the time of the consultation. As a result, input regarding support or objection for the proposed working hours was sought to provide an indication of community sentiment. During the consultation, ARTC explained that extended construction hours could reduce the duration of noise impacts in some circumstances, such as at isolated sensitive receivers close to trackwork with no major structures, as the work front would move quicker. It is estimated, at this stage of the design process, that constructing the proposal during the primary proposal construction hours would reduce the overall construction program by up to six months.

Public exhibition of the EIS also provided the opportunity for the broader community and other stakeholders to provide comments in relation to the primary proposal construction hours. ARTC has not stated or assumed that the verbal feedback sought from landowners constitutes informed consent and would continue to engage with them during the detailed design and construction phase. ARTC would also negotiate community agreements with impacted landowners in accordance with the *Draft Construction Noise Guideline* (NSW EPA, 2020) prior to construction, if appropriate.

As described in section A8.8.2 of the EIS, the primary proposal construction hours are considered to be justified as it is estimated, at this stage of the design process, that constructing the proposal during these hours would reduce the overall construction program by up to six months. This would reduce the length of time sensitive receivers are exposed to construction noise and traffic-related issues.

Other discrete works, which ARTC currently anticipates may be proposed outside recommended standard hours (during the night-time period), are considered to be justified for the following reasons:

- ▶ Large concrete pours for the Macquarie River, Castlereagh River and Narrabri Creek/Namoi River bridges could be completed in one pour and avoid high temperatures during the daytime. This would minimise the risk of structural issues with multiple separate concrete pours.
- ▶ Girder/bridge deck installation would be able to occur at bridges on selected public roads outside peak travel periods to minimise traffic and safety impacts.
- ▶ Utility works (such as connections) could be undertaken outside peak periods to minimise disruption to customers.

As described in the EIS, work outside the *Interim Construction Noise Guideline* (DECC, 2009) recommended standard hours would be undertaken with appropriate noise management controls and management measures, implemented in accordance with the conditions of approval and the proposed mitigation measures.

Mitigation measure CNV5 provides that an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels. The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders (including the NSW EPA) and the community with the potential to be impacted, and incorporated into the construction noise and vibration management plan.

The protocol would be developed to ensure that out-of-hours works are managed effectively during construction, to avoid incidents and reduce potential impacts on the community. The protocol would be prepared in consultation with key stakeholders (including the NSW EPA) and be approved prior to works commencing. It would:

- ▶ Be consistent with the Inland Rail NSW Construction Noise and Vibration Management Framework
- ▶ Be prepared in accordance with the conditions of approval for the proposal
- ▶ Take into account the results of the construction noise assessment
- ▶ Address the requirements of the environment protection licence for the proposal
- ▶ Provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works, which would be prepared in consultation with key stakeholders and the community, and incorporated into the construction noise and vibration management plan
- ▶ Document procedures to control potential impacts
- ▶ Identify responsibilities for implementation and management, including managing complaints.

Potential impacts from specific construction activities would be managed in accordance with location and activity-specific construction noise and vibration impact statements (mitigation measure CNV1) and a construction noise and vibration management plan, prepared and implemented as part of the CEMP in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework (mitigation measure CNV3).

In accordance with mitigation measure CNV4, the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the construction noise and vibration assessment (Technical Report 8). All feasible and reasonable noise and vibration measures would be implemented. Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan, and the construction noise and vibration impact statements. Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.

Construction accommodation assessment—guidelines

Issue

The temporary workforce accommodation facilities were assessed according to *Interim Construction Noise Guideline* (DECC, 2009). They should be assessed in accordance with Fact Sheet C (including modifying factors) of the *Noise Policy for Industry* (NSW EPA, 2017).

Response

Potential noise impacts associated with operation of the temporary workforce accommodation have been reviewed and updated with reference to the *Noise Policy for Industry* criteria, including relevant modifying factor adjustments. The results are provided in the updated noise and vibration assessment—construction and other operations report.

Construction accommodation assessment—sleep disturbance

Issue

The EPA noted that an assessment of maximum noise levels (L_{max}) from the temporary workforce accommodation facilities during night-time operations, such as at shift changeover, has not been undertaken. The EPA advised that sleep disturbance from temporary workforce accommodation facilities should be assessed.

Response

An assessment of maximum noise levels at the temporary workforce accommodation was undertaken, as detailed in section 5.2 of the Noise and Vibration Assessment—construction and other operations (Technical Report 8).

The assessment included consideration of sleep disturbance using the *Noise Policy for Industry* (NSW EPA, 2017) methodology and awakening impacts using the *NSW Road Noise Policy* (DECCW, 2011) methodology.

As described in section A8.8.2 of the EIS, the primary proposal construction hours would consist of a day shift only. As such, there would be no shift change over activities, apart from the departure and return of the workforce in the morning and afternoon. Any night-time noise at the temporary workforce accommodation facilities would be generally limited to minor activities associated with operation of the facilities.

The construction noise assessment has been updated, as described in section 3.2 of this report. This included updating the construction noise models. The results are presented in the updated noise and vibration assessment—construction and other operations report.

Construction noise mitigation

Issue

The EPA requested further information and clarification be provided for the potential noise mitigation measures available to reduce impacts at receivers, including administrative measures such as respite, engineering controls and community engagement.

The operational noise assessment identified that some receivers are eligible for consideration of at-property treatment. The EPA recommended that these treatments be considered for implementation prior to construction to assist with managing construction noise impacts.

Response

A description of the key proposed construction mitigation measures is provided in the response above. In particular, potential impacts from specific construction activities would be managed and monitored in accordance with location and activity-specific construction noise and vibration impact statements (mitigation measure CNV1); and a construction noise and vibration management plan prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW *Construction Noise and Vibration Management Framework* (mitigation measure CNV3).

Mitigation measure CNV4 confirms that the Inland Rail NSW *Construction Noise and Vibration Management Framework* (see Appendix L of the EIS) would be implemented, and the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the noise and vibration assessment. The measure commits ARTC to implementing all feasible and reasonable noise and vibration measures during construction. In accordance with mitigation measure CNV4, any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan and the construction noise and vibration impact statements. Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.

The *Inland Rail NSW Construction Noise and Vibration Management Framework* identifies a range of management measures to be considered, including standard measures (e.g. inductions, daily briefings, plant and equipment operation and complaints handling) and additional measures (e.g. communication processes and respite offers).

As described in section C8.5.1 of the EIS, the construction noise and vibration impact statements would be prepared prior to specific construction activities, based on a more detailed understanding of the construction methods, including the size and type of construction equipment; duration and timing of works; and detailed reviews of local receivers as required. The noise and vibration impact statements would include:

- ▶ A more detailed understanding of surrounding receivers, including particularly sensitive receivers, such as education and childcare, and any vibration-sensitive medical, imaging, and scientific equipment
- ▶ Application of appropriate noise and vibration criteria for each receiver type
- ▶ An assessment of the potential noise and vibration impacts as a result of different construction activities
- ▶ Minimum requirements in relation to standard noise and vibration mitigation measures
- ▶ Noise and vibration auditing and monitoring requirements
- ▶ Additional measures to be implemented when works outside the recommended standard construction hours or exceedances of the noise or vibration management levels are likely to occur.

Noise and vibration during construction would be managed and monitored in accordance with the construction noise and vibration management plan, as required by mitigation measure CNV3. The management plan would be prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.

ARTC would continue to work with all potentially affected stakeholders to minimise potential impacts in accordance with the mitigation measures and conditions of approval. In accordance with mitigation measures ONV1 and ONV2, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts, and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. Where at-property noise treatments are identified as the preferred mitigation option, ARTC would aim for these works to be undertaken as soon as practicable to assist with management of construction noise. This would be limited to those sensitive receivers that are confirmed as qualifying for noise mitigation in the year of opening.

In accordance with mitigation measure ONV5, operational noise and vibration compliance monitoring would be undertaken at representative locations once Inland Rail has commenced operation to compare actual noise performance against that predicted by the operational noise and vibration review. Compliance monitoring requirements would be defined by the operational noise and vibration review. The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.

Operational noise mitigation

Issue

Specific descriptions of proposed treatments for receivers predicted to exceed the screening levels within the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013) should be provided as part of the assessment, rather than be deferred to detailed design. This will enable affected receivers to understand and comment on potential changes to their property in relation to visual amenity of the property or the built form of their dwelling.

Response

As noted above, and in accordance with mitigation measures ONV1 and ONV2, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design.

While the rail alignment may be unlikely to materially change, detailed design and construction planning provides the opportunity to refine the proposed works. As part of this process, further assessment would be undertaken to investigate and confirm the noise mitigation options for individual potentially affected sensitive receivers. The specific noise mitigation for each affected receiver would be determined on a case-by-case basis, considering a range of environmental, engineering and site-specific factors. Landowner/landholder preferences would also be considered.

At this stage of the design process, features such as building construction (e.g. form and function) and the acoustic performance of existing individual at-property elements (e.g. facades and windows) cannot be quantified. It is also important that received railway noise levels are validated. Possible at-property treatments include upgraded acoustic glazing, acoustic window and door seals, acoustic insulation for the roof, fresh air ventilation (acoustic ducting) or air-conditioning, and 'acoustic' fences. These matters would be addressed during detailed design and construction planning.

5.2.3 Water quality

Soil and water management plan

Issue

The EPA recommends that any conditions of approval should require ARTC to prepare a soil and water management plan and water quality monitoring program as part of the CEMP. The EPA noted that any water that is captured onsite will need to be treated to appropriate levels prior to discharge.

Response

In accordance with mitigation measure WR6, a soil and water management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts (including impacts to groundwater) during construction. Requirements in relation to the contents of the soil and water management plan are provided in the outline CEMP in Appendix I of the EIS.

Mitigation measure WQ3 provides for the development and implementation of a surface water monitoring framework as part of the soil and water management plan. The framework would identify:

- ▶ Monitoring locations at discharge points and selected watercourses where works are being undertaken
- ▶ Monitoring parameters
- ▶ Frequency and duration of monitoring.

The monitoring framework would include the relevant water quality objectives, parameters and criteria from Technical Report 5—Surface water quality assessment. It would be developed in consultation with DPE and the NSW EPA.

5.2.4 Air quality

Air quality management plan

Issue

The EPA recommended that any conditions of approval should require ARTC to prepare an air quality management plan as part of the construction environmental management plan (CEMP).

Response

In accordance with mitigation measure AQ1, an air quality management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction.

5.2.5 Contamination

Unexpected finds protocol for contamination

Issue

The EPA noted the risk of contamination associated with the proposal is low. The EPA recommended that an unexpected finds protocol be included as a condition of approval.

Response

An unexpected finds protocol would be included in the contamination and hazardous materials plan, which would be prepared and implemented as part of the CEMP in accordance with mitigation measure SC8.

5.3 DPIE Biodiversity, Conservation and Science Directorate

The Biodiversity, Conservation and Science Directorate (BCS) of DPIE (now DPE) provided recommendations and comments in relation to biodiversity, and flooding and hydrology. Responses to these recommendations/comments are provided in the following sections.

5.3.1 Biodiversity

The BDAR should be certified as Biodiversity Assessment Method compliant within 14 days of the submission date

Issue

The Biodiversity Development Assessment Report (BDAR) for the project, its associated Biodiversity Assessment Method calculator generated credit reports, and the Biodiversity Assessment Method calculator credit case, were certified and finalised in August 2020. The EIS for the project, which contains the BDAR, was submitted to the consent authority on 7 December 2020.

The BDAR should be certified, and the credit calculations in the Biodiversity Assessment Method calculator should be finalised, within 14 days of the report being submitted.

Response

As described in section 3.2 of this report, an updated biodiversity development assessment report (the updated BDAR) has been prepared. The BDAR will be certified in accordance with the *Biodiversity Assessment Method* (DPIE, 2020b) prior to submission to DPE.

Comparison of areas that could not be accessed but require assessment would be beneficial

Issue

The BDAR states that access could not be obtained to the entire study area. Section 3.6.3 of the BDAR should be updated to include a table that states the area that could and could not be accessed in the project footprint, and, where land could not be accessed, the comparison of area of native and non-native vegetation.

Response

Section 3.6.3 of the updated BDAR includes the requested table (Table 3.12).

Separate habitat suitability assessments must be completed for each Interim Biogeographic Regionalisation for Australia subregion intersected by the project

Issue

The BDAR and the Biodiversity Assessment Method calculator provided an assessment based on one Interim Biogeographic Regionalisation for Australia (IBRA) subregion, while the project footprint spans across six IBRA subregions. Separate habitat suitability assessments must be completed for each IBRA subregion. Submission of separate cases in the Biodiversity Assessment Method calculator for each IBRA subregion intersected by the proposal site is required.

The minimum number of plots and transects required by Table 4 of the *Biodiversity Assessment Method* for each vegetation zone in each IBRA subregion assessment must be met, and any additional candidate threatened species generated from the revised habitat suitability assessments must be assessed.

Response

Separate habitat suitability assessments have been completed for each IBRA subregion, as described in section 6 and Appendix I of the updated BDAR. Separate cases have been prepared in the *Biodiversity Assessment Method* (DPIE, 2020b) calculator for:

- ▶ NSW South Western Slopes bioregion and Inland Slopes subregion
- ▶ Darling Riverine Plain bioregion and Bogan Macquarie subregion
- ▶ Brigalow Belt South bioregion and Pilliga subregion
- ▶ Darling Riverine Plain bioregion and Castlereagh-Barwon subregion
- ▶ Brigalow Belt South bioregion and Pilliga Outwash subregion
- ▶ Brigalow Belt South bioregion and Liverpool Plain subregion
- ▶ Brigalow Belt South bioregion and Northern Basalts subregion.

The minimum number of plots and transects, required by Table 4 of the Biodiversity Assessment Method, has been updated for each vegetation zone in each IBRA subregion assessment. Where appropriate plots are not present in the IBRA subregion, plots have been used from nearby locations, or benchmark data has been used. Justification for the use of plots has been included in Appendix L of the updated BDAR and were reviewed and approved by BCS prior to re-entry in the calculator.

Additional assessments have been undertaken for candidate threatened species identified in the IBRA subregions (see section 6 and Appendix I of the updated BDAR).

Additional justification is required for the selection of plant community types (PCTs)

Issue

Appendix B details the profiles for each plant community type (PCT). Minimal justification has been provided on how each PCT was assigned, with limited reference made to identifying features like soil types, landscape position, existing mapping or attributes recorded in the field data sheets. The submitter suggested it would be beneficial if a short-list of candidate PCTs was provided based on the key diagnostic features collected through the field survey, with a final justification describing why the selected PCT was the best fit.

5.3.1.1 Response

Additional information has been provided in Appendix B of the updated BDAR to justify the allocation of each PCT and species lists for all vegetation integrity plots are provided in Appendix E of the updated BDAR.

Vegetation zones may require revision

Issue

The BDAR should be updated to include a section describing how condition states were assigned to the PCTs, particularly for those PCTs comprised of discontinuous patches or distinct structural attributes.

Refined stratification of broad condition states within PCTs may result in an increased minimum number of plots and transects required per vegetation zone area. The minimum number of plots and transects required by the Biodiversity Assessment Method for each vegetation zone in the subject site must be met.

Response

Vegetation zones have been reviewed based on BCS's requested changes to the approach to assigning condition states to PCTs, changes to grassland PCTs in the credit calculator and results of additional survey effort. The results of additional surveys targeting threatened flora species, undertaken in September, October and November 2020, have been incorporated. Vegetation zone mapping has been updated for newly accessed areas. Vegetation zone mapping has also been updated for areas previously mapped as PCT619, PCT250 and parts of PCT49. Derived grassland PCTs and vegetation zones were allocated to a parent woodland or grassland community. The updated vegetation zone mapping included paddock and scattered trees in woodland vegetation zones as discrete polygons, rather than within grassland vegetation zones.

Additional information has been added to section 5.2.1 and Appendix B of the updated BDAR.

Inadequate justification has been provided for the presence of non-native vegetation

Issue

The BDAR should outline the methodology used to determine non-native vegetation, which may include (but not be limited to) the results from rapid assessments, photos of cultivated paddocks or aerial photography. This could be included as an additional description in Appendix B.

Response

Additional information, including photos, has been added to section 3.4.1 of the updated BDAR.

The vegetation integrity plots should adequately sample vegetation variability across a vegetation zone and be within relative proximity of the vegetation zone impacted

Issue

BCS notes some concerns with the mapped vegetation zones within the subject site and the relative location of individual vegetation plots used to inform that zone's vegetation integrity scores. BCS proposes to liaise with ARTC on the vegetation zones to ensure plot locations and number of plots undertaken are adequate and appropriate along the length of the project.

Response

Additional plot/transect surveys were undertaken during spring 2020 and autumn 2021, with a particular focus on areas where surveys could not previously be undertaken and areas of native grassland. The team's accredited assessors have liaised with BCS regarding vegetation zones to ensure the plot locations and number of plots undertaken are adequate and appropriate along the length of the proposal site. The updated BDAR and credit calculations have addressed comments from BCS.

Plot justifications and locations for each of the seven subregion cases sent to BCS for review (in March 2021) are included in Appendix L of the updated BDAR. This included allocating benchmark derived native grassland values for revised vegetation zone mapping of PCT619 to woodland parent communities. Values for each benchmark derived native grassland were sent to BCS for approval before use in the calculator. Justifications for use are provided in section 3.4.3 of the updated BDAR.

Vegetation zones excluded from species polygons should be justified

Issue

BCS notes a number of inconsistencies between candidate species credit species polygon description tables (Appendix I), habitat information within the threatened biodiversity data collection, and habitat inclusion/exclusion in the Biodiversity Assessment Method calculator. BCS requests the following:

- ▶ Conduct a consistency review of each table within Appendix I with the information contained within the threatened biodiversity data collection and habitat survey tab of Biodiversity Assessment Method calculator.
- ▶ Update each table in Appendix I to identify all PCTs occurring within the site that have the potential to provide suitable habitat to candidate species credit species, including those which have been excluded from a species polygon.
- ▶ In accordance with section 6 of the Biodiversity Assessment Method 2017, provide evidence and justification to support the exclusion of vegetation zones from each species polygon.

Response

The tables in Appendix I of the updated BDAR have been updated. Consistency with the threatened biodiversity data collection and habitat survey tab of the Biodiversity Assessment Method calculator has been checked and amendments made.

Additional tables identifying PCTs in each IBRA subregion have been included in Appendix I of the updated BDAR for each candidate species. These include habitat suitability assessments and the tables identifying those PCTs that have been excluded from species polygons. GIS related data, including associated PCTs and survey effort for each candidate species and all polygons, has been provided to BCS for review over multiple iterations during 2020 and 2021. Evidence for the exclusion of some areas of suitable associated vegetation zones for each candidate species has been included in the tables in Appendix I of the updated BDAR. Where associated PCTs contained suitable potential habitat for a candidate species but access was not possible, or the species could not be reliably excluded, species presence was assumed.

The impact of drought conditions on vegetation integrity scores requires further review

Issue

BCS notes that while the BDAR states that benchmark plots were used to reach the minimum number of plots of vegetation zones where the required number of plots were not completed, it remains likely that drought considerations have affected the vegetations integrity scores and biodiversity credit obligations. BCS requests the following:

- ▶ The BDAR should discuss the applicability of applying modified dry benchmarks to PCTs within the subject site.
- ▶ BCS will review the updated BDAR and Biodiversity Assessment Method calculator, which will incorporate recommendations from this review and spring 2020 survey data, and liaise with the accredited assessors, to determine the representativeness of the plot data for each vegetation zone.
- ▶ If modified benchmarks are proposed, adequate detail should be provided on the method used to determine modified benchmarks, including justification of any assumptions made.

Response

The use of dry benchmarks has not been proposed for the proposal. During development of dry benchmarks by BCS during the 2016 to 2018 drought, their use for the proposal was discussed with BCS. BCS advised in 2019 that the benchmarks for this region would not be suitable for the proposal. As such, the use of dry benchmarks is not proposed.

In addition, the collection of additional plot data in June 2020 and during spring 2020 and autumn 2021 has resulted in higher vegetation integrity scores across vegetation zones compared to those collected during drought conditions. With the exception of an existing cleared borrow pit site, there are no vegetation zones in any subregion with a score less than 17, and the impacts in all vegetation zones require offsets.

Additional plot/transect surveys were undertaken during the spring 2020 surveys, with a particular focus on areas where surveys could not previously be undertaken and areas of native grassland. The team's accredited assessors liaised with BCS regarding vegetation zones to ensure plot locations and number of plots undertaken are adequate and appropriate along the length of the proposal site, and to report the results of the spring 2020 surveys. BCS provided a formal response to plot use and justifications in April 2021. Details of the additional surveys and the findings have been incorporated into the updated BDAR and Biodiversity Assessment Method calculator.

Modified benchmarks have been used for derived native grasslands assigned to a derived native grassland parent community. Assumptions and justifications for these changes to modified benchmarks were provided to BCS for review and were endorsed by BCS on 12 March 2021. Further information is provided in section 3.4.3 of the updated BDAR.

The mapping of native vegetation extent requires consistency between Figure 4.1 and Appendix G, and the landscape vegetation cover class estimate needs to be revised

Issue

The extent of native vegetation identified and mapped within the subject site is required to be included within the native vegetation cover polygon on the landscape assessment map and the vegetation percent cover class assessment.

Response

Figure 4.1 (from Technical Report 1—Biodiversity development assessment report, which formed part of EIS) has been updated and is provided in the updated BDAR. Seven separate landscape maps have been created for each subregion assessment to include native vegetation. These are provided in Appendix G of the updated BDAR.

Separate landscape assessments have been completed for each subregion assessment. These include native groundcover and canopy vegetation (see Figures 4.1 a–g in the updated BDAR).

Species polygons for candidate species that have been assumed will be re-examined following input of new information

Issue

BCS notes the precautionary approach taken to assume presence of several threatened species to take into account the potential impact of drought on the detectability of some species and the limited access to some areas of the site.

BCS proposes to re-examine the species polygons for species assumed to be presented following the update to the BDAR and Biodiversity Assessment Method calculator to incorporate the separate IBRA subregion assessment and the spring 2020 field survey data.

Response

All species polygons have been revised based on the results of additional surveys and separate IBRA subregion assessments. These are provided in Appendix I of the updated BDAR. All revised species polygons have been provided to BCS for review in 2021 in advance of final submission of the updated BDAR.

The BDAR should include threatened and migratory entity records prior to 1998

Issue

BCS requests that all sections of the BDAR, which have been informed by the filtering and exclusion of threatened species records prior to 1998, are revised to be inclusive of these records.

Response

An updated desktop assessment has been undertaken to incorporate all records of threatened species. This is provided in Appendix C of the updated BDAR.

A threatened ecological community (TEC) equivalency assessment should be provided for all PCTs associated with a TEC

Issue

A TEC equivalency assessment should be conducted for all PCTs identified within the Biodiversity Assessment Method calculator as potentially equivalent to a BC Act or EPBC Act-listed TEC. Equivalency assessments should be supported by evidence and data collected during the field survey. The compositional, structural and functional aspects of a vegetation patch should not be assumed to be non-equivalent if access to a patch could not be obtained.

Response

A new table (Table 5.3) has been included in the updated BDAR as a TEC equivalency assessment (see section 5.2.2 of the updated BDAR).

Confirmation is required that all surface impacts from the proposal have been included in the development footprint

Issue

The BDAR provides spatial detail of the infrastructure components required for the proposal; however, BCS requests confirmation on whether all surface infrastructure components required have been included within the development footprint.

Response

The proposal site considered by the EIS (including the BDAR) is the area that would be directly affected by construction works (also known as the construction footprint). It includes the location of proposed operational (surface) infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of the storage areas/compounds sites, etc., that would be used to construct that infrastructure.

As such, it includes all areas required for both the construction and operation of the proposal. All proposed surface infrastructure components are located within the assessed footprint. The updated BDAR has considered the amended proposal footprint as described in section 3.1 of this report and the combined Preferred Infrastructure/Amendment Report.

A serious and irreversible impacts assessment should be conducted for Coolabah Bertya and the targeted survey effort undertaken for this species should be clarified

Issue

BCS recognises the targeted survey for Coolabah Bertya species was conducted within the subject site. Despite the presence of species records within the subject site, no individuals were found; however, the species has been assumed to be present as drought conditions could have impacted detectability of the species. BCS recommends that:

- ▶ A serious and irreversible impacts assessment should be completed for Coolabah Bertya (*Bertya opponens*) in accordance with section 10.2 of the Biodiversity Assessment Method. Information from this assessment should be used to update the impact assessment prepared under the EPBC Act.
- ▶ Section 8.1 of the BDAR should be updated with proposed avoidance measures that will be implemented for Coolabah Bertya.
- ▶ Targeted surveys should be conducted for Coolabah Bertya, outside of drought conditions, to more accurately determine the presence or absence of the species, and potential impacts to the species if it is present.
- ▶ Provide clarification in Table 12.3 of the BDAR regarding the conclusion that only four individuals of Coolabah Bertya are likely to be impacted by the species.

Response

A serious and irreversible impacts assessment has been completed for Coolabah Bertya (*Bertya opposens*). The results are provided in section 10.1.2 of the updated BDAR. The relevant EPBC Act assessment has been updated and is provided in Appendix M of the updated BDAR.

Repeated survey efforts have been conducted to relocate the existing Coolabah Bertya records in the proposal site near Bohena Creek. The previous record was for two juvenile plants and three seedlings. Despite repeated survey efforts over multiple months and years, these records, and any others of this species, could not be relocated. Targeted surveys were conducted for this species during September, October and November of 2020, and during the surveys described in Technical Report 1. These included potential habitat areas as well as the known location from the BioNet Atlas records. It is assumed this population no longer occurs.

The species had been assumed present in two remote locations of the Pilliga forests where access was not possible. A targeted survey was completed over two weeks in March 2022 using multiple ecologists to minimise safety issues and improve potential for detection. No individuals were recorded in these two locations, and in consultation with BCS it has been concluded that the species can be considered absent from the proposal site.

Table 10-1 of the BDAR has been updated to reflect the findings of these surveys. Mitigation measure BD3 has been amended to remove the requirement for further surveys for this threatened species as all relevant areas have now been surveyed.

Mapping of connectivity features in accordance with Section 4.2.1.9 of the Biodiversity Assessment Method should be provided

Issue

Pre-construction and post-construction fauna connectivity states should be spatially represented within the BDAR in accordance with section 4.2.1.9 of the Biodiversity Assessment Method. The post-construction fauna connectivity state mapping should provide indicative locations of proposed fauna passage features to be installed as per Appendix J of the BDAR. This will allow for a better understanding of the coverage and adequacy of fauna connectivity measures across the subject site.

Response

A preliminary fauna connectivity strategy has been prepared in accordance with mitigation measure BD6 in the EIS. The preliminary strategy is provided in Appendix J of the updated BDAR.

Pre-construction connectivity states have been mapped in Figure 4.2 in the updated BDAR and are also included in Appendix A of the preliminary fauna connectivity strategy. Post-construction fauna connectivity states have also been mapped and are included in Appendix B of the preliminary fauna connectivity strategy.

Prescribed connectivity impacts on all threatened species with the potential to be impacted should be identified, discussed and mitigated in the BDAR and offsets should be proposed for all residual prescribed impacts to connectivity

Issue

BCS requests the following updates to be made to the BDAR:

- ▶ Prescribed impacts to connectivity for threatened species should be revised to include all threatened species likely to be affected by the proposed development.
- ▶ Avoidance and mitigation measures should be proposed that contribute to the recovery of threatened woodland birds, threatened plants with limited seed dispersal and threatened reptiles.
- ▶ Residual prescribed impacts to the connectivity of threatened species, which are likely to occur after the proposed avoidance and mitigation measures are implemented, should be identified.
- ▶ If residual prescribed impacts are identified, measures for offsetting residual prescribed impacts should be proposed in accordance with Section 6.1.2(b) of the Biodiversity Conservation Regulation 2017.

Response

Prescribed impact discussions in section 9.2 of the BDAR have been updated to include additional species (see the updated BDAR for further information). Summaries have been included in tables 9.9 and 9.10 in the updated BDAR.

The preliminary fauna connectivity strategy (see Appendix J of the updated BDAR) includes a range of measures to minimise mortality as a result of train strike, encourage the safe movement of fauna across the rail line, and minimise impacts on connectivity. These measures include dry passage under bridges, use of dedicated fauna underpasses, canopy bridges and rope bridges. Emerging and new measures, such as barrier poles and targeted removal of ballast, would also be trialled. The goal of the preliminary fauna connectivity strategy is to maintain viable fauna populations in the study area, particularly in the Pilliga forests. Mitigation measure BD6 has been updated accordingly (see section 11 of this report). The fauna connectivity strategy would be finalised during detailed design in accordance with updated mitigation measure BD6. BCS would be consulted as part of finalising the strategy.

The Biodiversity Assessment Method does not calculate biodiversity credits to offset a prescribed impact. However, in accordance with section 7.13(4) of the BC Act and clause 6.1.2 (b) of the Biodiversity Conservation Regulation 2017, the consent authority has the discretion to increase the number of biodiversity credits to be retired (or other conservation measures to be undertaken) to account for the environmental impacts of a proposed development. Given there is no set method for determining a suitable quantum of credits to offset a prescribed impact, a framework and justification for additional credits has been developed for the proposal for residual prescribed impacts, in consultation with BCS. An additional 9,625 ecosystem credits and 87,501 species credits would be required to offset the residual prescribed impacts of the proposal. The final commitment to offsetting the prescribed impacts would be included in the conditions of approval.

Drainage culverts not specifically designed for fauna passage should not be considered to represent adequate fauna passage structures

Issue

BCS supports a fauna connectivity strategy as discussed in section 11.1.2 of the BDAR; however, BCS requests the following:

- ▶ The fauna connectivity strategy should be prepared and incorporated in the BDAR, at least in an indicative form, to determine whether the proposed mitigation measures are adequate.
- ▶ The fauna connectivity strategy should be included as a document that must be prepared, in consultation with BCS, as a condition of consent.
- ▶ The use of drainage culverts as a fauna connectivity measure should be removed from the BDAR, unless culverts contain installed components designed specifically for this function.
- ▶ Table 11.4 should provide further clarification on which drainage culverts would be receiving fauna passage design features and provide an indicative location within the subject site.

Response

As noted above, a preliminary fauna connectivity strategy has been prepared to guide detailed design in accordance with mitigation measure BD6. The preliminary strategy is provided in Appendix J of the updated BDAR.

Mitigation measure BD6 has been updated to confirm that the final detailed fauna connectivity strategy would include investigation and design of:

- ▶ Locations for fauna crossing structures in the Pilliga forests, including bridges and dedicated underpasses for threatened fauna (such as the koala and Pilliga mouse in areas of preferred habitat), canopy bridges at regular intervals, and wooden barrier poles at selected bridges
- ▶ The provision of localised fencing to direct fauna to crossing structures
- ▶ Fauna furniture to be included in the design of bridges and dedicated underpasses, where appropriate, to encourage crossings by koalas and other native fauna
- ▶ Landscaping of the rail corridor to encourage movement of fauna across the gap.

More detail about dedicated fauna underpasses and fauna furniture has been provided in the preliminary fauna connectivity strategy. Culverts with fauna furniture have been identified and mapped. These are provided in Appendix B of the preliminary fauna connectivity strategy, together with a recommendation that further assessment be undertaken during detailed design.

The final fauna connectivity strategy would draw on threatened species management plans that identify detailed monitoring methods and approaches to adaptive management.

Derived PCTs will no longer be able to be assigned under Biodiversity Assessment Method 2020

Issue

BCS notes that it is acceptable to assign derived PCTs according to the method detailed within the Biodiversity Assessment Method 2017, as has been done in the BDAR; however, if ARTC is considering pursuing land-based offsets to satisfy the project's credit obligation, consideration should be given to reviewing PCTs that have been assigned a derived PCT classification and assigning the original PCT from which the derived PCT has developed.

Response

As noted above, vegetation zones have been reviewed based on a number of recent changes to the approach and additional survey effort. These included incorporating the results of additional surveys in September, October and November 2020, targeting threatened flora species. In addition, vegetation zone mapping has been updated:

- ▶ For newly accessed areas
- ▶ For areas previously mapped as derived grasslands (PCT619, PCT250 and parts of PCT49) to assign these areas to a parent native grassland or woodland community
- ▶ To include paddock and scattered trees to woodland vegetation zones as discrete polygons.

Updated vegetation zone mapping by subregion has been provided in Table 5.2 and Appendix G of the updated BDAR.

The BDAR should demonstrate that the recent vegetation clearing within the proposed location of Borrow Pit D was undertaken lawfully and not for the purposes of the project

Issue

The BDAR should state whether the clearing undertaken at the site of Borrow Pit D is authorised under legislation separate to this development. Any area with a current authorisation does not require assessment for impacts to native vegetation.

Response

ARTC is unable to respond to this request. The site was cleared when the field survey team attended the site. It is not the responsibility of ARTC or their contractors to confirm the legalities of private landholder actions during investigation phases.

Minor edits to the BDAR are required

Issue

The BDAR should be updated to correct minor errors or editing matters.

Response

The matters identified are addressed in the updated biodiversity development assessment report.

5.3.2 Flooding and hydrology

Additional studies should be reviewed when defining the one per cent AEP

Issue

The flood frequency analysis should be included for those water sources with gauging stations and that were used as part of the study. Comment on the reliability of rating curves should also be included. BCS recommends that:

- ▶ Additional studies should be reviewed and referenced when defining the one per cent annual exceedance probability (1% AEP) event.
- ▶ The flood frequency analysis should be included for the gauging stations used in the study.
- ▶ Comment should be provided on the reliability of the rating curves.

Response

The flooding and hydrology assessment (Technical Report 3) was prepared by a team of qualified and experienced hydrological professionals in accordance with the SEARs, and relevant guidelines and requirements, including *Australian Rainfall and Runoff* (Ball et al., 2019). Flood modelling was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments. In addition, as described in section 4 of Technical Report 3 (and in the updated flooding and hydrology assessment report, as noted below), ARTC has undertaken consultation with local landowners and other stakeholders to confirm that the flood modelling is representative of observed conditions.

A range of previous flood studies were considered in the original assessment, as described in section 3.3.5 of Technical Report 3. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited. The updated assessment includes discussion of additional flood studies such as the *Bohena Creek Flood Study* (WRM, 2019b) (see the updated flooding and hydrology assessment report for further information).

The assessment included a number of sources of information to determine the adopted design peak flow rates. These included at-site flood frequency analysis, regional flood frequency analysis and replication of individual historically observed flood behaviour at gauge locations. The flood calibration report for the proposal has been provided as an appendix to the updated flooding and hydrology assessment report.

The primary objective of at-site flood frequency analysis is to establish a relationship between the magnitude of flood events and their frequency of occurrence at a stream gauge. At-site flood frequency analysis is a statistical technique that fits a probability distribution to streamflow data series. A check of channel cross section, gauged flows and rating curves was undertaken for each stream gauge, where sufficient historical streamflow data was available. The analysis was based on annual peak flows and was undertaken in accordance with *Australian Rainfall and Runoff*. General extreme value and Log Pearson Type III (LP3) probability distributions were fitted to the annual peak flow series, with and without the Multiple Grubbs Beck Test. The Multiple Grubbs Beck Test aims to remove potentially influential low flows from the flood frequency analysis.

The stream gauges at which at-site flood frequency analysis was undertaken for previous flood studies were reviewed and updated as required. Outcomes from the at-site flood frequency analysis were used in the validation of design peak flows for tributary catchments.

The at-site flood frequency analysis that informed the hydrologic models is summarised in Table 5-1. Results are provided both with and without the Multiple Grubbs Beck Test.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

TABLE 5-1: FLOOD FREQUENCY ANALYSIS—ESTIMATED PEAK FLOWS (M³/S)

	Baradine Creek		Coolbaggie Creek		Macquarie River (Baroona)		Castlereagh River (Mendooran)	
AEP	Without	With	Without	With	Without	With	Without	With
50%	25	21	71	71	177	170	160	129
20%	111	104	165	155	541	480	471	457
10%	215	202	214	205	1045	873	706	711
5%	348	321	247	244	1,875	1,473	917	933
2%	562	499	274	283	3,786	2,742	1,151	1,164
1%	747	640	286	305	6,210	4,231	1,294	1,295

The quality of the information that forms the basis of individual rating curves has been considered on an at-site basis. The consideration of both individual site-based assessments and regional assessments allowed for identification of discrepancies in the two estimates, which reduces the reliance on individual gauging site rating curve quality.

Additional information is required to support the proposed quantitative design objectives

Issue

BCS notes that the quantitative design objectives and their relevant justification and description are included in the flooding and hydrology assessment; however, additional information should be provided regarding how the objectives were developed, including relevant documents or studies that have been used as a reference source. This will assist in determining whether the objectives are relevant to this project.

Response

The proposal has been designed to, at a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event. In particular, the proposal has been designed to comply with the proposed quantitative design limits. The updated flooding and hydrology assessment report includes revised quantitative design limits.

These quantitative design limits apply outside the rail corridor, for events up to and including the 1% AEP flood event. The limits have been established in consultation with DPE and are based on relevant policies, planning controls and guidelines detailed in section 2 of Technical Report 3, and in the updated flooding and hydrology assessment report, other Inland Rail projects, and similar infrastructure projects in NSW. Adopting these limits would minimise the risk to public safety, buildings, existing highways and roads, existing rail lines and land uses.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

Impacts to wetlands and flood-dependent ecosystems should be assessed across a range of floods

Issue

BCS requests the identification of any flood-dependent ecosystems present in the vicinity of the rail alignment and the potential impact to their character as a result of the project is required.

Response

As described in Technical Report 1—Biodiversity development assessment report, and in the updated BDAR, there are a range of vegetation communities within and near the proposal site. A number of these communities would depend to varying degrees on hydrological processes such as groundwater, surface water flows in watercourses, or broader flows associated with flooding. The proposal includes bridges and culverts to minimise changes to natural flow patterns that could affect vegetation communities. In addition, bridges have been, and would continue to be, designed to minimise impacts on riparian habitat, as far as practicable.

Further information is required to identify the impact, to confirm any increases in velocity and subsequent impacts to erosion

Issue

BCS requests that further assessment and proposed mitigation measures that will be implemented to reduce velocities is provided. It also requests confirmation of the decrease in velocities that are likely to occur as a result of these mitigation measures.

Response

As noted above, the flooding and hydrology assessment has been updated. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, and proposed scour protection. In addition, to provide additional space outside the rail corridor in which to manage exceedances of the quantitative design limits during detailed design and construction. Drainage control areas would be provided at 200 locations along the proposal site (adjacent to the proposed rail corridor). These drainage control areas are typically 50 metres wide (i.e. from the edge of the rail corridor) on the downstream side and 15 metres wide on the upstream side of the rail corridor. Each drainage control area varies in length along the rail corridor to suit the various drainage structure configurations. Further information is provided in the updated flooding and hydrology assessment report.

Potential redistribution of flows on the floodplain should be assessed

Issue

Additional information regarding the potential, if any, for the proposal to redistribute flood flows should be included. This information should consider both hydraulic and geomorphological impacts on the floodplain covered by a floodplain management plan as well as any redistribution between watercourses.

Response

ARTC acknowledges that constructing the proposal across floodplains would affect the existing hydrological regime. The proposal has been designed to, at a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event. In particular, the proposal has been designed to comply with the proposed quantitative design limits.

As described in Technical Report 3, and in the updated flooding and hydrology assessment report, many of the existing watercourses (in particular within the Macquarie River and Namoi River floodplains) have complex overflow interactions during flood events. Culverts and bridges are generally located around existing drainage lines, watercourses, and within floodplains and associated overflow areas to minimise changes in natural flow patterns and redistribution of additional flows between watercourses.

As described in section 7.2.3 of Technical Report 3, and in the updated flooding and hydrology assessment report, in overland flow paths that are away from defined watercourses, existing flood behaviour is generally characterised by widespread shallow flows with low velocities. The flood and geomorphological assessments predict that the existing overland flood behaviour is not expected to significantly change following construction of the proposal.

The documents mentioned in the submission (Floodplain Management Plan for the Lower Namoi Valley Floodplain Order 2020 (NSW Government, 2020) and the Floodplain Management Plan for the Macquarie Valley Floodplain Order 2021 (NSW Government, 2021)) do not directly apply to the proposal as a critical State significant infrastructure project. Nevertheless, an assessment of the consistency of the proposal with these plans has been undertaken and is provided in the updated flooding and hydrology assessment report.

Flooding impact on buildings and the relationship with relevant flood risk management studies requires greater detail

Issue

BCS noted that the EIS has identified a number of buildings that will incur an increase in flood levels, due to the proposal, that are greater than 10 millimetres. Additional information on houses with increased flood levels is required, as well as reconciling these houses with the outcome of the relevant floodplain management plan. A methodology that outlines how the impacts to flooding to buildings will be mitigated should be provided.

Response

The updated flooding and hydrology assessment report includes revised quantitative design limits and additional assessment regarding potential building impacts. These quantitative design limits apply outside the rail corridor, for events up to and including the 1% AEP flood event. The limits have been established in consultation with DPE and are based on relevant policies, planning controls and guidelines listed in section 2 of Technical Report 3 and in the updated flooding and hydrology assessment report, other Inland Rail projects, and similar infrastructure projects in NSW. Adopting these limits would minimise the risk to public safety, buildings, existing highways and roads, existing rail lines and land uses.

While the floodplain management plans do not directly apply to the proposal as a State significant infrastructure project, an assessment of the consistency of the proposal with these plans is provided in the updated flooding and hydrology assessment report.

In accordance with mitigation measure FH1, the design would continue to be refined during the detailed design process, where practicable, to not worsen existing flooding characteristics. Additionally (and as described above), the updated flooding and hydrology assessment report describes the process that would be implemented where the quantitative design limits cannot be achieved.

General comments

BCS made the following general comments for consideration and update in the EIS:

- ▶ Section 4.2.3 noted that consultation has occurred with landholders in relation to the impact of the proposal on the supply of farm water from existing water flows. It should be confirmed whether the impact on farm water supply has been limited to the consultation activities described; or whether a desktop assessment has been carried out that identified any farm dams downstream of the proposal that may be affected.
- ▶ The design provides flood immunity for a 1% AEP flood at formation level. The worst-case scenario will be when the railway line overtops, which is track level. Some narrative should be provided as to when this is envisaged to occur, especially near the urban areas.
- ▶ Appendix G—Figure 4.1c has an area downstream of the proposal 'now high hazard'. If this does happen, are there any implications to both the environment and emergency evacuation?
- ▶ The emergency management arrangement and failure in section 7.1.10 has limited information, including the consultation with the State Emergency Service (SES) undertaken for the purposes of preparing the EIS. For example, the afflux maps show an increase in levels along the Wee Waa Road, which is a major road into Narrabri. It is not clear whether these roads have been considered in the assessment of impacts to roads in section 7.1.4 over the range of floods.

Response

Table 7.9 of Technical Report 11—Agriculture and land use assessment recognises that construction and operation activities could affect farm water pipelines, dams and drainage channels, and, as a result, livestock drinking water supplies. In accordance with mitigation measure LP20, farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies, prior to removal of existing impacted infrastructure. Costs associated with reinstating infrastructure for access to water that is changed as a result of the proposal would be borne by ARTC.

Consultation undertaken for the proposal is described in chapter A4 of the EIS. Consultation undertaken for the flooding and hydrology assessment is described in the updated flooding and hydrology assessment report and in section 4 of Technical Report 3. This included consultation with the Narrabri Floodplain Risk Management Committee, which includes representatives of the NSW State Emergency Service.

The assessment described in the updated flooding and hydrology assessment report includes Wee Waa Road (referred to as Kamilaroi Highway), and all other highways and major named roads within the study area. Changes in overtopping as a result of the proposal are considered. While there are no dedicated evacuation routes within the study area, the proposal has been, and would continue to be, designed in accordance with the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This includes consideration of potential impacts to roads.

As described above, the proposal has been, and would continue to be, designed to minimise the potential for flooding risks. In accordance with mitigation measure FH1, the design would continue to be refined, where practicable, during the detailed design process to not worsen existing flooding characteristics. The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

5.4 DPIE Water

5.4.1 Water take and licensing

Inconsistencies in non-potable groundwater requirements for construction

Issue

The EIS identifies that the proposal requires groundwater during construction. The estimates for non-potable groundwater are inconsistent between chapter B2 of the EIS (1,041 megalitres per year) and Technical Report 4 (1,400 megalitres per year).

Response

The difference between the yearly estimates for non-potable groundwater provided in chapter B2 of the EIS and Technical Report 4 is due to the construction period over which it was estimated that groundwater would be required for construction. Both the EIS and the technical report noted that an estimated total of 4,634 mega litres (ML) would be required for construction, of which 4,165 ML would be non-potable water sourced from deep aquifers.

The groundwater assessment (Technical Report 4) assumed that non-potable construction water would only be required for three of the four years over which construction would be undertaken, as not all activities are expected to need non-potable water (e.g. testing and commissioning). As a result, an estimate of 1,400 ML per year was used as the basis for the groundwater assessment. In comparison the estimate provided in the EIS was based on the assumption that non-potable construction water would be required for the entire four-year construction period.

The less conservative estimate of 1,041 ML per year provided in the EIS was not used as the basis for any assessments. As a result, despite the discrepancy, there is no change to the outcome of the groundwater assessment.

Confirmation of availability and approvals for groundwater required during construction

Issue

The EIS does not provide evidence of any agreement with landowners for the establishment of the proposed borefields, or justification that sufficient volumes are available and/or sufficient entitlement exists, where required. The security of supply also needs to be addressed due to the potential for drought conditions. In addition, no alternative sources of construction water have been identified.

Further assessment is required to identify any applicable approval requirements under the *Water Management Act 2000* (NSW). The assessment and access to additional water entitlements must be in accordance with the relevant water sharing plan, the Access Licence Dealings Principles Order (2004) and DPE Water's Factsheet—*Assessing Groundwater Applications* (NSW Department of Industry, 2018).

Response

As described in section A6.3.5 of the EIS, the viability of several potential construction water sources was investigated during the reference design process, with consideration of the existing and possible future drought conditions. Extraction of groundwater from deep aquifers was determined to be the preferred option, due to the availability of groundwater licences and the limited use of these aquifers by landholders. It was not considered feasible to take water from the shallow groundwater aquifer systems due to the recent and possible future drought conditions and the lack of availability of shallow aquifer groundwater licences.

As described in section B2.3.4 of the EIS, there would be sufficient water available, under a controlled allocation, for the extraction of groundwater for construction water within the Lachlan Fold Belt Murray Darling Basin Groundwater Source and the Gunnedah–Oxley Basin Murray Darling Basin Groundwater Source.

In accordance with mitigation measure WR5, the volume of water that would need to be extracted from groundwater for construction water and potable water would be confirmed, and the appropriate approvals would be obtained, prior to extraction.

In accordance with mitigation measure WR1, however, ARTC has already commenced the exploration of other construction water supply options, including reuse of excess water from the Narrabri Gas Project or other suitable facilities in the area, and lease and/or purchase of existing water access licences from surrounding landholders.

Since exhibition of the EIS, ARTC has consulted with a number of landowners along the alignment who have expressed interest in supplying water for construction. A formal expression of interest has been issued, with water sought from landowners through either purchase of water or lease and/or purchase of existing water access licences.

The expression of interest requested that the water be ideally located within 25 km of the proposal site; however, locations up to 50 km away would be considered. The expression of interest closed in mid-March 2021.

Recent discussions with Santos and the NSW EPA have also further explored the opportunity of using treated and recycled wastewater from the Narrabri Gas Project as a beneficial reuse water supply for construction. Discussions have confirmed the feasibility of this option from a timing, quantity, quality and approvals perspective. Sourcing water from the Narrabri Gas Project would be consistent with the principles of the *Waste Avoidance and Resource Recovery Act 2001* (NSW).

In addition to the two alternative water supplies noted above, the construction contractor would investigate the ability to beneficially reuse treated water from council-operated wastewater treatment plants and the proposed temporary workforce accommodation facilities.

Construction water supply options would continue to be explored during detailed design. As per amended mitigation measure WR1, any required approvals or agreements would be obtained prior to the use. The need for new groundwater bores would depend on the outcomes of this further investigation. It is likely that a combination of water supply options would be required to achieve the water demand.

Groundwater take at borrow pit A

Issue

The assessment identified that it is likely that only borrow pit A would intersect the groundwater table and result in an estimated maximum groundwater inflow of 0.3 megalitres (ML) per year; however, the impact calculations are incorrect, are not traceable or repeatable, and were validated with an unrepresented sensitivity analysis.

If the groundwater take at borrow pit A exceeds 3 ML per year, sufficient entitlement must be obtained in the relevant water source prior to any extraction or interception.

If the groundwater take at borrow pit A is less than 3 ML per year, an exemption is available under clause 7 of Schedule 4 of the Water Management (General) Regulation 2018. Under the exemption, any groundwater take must meet the requirements of clause 21(6) of the Water Management (General) Regulation 2018, which includes requirements to:

- ▶ Record the water take within 24 hours in the approved form and manner
- ▶ Provide the water take records to the Minister by no later than 28 July for the year ending 1 July, during which the water was taken (e.g. included in the annual report)
- ▶ Keep the water take records for a period of five years.

Response

The method used to calculate potential groundwater inflow into borrow pit A is described in section 4.5.3 of Technical Report 4—Groundwater assessment. Further information regarding the parameters, calculations and assumptions used is shown in Figure 5-1. Three uncertainty scenarios have also been included.



The calculations shown in Figure 5-1 indicate that none of the analysed uncertainty scenarios result in a groundwater inflow rate of greater than 3 ML per year. As a result, the potential for groundwater inflow into borrow pit A to trigger the need to obtain a controlled allocation is considered to be low; however, in accordance with amended mitigation measure WR-C14, if the groundwater inflow rate has the potential to exceed 3 ML per year, sufficient entitlement would be obtained prior to any groundwater extraction or interception. Additionally, ARTC confirms if groundwater take at borrow pit A is less than 3 ML per year, it will meet the requirements of clause 21(6) of the Water Management (General) Regulation 2018.

Note: For application in Dupuit-Forchheimer groundwater inflow equation, R_o taken as R_o plus r_{pit} , because the R_o value that is applied in the equation has to be larger than r_{pit} .

Groundwater inflows—potential groundwater inflow rate for borrow pit A was estimated using the Dupuit-Forchheimer well discharge for an unconfined aquifer without recharge.

Radius of influence—the areal drawdown extent (also known as radius of influence) was estimated using the Cooper-Jacob (1946) equation.

Scenario	Pit area (m ²)	Equivalent pit radius, r_{pit} (m)	Time, t (days)	Transmissivity, T (m ² /d)	Hydraulic conductivity estimate location	Adopted hydraulic conductivity, K (m/d)	Estimated groundwater inflow rate (kL/d)	Estimated groundwater inflow (ML/d)	Estimated groundwater inflow (ML/yr)	R_o (m)	$R_o + r_{pit}$ (m)
Base Case	108645	186	30	0.0001	BP a (BH250-01-BH2093)	0.00005	0.80	8.02E-04	0.29	0.32	186.28
Uncertainty 1—time, t increased from 30 to 1825 days	108645	186	1825	0.0001	BP a (BH250-01-BH2093)	0.00005	0.10	1.03E-04	0.04	2.46	188.42
Uncertainty 2—time, t increased from 30 to 3650 days and hydraulic conductivity, K increased by one order of magnitude	108645	186	3650	0.001	BP a (BH250-01-BH2093)	0.00005	0.24	2.37E-04	0.09	10.99	196.95
Uncertainty 3—hydraulic conductivity, K increased by one order of magnitude	108645	186	309	0.001	BP a (BH250-01-BH2093)	0.00005	2.54	2.54E-03	0.93	1.0	186.96

Legend  Input required  Calculated

Cut depth (m) below water table, H_0 — 2.94, Storage — 0.1

FIGURE 5-1: BASE CASE AND UNCERTAINTY ASSUMPTIONS FOR BORROW PIT A GROUNDWATER INFLOW RATE ESTIMATION

Inconsistencies in groundwater data for borrow pits

Issue

The depth of bore BH-2-093, representing the aquifer at borrow pit A, is inconsistently presented as either 9.55 metres below ground (Technical Report 4, Table 7.1) or with a maximum screen depth below ground being 10.1 metres (Technical Report 4, Tables 4.2, 4.4, 5.10 and 5.11).

The surface elevations of all borrow pits are also inconsistent between Technical Report 4, Tables 4.2 and 7.1.

Response

The total depth (metres below ground level (mbgl)) of bore BH-2-093 was incorrectly transcribed as 9.55 mbgl in Table 7.1 of Technical Report 4. The depth should be 10.1 mbgl as noted in Table 4.2, 4.4, 5.10 and 5.11 in Technical Report 4. This minor error makes no material difference to the outcomes of the assessment.

Table 4.2 in Technical Report 4 presents the existing surface elevation (metres above Australian Height Datum) at the borrow pit bores. Table 7.1 in Technical Report 4 presents the existing surface elevation in the area of maximum extraction depth for the borrow pits. As a result, the presented surface elevations are intentionally different.

Groundwater monitoring program does not consider potential incidental take of water

Issue

The proposed monitoring program does not consider the potential for unidentified geological structures to result in the incidental take from connected water sources.

Response

In accordance with amended mitigation measure WR4, test bores would be installed during detailed design, and further investigation would be undertaken by a qualified hydrogeologist, to confirm the depth and location of the proposed bore field bores.

The test bores and bore fields would consider the design considerations detailed in section 11.1 of Technical Report 4—Groundwater assessment, as well as the potential for unidentified faults and other geological structures to connect shallow and deep-water tables. This includes the requirement to confirm the thickness and hydraulic conductivity of aquitard(s) at the base of the Great Artesian Basin, as well as the potential presence of unidentified geological structures that connect water sources.

Approvals required under the Water Management Act 2000

Issue

ARTC must obtain relevant approvals and licences under the *Water Management Act 2000* (NSW) before commencing any works which intercept or extract groundwater or surface water.

Response

As described in section A3.4.1 of the EIS, the proposal would require:

- ▶ A licence under Part 5 of the *Water Act 1912* (NSW) to extract groundwater during construction
- ▶ A water access licence for dewatering and other taking of water from any water source that is covered by a water sharing plan under the *Water Management Act 2000* (NSW).

All relevant licences required under the *Water Act 1912*/*Water Management Act 2000* for construction purposes would be obtained prior to construction commencing.

Water management plan and borefield extraction plan

Issue

A water management plan must be prepared by ARTC following project approval and prior to the commencement of construction. The plan must include a borefield extraction plan that must be submitted to DPIE Water (now DPE Water) /National Resource Access Regulator for consultation and endorsement a minimum of three months prior to bore construction. No groundwater bores can be constructed, or pumping commence, until DPIE Water has endorsed this plan.

The borefield extraction plan must include detailed information on bore location, water source, depth and proposed volumes of take per year, per bore. DPIE Water assesses each bore and may include extraction limits and make good provisions.

Response

Commitments to further investigate, monitor and minimise the potential impacts of constructing the proposed bore field bores are defined by a number of mitigation measures, including WR3, WR4, WR5, WR7, WR9 and WR10. In particular, mitigation measure WR4 commits to further investigation by a qualified hydrogeologist to confirm the depth and location of the proposed bore field bores. In addition, mitigation measure WR5 commits to confirming the water volumes that would be required from groundwater bores for construction water and monitoring during extraction to ensure volumes stipulated by licence requirements are not exceeded.

In accordance with new mitigation measure WR14, however, a bore field extraction plan would be prepared as part of the soil and water management plan. The extraction plan would be provided to DPE Water prior to constructing the proposed bore field bores. The plan would include information about the locations, water source, depth and proposed volumes of water take per year for the proposed bore field bores, and any measures to minimise the potential for impacts due to the extraction of groundwater for use as construction water.

The plan would also provide confirmation that any applicable water sharing plan rules have been met.

5.4.2 Groundwater impacts

The groundwater assessment does not provide a direct assessment against the Aquifer Interference Policy (2012)

Issue

The groundwater assessment has not directly provided an assessment against the 'minimal impact considerations' of the Aquifer Interference Policy (2012) for the take of water associated with an aquifer interference activity (i.e. the indirect or consequential take of water from the interception of an aquifer) in relation to borrow pit A.

Response

Potential groundwater impacts of constructing borrow pit A are assessed in Technical Report 4—Groundwater assessment and summarised in section C3.3.3 of the EIS. The groundwater assessment concluded with regard to borrow pit A:

- ▶ There is potential for minor groundwater inflow at borrow pit A (in the order of about 0.22 kilolitres per day after one year).
- ▶ The maximum groundwater level change at borrow pit A would be about 3 metres.
- ▶ The potential to impact groundwater dependent ecosystems due to groundwater inflow at borrow pit A is low.
- ▶ No impacts on existing bores are anticipated due to groundwater interception at borrow pit A.
- ▶ No baseflow reductions are expected due to the potential drawdown at borrow pit A.

The *NSW Aquifer Interference Policy* (DPI, 2012b) requires that potential impacts on groundwater sources be assessed against the minimal impact considerations outlined in the policy. As described in section 3.3 of Technical Report 4, in the context of the *NSW Aquifer Interference Policy*, the proposal is considered to be underlain by highly productive groundwater sources. If the predicted impacts are less than the Level 1 minimal impact considerations for highly productive groundwater sources, then the potential groundwater impacts are acceptable. The minimal impact considerations for highly productive groundwater sources, as relevant to the proposal, are:

- ▶ Less than 10 per cent cumulative variation in the water table 40 m from any high-priority groundwater dependent ecosystem
- ▶ Maximum of a 2-m decline at any existing bore
- ▶ Less than 0.2 m cumulative variation in groundwater pressure 40 m from any high-priority groundwater dependent ecosystem
- ▶ Any change in the groundwater quality should not lower the beneficial use category of the groundwater source.

As per the indicative proposed borrow pit extraction depths and levels outlined in Table 7.1 of Technical Report 4, the predicted water table interception depth at borrow pit A is 2.94 m. As a result, the maximum drawdown that would occur at the excavation face is predicted to be about 2.94 m. Beyond the excavation face, the height of drawdown would decrease until becoming negligible. As shown in Figure 5-1 of this report, the estimated range of the radius of influence is small, with the maximum radius distance being 10.99 m. Even with an assumed hydraulic conductivity value two orders of magnitude higher than the test value, the drawdown distance from borrow pit A is less than 40 m after a duration of 10 years.

A direct assessment against the *NSW Aquifer Interference Policy* minimal impact considerations was not provided in the EIS because, as described in section 5.7 of Technical Report 4, there are no high-priority groundwater dependent ecosystems located close to borrow pit A, and the nearest existing bore is 2.35 km to the south. Therefore, the potential for the minimal impact considerations to be exceeded due to groundwater take from borrow pit A was considered to be low; however, based on the information above, and that provided in Technical Report 4, regarding the location of groundwater dependent ecosystems and existing bores, the following is concluded with regard to the *NSW Aquifer Interference Policy* and borrow pit A:

- ▶ Given there are no high-priority groundwater dependent ecosystems located close to borrow pit A, and that the drawdown distance from borrow pit A is about 11 m, the cumulative variation in the water table 40 m from any groundwater dependent ecosystem would be less than 10 per cent. It is also anticipated that the cumulative variation in groundwater pressure would be less than 0.2 m.
- ▶ Given the distance to the nearest existing bore, the radius of influence, and that the maximum drawdown at the excavation face would be about 2.94 m, the decline at any existing bore would be less than 2 m.

- ▶ The above noted groundwater level reductions are not anticipated to cause any existing flowing bores to cease flowing; nor is the beneficial use category of groundwater sources anticipated to be lowered beyond 40 m from borrow pit A, given the radius of influence.

As a result of the above, the predicted impacts due to groundwater take at borrow pit A are considered unlikely to exceed the *NSW Aquifer Interference Policy* minimal impact considerations.

The groundwater assessment must assess proposed bores as a water supply dealing

Issue

The groundwater assessment has incorrectly assessed the proposed groundwater bores under the Aquifer Interference Policy (2012). For the supply of groundwater for consumptive purposes to an aquifer interference activity, the water supply works must be assessed as per a water supply dealing and not under the NSW Aquifer Interference Policy.

Response

The proposed bore field bores assessed as part of the groundwater assessment described in Technical Report 4 were sited in general accordance with the relevant water sharing plan rules. In accordance with mitigation measure WR4, test bores would be installed during detailed design, and further investigation would be undertaken by a qualified hydrogeologist, to confirm the depth and location of the proposed bore field bores. Once these locations are confirmed, a check would be made to confirm that the proposed production bores remain sited, in accordance with the relevant water sharing plan rules.

It is noted that, for the majority of the proposed bore field bores, most of the water sharing plan setback rules do not apply as the proposal is targeting different groundwater sources to that which existing bores target. Additionally, as described in section A3.4.1 of the EIS, a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the *Water Management Act 2000* (NSW) do not apply to State significant infrastructure. Therefore, the distance rules in water sharing plans that apply to granting approvals would also not apply.

If all water sharing plan setback rules cannot be met once the location of the proposed bore field bores is confirmed, however, the assessment of impacts associated with the proposed bore field bores provided in Technical Report 4 is considered a suitable surrogate for an assessment of where more than minimal harm would be caused. In accordance with the relevant water sharing plans, bores can still be completed without meeting the relevant setback rules, provided no more than minimal harm would occur.

In accordance with new mitigation measure WR14, a bore field extraction plan would be prepared as part of the soil and water management plan. The extraction plan would be provided to DPE Water prior to constructing the proposed bore field bores. The plan would include information about the locations, water source, depth and proposed volumes of take per year for the proposed bore field bores, and any measures to minimise the potential for impacts due to the extraction of groundwater for use as construction water.

The plan would also provide confirmation that any applicable water sharing plan rules have been met with regard to siting of the bores.

Further justification and consideration of modelling for proposal borefields PB1 and PB2 is required

Issue

The modelling of potential impacts associated with the proposed borefields is considered appropriate, with the model construction and applied parameters being mostly reasonable and conservative; however, justification or further consideration is required regarding the structure of the model for proposed borefield PB1 and uniform hydrological parameter values applied in the model for proposed borefield PB2, as follows:

- ▶ A drawdown of 4 m was forecast for a neighbouring bore by groundwater model PB1 but waived by assuming extraction is mainly from geologic material represented by model layer 1. Conversely, that bore had been drilled beyond the model layer 1 boundary depth of 66 m, through what the driller described as a water supply zone, to 73 m in depth and clay gravel to 76 m in depth. As a result, 10 m of productive basal alluvium is represented by model layer 2.
- ▶ The groundwater model PB2 was assigned identical hydrological parameter values for all three layers without providing justification (Table 4.6 in Technical Report 4). These uniform model properties have resulted in a forecast drawdown at a neighbouring bore exceeding the aquifer interference policy's minimal impact criterion.

Accordingly, DPIE Water supported the recommendation (Technical Report 4, section 4.6.2) to measure site-specific hydrogeological properties at the detailed design stage so that impact modelling can be refined.

Response

DPE Water's support, regarding the recommendation in section 4.6.2 of Technical Report 4, to measure site-specific hydrogeological properties at the detailed design stage is noted. In accordance with amended mitigation measure WR4, test bores would be installed during detailed design and further investigation would be undertaken by a qualified hydrogeologist to confirm the depth and location of the proposed bore field bores.

The test bores and bore fields would consider the design considerations detailed in section 11.1 of Technical Report 4, as well as the potential presence of unidentified geological structures that connect water sources.

Justification regarding the structure of the model for proposed bore field PB1 and uniform hydrological parameters applied in the model for proposed bore field PB2 is provided below.

PB1 model

Justification for the structure of model PB1 was provided in Table 4.5 of Technical Report 4. As outlined in Table 4.5, the bottom of layer 1 (alluvium) was established at 66 metres below ground level (mbgl) based on the average depth to rock noted in Water NSW's work summary reports for existing nearby bores (GW000306, GW01568, GW000367, GW802725, GW802807 and GW002441). For cases where a clear distinction between alluvium and rock was not present, or where weathered material was logged, judgement was used to select a representative depth from the summary reports for the purpose of the average depth calculation. Depths applied in the average calculation are shown in Table 5-2.

TABLE 5-2: AVERAGE DEPTHS FOR EXISTING BORES

Bore ID	Average depth (metres below ground level)
GW000306	70.1
GW01568	76.2
GW000367	59.74
GW802725	52
GW802807	36
GW002441	104.24

As the alluvium in the area of proposed borefield PB1 is not very productive (the logs indicate that the material is predominantly clayey), it was considered reasonable to group weathered material with alluvium for the purpose of the depth calculation and modelling.

The applied alluvium depth of 66 mbgl in model PB1 is therefore considered representative and appropriate. This is despite the depth being shallower than the 76.2 m depth of alluvium logged at bore GW01568, which is the closest existing bore to borefield PB1.

PB2 parameters

The PB2 groundwater model was assigned identical hydrological parameter values for all three layers, for the following reasons:

- ▶ Alluvium is not mapped near PB2 in the Narromine 1:250,000 Geological map (Geological Survey of NSW, 1997). The closest mapped alluvium is greater than 500 m to the east.
- ▶ Current data does not allow layer specific discretisation and parameterisation; thus, uniform parameters were adopted for the three model layers used to represent rock.

Make-good provisions for impacts to neighbouring groundwater users

Issue

ARTC has not committed to any specific make-good provisions, or indicated their feasibility, for neighbouring groundwater users impacted by drawdown.

Response

In accordance with mitigation measure WR9, where groundwater monitoring identifies the potential for groundwater drawdown in existing bores to exceed the *NSW Aquifer Interference Policy* minimal impact considerations, make-good provisions would be triggered for those bores, in consultation with the relevant landholders. The groundwater assessment (Technical Report 4) indicates that the minimal impact considerations would not be exceeded; however, if they are, make-good provisions would be triggered. The precise arrangements would be determined in consultation with the landholder.

Monitoring of groundwater extraction from bores

Issue

All bores must be installed with a meter and groundwater extraction recorded and reported to National Resource Access Regulator in line with the reporting requirements in the 'Non-Urban Water Metering Policy'. The proponent needs to abide by the reporting requirements under the Water Management (General Regulation 2018) exemption clause 21(6).

Response

The proposed requirements are noted. In accordance with amended mitigation measure WR5, water volumes to be extracted from groundwater bores for construction water and potable water would be confirmed and the appropriate approvals would be obtained prior to extraction.

Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded.

Meters would be installed, and groundwater extraction would be recorded and reported in accordance with the relevant requirements of the *NSW Non-Urban Water Metering Policy* (DPIE, 2020f) and clause 21(6) of the Water Management (General) Regulation 2018.

Construction requirements for proposed groundwater bores

Issue

All groundwater bores must be constructed in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (4th edition).

DPIE Water may require specific additional construction requirements for individual bores that will be determined at the time of endorsement of the bore field extraction plan.

Response

In accordance with mitigation measure WR10, all bores required would be constructed by appropriately licensed drillers in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2020) and the relevant requirements of each Water Sharing Plan.

ARTC notes that DPE Water may have additional construction requirements and these would be discussed further during detailed design.

5.4.3 Monitoring plan

Soil and water management plan

Issue

The objectives of the proposed soil and water management plan do not consider water licensing and groundwater impacts. The soil and water management plan should address compliance with any water licensing requirements and managing groundwater-level impacts.

Response

Mitigation measure WR6 has been amended to confirm that the soil and water management plan would include measures to manage potential impacts to groundwater.

As described in section D5.2.1 of the EIS, the CEMP, which would include the soil and water management plan, would define all relevant statutory and other obligations, including consents, licenses and approvals required to construct the proposal.

As described in section A3.4.1 of the EIS, a water access licence under the *Water Management Act 2000* (NSW) may be required for the proposal.

In accordance with mitigation measure WR7, a groundwater monitoring program would be developed and implemented, as part of the soil and water management plan, to monitor potential groundwater impacts. The program would define the following in accordance with chapter 10 of Technical Report 4—Groundwater assessment:

- ▶ Monitoring parameters
- ▶ Monitoring locations
- ▶ Frequency and duration of monitoring.

As described in chapter 10 of Technical Report 4, the monitoring program would include groundwater monitoring at the proposed bore field bores to provide data to assess bore performance. The data would also provide the basis to inform assessment of whether make-good provisions should apply at certain bores if complaints arise concerning water level reductions.

In addition, in accordance with amended mitigation measure WR5, water volumes required to be extracted from groundwater bores for construction water and potable water would be confirmed, and the appropriate approvals would be obtained, prior to extraction. Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded.

Meters would be installed, and groundwater extraction recorded and reported, in accordance with the relevant requirements of the *NSW Non-Urban Water Metering Policy* (DPIE, 2020f) and clause 21(6) of the *Water Management (General) Regulation 2018*. Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions.

5.4.4 Licensing bore decommissioning

Decommissioning of existing bores

Issue

The proposal would require decommissioning of 10 existing groundwater bores, including seven private bores and three government monitoring pipes.

Prior to approval, ARTC must address compensation or alternative water-supply arrangements for the decommissioning of any bores.

Following approval and within 18 months, all government monitoring bores decommissioned should be replaced at ARTC's expense. Consultation with DPIE Water (now DPE Water) will be required to establish the bore design criteria and location of the new work in proximity to the original bore location.

Response

The decommissioning of existing bores on land to be acquired is a compensable item under the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Where bores are decommissioned outside of land to be acquired, alternative water supply arrangements would be made in consultation with the landowner/landholder.

In accordance with amended mitigation measure WR2, where existing licensed bores are located within the proposal site, they would be decommissioned in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2020).

Where bores are decommissioned, compensation would be provided, or alternative water supply arrangements made, in consultation with the landowner/landholder.

DPE Water's requirement regarding the decommissioning and replacement of government monitoring bores is noted.

5.4.5 Surface water

Watercourse impacts

Issue

The assessment of potential impacts to waterways, due to changes in flows and velocities, is inadequate, with detailed hydraulic analysis and development of management plans in consultation with DPIE Water (now DPE Water) deferred to detailed design. The assessment is based on the NSW River Styles database to characterise waterways; however, this should only be used to inform further detailed assessment. Insufficient information is provided to assess the effectiveness of the proposed scour protection.

DPIE Water recommended that detailed hydraulic assessment be undertaken during detailed design, which includes:

- ▶ Identification of waterways that are at higher risk of change
- ▶ Analysis of stream power, upstream and downstream of structures to assess factors including local changes in geomorphic processes, upstream and downstream impacts for a reach, changes in habitat availability and changes in roughness where riparian vegetation is impacted
- ▶ Identification of specific measures, including scour protection, to prevent damage to watercourses.

The proposed geomorphic monitoring program is to be developed in consultation with DPE Water. The program must provide for collection of adequate baseline data, suitable indicators, monitoring locations, monitoring frequency and ongoing monitoring post-construction to ensure the mitigation measures are effective.

Response

As noted in section B2.1.4 of the EIS, bridges and culverts have been designed to have a minimal impact on existing surface flow paths. Furthermore, as described in section B2.4.2 of the EIS, scour protection would be provided in locations where increased flow velocities are predicted. The *NSW River Styles framework* (Brierley and Fryirs, 2003) was used in the geomorphological assessment to provide a basis for the identification of potential impacts and the proposed approach to at-site specific mitigations that would be required. In accordance with mitigation measure FH2, further detailed hydraulic modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection works, and to confirm the extent and type of protection required.

As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since exhibition of the EIS. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, additional assessment of geomorphological impacts and further information on proposed scour protection.

The proposed geomorphology monitoring program (mitigation measure FH5) would be prepared in accordance with the relevant guidelines and conditions of approval. ARTC would consult with DPE Water during the preparation of the monitoring program.

Compliance with floodplain management plans

Issue

The EIS has not undertaken an assessment against the requirements of relevant floodplain management plans. Prior to approval, ARTC should assess compliance against the Floodplain Management Plan for the Lower Namoi Valley Floodplain 2020 (Management Zone AD and Management Zone B) and the Draft Floodplain Management Plan for the Macquarie Valley Floodplain 2018.

Response

Following receipt of the submission, the Draft Floodplain Management Plan for the Macquarie Valley Floodplain 2018 has been replaced by the *Floodplain Management Plan for the Macquarie Valley Floodplain Order 2021*. The documents mentioned in the submission do not directly apply to the proposal as a critical State significant infrastructure project. Nevertheless, an assessment of the consistency of the proposal with these plans has been undertaken and is provided in the updated flooding and hydrology assessment report.

Management of construction work within watercourses

Issue

The proposal will involve work within and near watercourses. DPIE Water (now DPE Water) supported the proposed preparation of a construction environmental management plan, and soil and water management plan. These plans need to ensure that adequate buffers and controls are put in place to minimise impacts to watercourses. This will need to be consistent with the Guidelines for Controlled Activities on Waterfront Land and industry standard erosion and sediment control guidelines (e.g. Managing Urban Stormwater: Soils and Construction (Landcom, 2004)).

In addition, work within watercourses will need to ensure maintenance of water flow downstream to key water users and the environment, and/or minimise the time these activities are required.

Response

In accordance with mitigation measure WR6, a soil and water management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts (including impacts to groundwater) during construction. The soil and water management plan would be prepared in accordance with the *Managing Urban Stormwater – Soils and Construction: Volume 1* (Landcom, 2004), *Volume 2C Unsealed Roads* (DECC, 2008a) and *Volume 2D Main Road Construction* (DECC, 2008b) (collectively referred to as the ‘Blue Book’).

In accordance with mitigation measure WR11, works within or near watercourses would be undertaken with consideration of the *Guidelines for watercourse crossings on waterfront land* (DPI, 2012a). Maintenance of downstream waterflows during construction will be a key consideration of the construction works planning.

5.5 DPI Agriculture

Consultation

Issue

DPI Agriculture encourages ARTC to consult with impacted agricultural operators to deal with both immediate issues and ongoing operational impacts associated with the development. The requirement to undertake this should be reflected in the conditions of consent.

Response

ARTC has, and will continue to, consult with impacted landowners/landholders. In addition to the consultation activities described in the EIS and section 3.4 of this report, this has included:

- ▶ About 200 face-to-face meetings with landholders in February 2018
- ▶ Meetings with about 100 landholders between July 2019 and February 2020
- ▶ Meetings with about 92 landholders between July and October 2020.

ARTC commits to working with landholders to develop measures to minimise the impacts of constructing and operating the proposal on agricultural properties, landholders and their operations. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

All property acquisitions would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable.

In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements may include:

- ▶ Measures to minimise property impacts, including on agricultural operations
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery, are able to be maintained as efficiently as possible

- ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (such as new or adjusted accesses to the public road network or internal access networks), divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of affected structures such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

Other mitigation measures relevant to addressing the potential impacts of the proposal on agricultural enterprises include (for example):

- ▶ LP10—Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock-train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
- ▶ LP20—Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
- ▶ LP22—ARTC will develop a 'Call Train Control' process to enable landowners to use level crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.

In relation to the potential impacts of construction, in accordance with mitigation measure LP4, property owners and occupants (including impacted agricultural operators) would be consulted in accordance with the communication management plan to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

Amended mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

The full set of mitigation measures (as updated) is provided in section 11 of this report.

5.6 DPI Fisheries

5.6.1 Fish passage

Comments on compliance with the Fisheries Management Act 1994 and guidelines

Issue

The design of bridge, culverts, and waterways crossings should be in accordance with the document *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013). Consideration should also be given to the detailed design of any scour protection below watercourse crossing structures to ensure that fish passage is not impeded.

Response

Potential impacts to aquatic ecology, including fish passage, were assessed in sections 5 and 6 of Technical Report 2—Aquatic ecology assessment and summarised in chapter B1 of the EIS. The reference design for the proposal, and the aquatic ecology assessment, have considered relevant guidelines, including *Policy and guidelines for fish habitat conservation and management* (Department of Primary Industries (DPI), 2013) and *Why do fish need to cross the road? Fish passage requirements for waterway crossings* (Fairfull and Witheridge, 2003). In particular, locations where watercourse crossings are required were assessed by classifying key fish habitat type and watercourse class to ensure that the proposed structures meet the minimum crossing type to maintain long-term fish passage.

In accordance with mitigation measure BD5, watercourse crossing structures would meet Inland Rail design standards and would be designed in accordance with *Why do fish need to cross the road? Fish passage requirements for waterway crossings*. This would include appropriate consideration for fish passage in any associated scour protection measures.

In accordance with mitigation measure BD16, culverts that provide for the flow of watercourses would be inspected and maintained in accordance with ARTC's standard operating procedures to address any issues that may contribute to the blockage of fish passage.

5.6.2 Riparian buffer zones

Issue

Where disturbance is inevitable, environmental management plans should be prepared to minimise the extent of the disturbance footprints and re-establish riparian and aquatic features.

Response

The potential impacts to riparian and aquatic areas are considered in the EIS. As described in section B2.3.2 of the EIS, if inadequately managed, work in watercourses and waterfront land has the potential to change the flow regime, affect riparian vegetation and aquatic ecology (considered in chapter B1 of the EIS), reduce the stability of beds and banks (considered in chapter B3), and contribute to erosion, sedimentation and water quality impacts (considered in chapter B5). As noted in section B2.3.2 of the EIS, the proposal includes a number of design features, particularly in relation to the use of pre-fabricated components, to minimise the extent of disturbance to watercourses. Additionally, only the Macquarie River and Narrabri Creek/Namoi River bridges would require piers to be constructed within flowing water. All other bridges and culverts would be constructed in watercourses that are ephemeral.

A range of mitigation measures are provided to minimise and manage the potential impacts identified. As described in section B2.5 of the EIS, all works within and near watercourses would be undertaken in accordance with the *Guidelines for watercourse crossings on waterfront land* (DPI, 2012a). Where discharge to watercourses is required, it would be undertaken with consideration of the hydrological attributes of the receiving waterbody. This would include considering whether the receiving waterway has sufficient flow volume and velocity to incorporate and disperse the potential discharge. Scour protection measures would be provided at culvert and longitudinal drain outlets to minimise the potential for surface water hydrology impacts due to scouring and erosion. Appropriate scour protection measures would also be incorporated into the design of bridge piers and abutments.

The approach to environmental management during construction is described in section D5.2.1 of the EIS. The management of environmental impacts during construction would be documented in the CEMP. 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 of the EIS. In accordance with mitigation measure WR6, a soil and water management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts (including impacts to groundwater) during construction.

Other relevant mitigation measures include:

- ▶ BD8—A biodiversity management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to manage biodiversity and minimise the potential for impacts during construction.
- ▶ BD12—A rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas outside the operational footprint (such as compounds and temporary workforce accommodation). The strategy would include clear objectives for rehabilitation of native vegetation in temporary disturbances areas.

- ▶ SC9—Disturbed areas would be rehabilitated following construction in accordance with the rehabilitation strategy.

5.6.3 Stockpiling felled timber

Issue

Consultation with DPI Fisheries should occur regarding stockpiling of felled trees from the footprint of the development for use as snags (large woody debris) to rehabilitate and improve the habitat quality of Key Fish Habitats.

Response

Table 9.4 in Section 9 of Technical Report 2—Aquatic ecology assessment considers potential management measures for minimising impacts to instream aquatic habitat. These recommendations were described broadly to accommodate the level of detail available at the reference design stage.

As noted above, 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 of the EIS. In accordance with mitigation measure BD8 and LP16, a biodiversity management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to manage biodiversity and minimise the potential for impacts during construction.

ARTC would prepare the biodiversity management plan in consultation with relevant stakeholders, including DPI Fisheries. This would include consideration of the use of felled trees.

5.7 Transport for NSW

5.7.1 Traffic and transport

Objection to the provision of level crossings on classified roads

Issue

Transport for NSW notes the proposal includes six at grade crossings of classified roads. Transport for NSW, in its previous submissions, has clearly stated that all new Inland Rail interfaces with classified roads are to be grade separated. As such, Transport for NSW objects to the proposal, as submitted in relation to treatment of the road–rail interfaces (level crossings).

Response

As described in section A6.2 of the EIS, option development has been an integral part of the overall design process for the proposal. An iterative process of option selection, design development, and evaluation has been undertaken to define the proposal. The approach to considering treatment options for the interaction of public roads and the rail corridor is described in section 5.1.1 of Technical Report 10—Traffic and transport assessment, and is summarised in section A6.3.3 of the EIS. This approach has taken into account relevant NSW and Australian level crossing policies, which emphasise the need to minimise the number of level crossings, as far as reasonably practicable.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations with regard to existing level crossings, and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that, where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

As previously advised to Transport for NSW, ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program.

In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It noted that the approach ensures level crossing safety risks are eliminated or minimised, so far as reasonably practicable, in accordance with Australian rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC.

Based on the methodology audited by ONRSR, higher order treatments, such as grade separation, are not considered justified as part of the proposal at those six locations noted by Transport for NSW, as the cost to grade separate would be grossly disproportionate to the benefits. Instead, level crossings with active controls, consisting of flashing lights and bells and boom barriers, would be installed at all six locations. This is the highest form of level crossing control under *AS1742.7-2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016).

ARTC also notes, however, that as part of the financial year 20/21 Federal Budget, the Australian Government has allocated \$150 million (m) for additional grade separations in NSW, with the NSW government contributing an additional \$37.5 m. This will be additional to grade separations that are already included in the Inland Rail scope. The specific projects to be implemented with this funding are being identified by the Australian Government in conjunction with the NSW Government. Approvals for these projects would be sought separately as required.

ARTC will continue to work collaboratively with Transport for NSW to progress road–rail interface solutions during detailed design. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. In addition, in accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing process design and assessment process that has been undertaken. The report would be developed in consultation with Transport for NSW and the relevant councils.

The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). Justification would be provided where no works are proposed on existing level crossings.

Delay times at all level crossings should be assessed

Issue

The EIS refers to ‘minimal delays’ and ‘long period’ waiting times at level crossings. This is subjective, particularly given the majority of the level crossings in the proposal currently do not exist. Actual projected delay times should be provided for each level crossing.

Response

An assessment of potential delays to road traffic at level crossings was undertaken as detailed in section 6.2.1 of Technical Report 10. The assessment identified the potential for delays at the worst-case active level crossing. This was considered to be the level crossing proposed at the Castlereagh Highway as it is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds prior to opening of the crossing and a maximum queue length of about 39 metres (m) during the proposal’s opening year, while in 2040 the delay would still be 96 seconds and the maximum queue length would be about 46 m.

As described in section 3.1 of this report, changes to public level crossings are proposed as one of a number of amendments to the proposal. This amendment includes changes to the numbers, locations and treatments for public level crossings. The amendment has been reviewed to determine whether there would be any changes to the outcomes of the traffic impact assessment undertaken for the EIS. The review determined that the Castlereagh Highway is still the busiest location at which a level crossing is proposed; however, as described in the combined Preferred Infrastructure/Amendment Report, the opening year of the proposal would now be 2026, rather than 2025. In addition, as described in section 3.2, further assessment has been undertaken to respond to various queries about the effect of level crossings on the performance of the road network, including what would be the real-time traffic delay for the last vehicle in the queue. The maximum delays and associated number of vehicles delayed (at the Castlereagh Highway crossing) for various operational scenarios, based on this further assessment, are provided in Table 5-3.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway and, therefore, further assessment and reporting is not considered necessary.

TABLE 5-3: CASTLEREAGH HIGHWAY LEVEL CROSSING DELAYS (INCL. MAX. DELAY FOR LAST VEHICLE)

Scenario ¹		Estimated maximum delay			
Opening year	Train speed (km/hr)	Time for level crossing to open (seconds)	No. of vehicles delayed (two-way)	Queue length (metres)	Maximum delay for last vehicle (seconds)
2026	80	121	9	74	148
2026	115	96	8	66	120
2040	80	121	10	82	151
2040	115	96	9	74	123

1. Based on a train with a maximum length of 1,800 metres

Stock movements at severed travelling stock routes

Issue

Where travelling stock routes are crossed by the proposal, confirmation was requested that the movement of stock would not occur on public roads.

Response

Section B12.3.5 of the EIS and section 5.1.1 of Technical Report 10 describes the travelling stock reserves that would be crossed by the proposal. The technical report noted in text below Table 5.2 that for two of the travelling stock reserves—R3420 and the northern section of R23332—access across the alignment would be provided by an adjacent level crossing.

The statement that access across the alignment for the northern section of R23332 would be provided by an adjacent level crossing was an error. The intent is that access across the proposal site for the northern section of R23332 would be provided under Castlereagh River bridge. This would require stock to cross the road before or after the level crossing at the intersection with East Coonamble Road; however, this impact is considered to be minor given that there is currently no fencing between the travelling stock reserve and the road, and there is already the potential for stock to interact with road traffic. Additionally, East Coonamble Road is an unsealed local road that is expected to experience low traffic volumes.

For travelling stock reserve R3420, concurrent with public exhibition of the EIS, ARTC has undertaken further investigations and is proposing a number of design refinements/amendments to the proposal to address issues raised during consultation and in submissions, and to minimise the potential impacts of the proposal. These design refinements are documented in the combined Preferred Infrastructure/Amendment Report. Access across the proposal site for travelling stock reserve R3420 would now be provided under Ewenmar Creek bridge; therefore, the proposal does not include provision for stock to cross the rail corridor via an adjacent level crossing at travelling stock reserve R3420.

Pedestrian and cyclist measures

Issue

The EIS does not provide any details in relation to the impacts to, and provision of, measures for pedestrians and cyclists.

Response

Potential impacts to pedestrians and cyclists during construction were considered in section 6.1.1 of Technical Report 10. Potential impacts during operation were considered in 6.2.1 of the report. The results are summarised in chapter B11 of the EIS. As noted in section 4.3.3 of Technical Report 10, there is minimal pedestrian and cyclist activity adjacent to the proposal, with no facilities for pedestrians or cyclists along the highways or local roads in the study area. Cycling is catered for in road shoulders where these are provided.

The assessment undertaken as part of the EIS noted that during construction there would be minor disruptions to cyclists who use roads near the construction footprint as a result of reduced speed limits and traffic control. Additionally, the introduction of additional heavy vehicles to the network has the potential to increase safety risks for pedestrians and cyclists, particularly where there is an increased likelihood for interaction. Potential impacts to pedestrian and cyclists, due to the presence of construction vehicles, would be managed by implementing appropriate measures defined in the traffic, transport and access management plan (mitigation measure TT6).

During operation, pedestrians and cyclists using the roads proposed for level crossings may experience delays at these crossings at times, due to passing trains. Additionally, the introduction of road closures and realignments may impact some existing travel paths, resulting in longer travel distances for pedestrians and cyclists on some routes. These impacts are expected to be limited as key pedestrian and cyclist networks in the study area are located within rural centres that would not be affected by the proposed changes.

Commitments to managing potential impacts to pedestrians and cyclists during construction and operation are defined by a number of mitigation measures, including measures TT1 to TT6, TT8, TT-CI1, TT11 and SE15. In particular, in accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction. In accordance with mitigation measure SE15, a rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.

Delay assessment at level crossings

Issue

The assessment of travel delay and queue lengths at the Castlereagh Highway level crossing is inadequate as it does not include B-doubles and road trains, which are common during harvest periods.

Response

As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing. The prevailing drought conditions at the time the surveys were undertaken affected the harvest period, however, and it is noted that the traffic surveys may not be representative of the levels and types of vehicles during a typical harvest period.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of higher level of traffic activity, the traffic analysis at the Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds due to the opening of the level crossings in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 and 74 metres, respectively.

In accordance with mitigation measure TT11, the operation of all proposed level crossings on classified roads would be reviewed after Inland Rail commences operation to confirm that the:

- ▶ Level of protection is appropriate
- ▶ Proposed infrastructure is appropriate for the traffic conditions.

Inappropriate assessment of level crossing risks

Issue

The use of ALCAM as the only tool to assess risks at road/rail interfaces is not appropriate (refer to alcam.com.au/about-alcam.aspx). Revised assessments should be undertaken using additional guidelines, including Austroads guides, Australian Standard 1742.7, Railway Crossing Safety Series 2011—*Plan: Establishing a Railway Crossing Safety Management Plan* (NSW Roads and Traffic Authority, 2011) and Safe System Assessment.

Response

The ALCAM is only one of the inputs in the risk assessment process. In line with the ONRSR guidelines, ARTC's level crossing risk tool applies a quantitative risk-based approach to determine road–rail interface treatments across the Inland Rail Program. This is a cost-benefit assessment that uses ALCAM as a key input. The output of the cost-benefit analysis is considered, along with a review of any incident data and stakeholder feedback, before proposed treatments are finalised.

In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, the focus of which was on ensuring level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

In accordance with amended mitigation measure TT4, public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016) and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. In addition, in accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the level crossing process design and assessment process that has been undertaken. The report would be developed in consultation with Transport for NSW and the relevant councils.

The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). Justification would be provided where no works are proposed on existing level crossings.

Signage standards for public roads

Issue

The EIS states that ‘ARTC standard signage’ would be provided at passive level crossings. All signage on and for traffic on public roads must comply with Australian Standard AS 1742.7.

Response

ARTC confirms that all signage provided as part of the proposal would comply with Australian Standard AS 1742.7 – *Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016). Mitigation measure TT4 provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

Assessment of road risks

Issue

The EIS states ‘the presence of level crossings may present safety risks to motorists due to potential collisions with trains’. Further assessment of other risks needs to be provided, including infrangible infrastructure in the clear zone, adverse road alignments, end of queue rear end crashes, platooning of traffic and overtaking.

Response

Transport for NSW’s request for further assessment is noted. In accordance with mitigation measure TT3, road safety audits would be undertaken, where changes to the road network are required, in accordance with relevant Austroads guidelines, to ensure the safety of all road users is considered in the design process.

Design standards for public roads

Issue

The EIS states ‘changes to roads would be undertaken in accordance with the minimum safe standard of the existing road’. Any work on the classified road network needs to be in accordance with Austroads and relevant Transport for NSW supplements (i.e. current standards).

Response

The proposal would be designed, constructed and operated in accordance with the conditions of approval, and all relevant road and drainage design standards and requirements, including:

- ▶ *Guide to Road Design Part 3: Geometric Design* (Austroads, 2021b)
- ▶ *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a)
- ▶ *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2020)
- ▶ *Guide to Road Design Part 5: Drainage—General and Hydrology Considerations* (Austroads, 2021c)

- ▶ *Guide to Road Design Part 5A: Drainage—Road Surface, Networks, Basins and Subsurface* (Austroads, 2021d)
- ▶ *Guide to Road Design Part 5B: Drainage—Open Channels, Culverts and Floodways* (Austroads, 2018).

Impacts of property severance on traffic movements

Issue

Where a property is severed by the proposal there is potential for landowners to either use the public road network with unregistered vehicles or unlicensed drivers, or to cross the railway in an unauthorised manner. Further consideration of providing access across the proposal for severed properties is required.

Response

Severance and fragmentation of rural properties are considered in Technical Report 11—Agriculture and land use assessment, and the results are summarised in sections B12.3.6 and B12.4.6 of the EIS. It is identified that property severance could affect the configuration of a property, affecting efficiency, productivity and viability, e.g. as a result of changes in access arrangement for the movement of farm machinery or stock to different areas of a property. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report. Other identified property impacts include impeded access, changes to internal roads and load limits, and the isolation of hubs within a farm's operational layout.

ARTC acknowledges this issue, which will continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures including opportunities to minimise impacts on their operations/properties.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

All property acquisitions would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable.

In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements may include:

- ▶ Measures to minimise property impacts, including on agricultural operations
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible
- ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (such as new or adjusted accesses to the public road network or internal access networks), divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of affected structures such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

The acquisition process commenced in April 2021 and the location of private level crossings will be discussed and agreed as part of this process. Additional information regarding potential locations and design considerations for private level crossings is provided in section 6.4 of the combined Preferred Infrastructure / Amendment Report.

ARTC's approach to considering level crossing options is consistent with relevant NSW and ONRSR level crossing policies. While ONRSR's policy is that no new level crossings be constructed, it recognises that where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with Commonwealth rail safety legislation. The NSW Government's level crossing policy is that building new level crossings should be avoided, wherever possible, and all other options should be explored before a new crossing is proposed.

ARTC would continue to consult with landowners in respect of access between different areas of a property that may be affected by the new rail corridor. Where access involves the use of a public road, all vehicles must, unless exempted, be registered for use on roads and vehicle operators licensed in accordance with the relevant legislation. The additional cost of registration and operation of vehicles will be considered as part of compensation applicable to the acquisition of land in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

Fencing would be constructed along the rail corridor, where it adjoins private land, to prevent unauthorised access to the rail corridor. Where the rail corridor abuts an existing public road with stock movements, fencing would be provided on both sides of the proposed rail corridor.

The type of fencing would be discussed with landholders and refined during detailed design.

The proposal must be planned, designed and managed to eliminate death and serious injury on the impacted road network

Issue

The proposal does not adequately consider impacts on the existing road environment. The NSW Government has committed to a target of zero deaths and serious injuries on NSW roads by the year 2056 (NSW Road Safety Plan 2021). Rail–road interfaces and road-related areas associated with the proposal must be designed and operated under the Safe System philosophy.

Traditional approaches to road design, risk management in the road environment and traditional road-related risk assessments are inadequate and do not align with the commitments, strategy and aspirations of the NSW Government. The new railway must be planned, designed and managed to eliminate death and serious injury on the impacted road network.

Response

As a rail transport operator level crossing safety is a key priority for ARTC. Under Commonwealth rail safety legislation, ARTC is required to manage risks, so far as is reasonably practicable. In line with the ONRSR guidelines, ARTC's level crossing risk tool applies a quantitative risk-based approach to determine road–rail interface treatments across the Inland Rail Program. ARTC notes that the ONRSR audited the Inland Rail Road–Rail Crossing Strategy—the focus of which was on ensuring level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

Commitments to ensuring the proposal is planned, designed and managed to eliminate death and serious injury on the road network, as far as is reasonably practicable, are defined by a number of mitigation measures, including TT1–TT5, TT11, TT12 and SE13. In particular, in accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. In accordance with mitigation measure TT12, in accordance with National and State Rail Safety Law requirements, public road crossings would be subject to an Interface Agreement with the relevant road manager to ensure that safety risks are identified and minimised, as far as practicable, during operations.

Mapping inconsistencies for proposed rail connections

Issue

Mapping of the Narromine West connection and other rail connections are inconsistent between chapter A7 and the Map Book (EIS Part E).

Response

All mapping provided in the EIS (including chapter A7) is graphics based and illustrative only. The mapping of all rail connections (proposed and possible future connections) is consistent between chapter A7 and the Map Book (Part E of the EIS).

5.7.2 General comments

Risk level associated with the proposal

Issue

The proposal introduces new risks to the road environment. At present, where a railway does not exist, the risks associated with level crossings and rail interfaces are non-existent. The proposal introduces new risks through the realignment of roads and the introduction of level crossings, and the introduction of infrangible structures in the road run-off area (clear zone). Risk assessments based on the So far is as reasonably practical model are inadequate for the proposal as they are aligned with assessing risks at existing infrastructure. As such, the highest level of risk associated with the introduction of the railway, and burdened upon the road user and road manager, needs to be no greater than negligible.

Response

Under work health and safety legislation and rail safety legislation, ARTC is required to manage risks arising from the impact of its operations on both workers and others, so far as is reasonably practicable. This approach is applicable to assessing risk for new and existing infrastructure. It is a fundamental principle of legislation within Australia to adopt a risk-based approach that is not 'an absolute risk principle' as the submission indicates but one that is tempered by the so far as is reasonably practicable principle.

In 2020, ONRSR audited the Inland Rail Road–Rail Crossing Strategy using a sample of crossings in NSW, including some proposed new crossings on the proposal. The objective of the audit was to assess how ARTC is applying the strategy, to ensure level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. The report published in 2020 contained no findings or recommendations requiring action by ARTC.

In accordance with new mitigation measure TT5, however, a public level crossing treatment report would be prepared to document the level crossing process design and assessment process that has been undertaken. The report would be developed in consultation with Transport for NSW and the relevant councils.

The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). Justification would be provided where no works are proposed on existing level crossings.

Sighting distances at passive level crossings

Issue

The environmental risks do not appear to account for the need to maintain sight triangles at passive control level crossings. Ensuring sighting is adequate may require clearing in private land or State forests to a width greater than the nominal rail corridor.

Response

The rail corridor is wider at passive level crossings to account for sight triangles, where practicable, including where the rail corridor traverses private property and State forests; therefore, allowance for sight triangles has now been included in the rail corridor extent and would be maintained by ARTC. In accordance with mitigation measure TT4, all public level crossings would be designed in accordance with relevant guidelines and standards, including AS 1742.7:2016 *Manual of uniform traffic control devices* (Standards Australia, 2016). This standard includes the sighting distance requirements. Ongoing maintenance of the rail corridor will be in accordance with ARTC's standard operation procedures.

Train lengths

Issue

The EIS should assess the traffic and transport (including safety) associated with the proposed future 3,600-metre long trains.

Response

The operation of 3,600-metre (m) long trains would be subject to a separate assessment and approval process under the EP&A Act. While components of the proposal would include infrastructure to accommodate possible future augmentation, including a possible future requirement for 3,600-m long trains, this is not part of the proposal for which approval is being sought.

In relation to other design changes, as described in section D5.4.2 of the EIS, any proposed changes would be reviewed for consistency with the assessments described in the EIS, including relevant mitigation measures, performance outcomes and any future conditions of approval. If any proposed variations are not consistent with the approvals, appropriate modifications to the project approval would be sought in accordance with the requirements of the EP&A Act.

Management of bushfire risk and weeds in the rail corridor

Issue

The risk of fire emanating from within the rail corridor needs to be mitigated through appropriate management of the fuel load within the rail corridor. Similarly, the spread of noxious and other weeds must be mitigated through appropriate surveillance and management.

Response

In accordance with mitigation measure BD14, weed inspections would be undertaken during operation, and weed management would occur in accordance with ARTC's standards operating procedures under the Biosecurity Act 2015 (NSW). ARTC's standard operating procedures include a vegetation management program involving pruning, slashing, weed control and spraying.

Regular track patrols of ARTC's rail freight network ensure safe and efficient operations. The frequency of these inspections varies between rail corridors and depends on the volume of traffic, weather and condition/type of assets on the section of track.

ARTC also undertake environmental site inspections. An annual schedule is developed in consultation with the relevant corridor managers and includes triggers for non-scheduled inspections. Environmental site inspections are undertaken by ARTC's Environment Advisors and focus on areas of risk such as waterways, known heritage items, sensitive flora or fauna and works in proximity to sensitive receivers.

Typically, ARTC maintains a five-metre-wide strip either side of the rail track to minimise fuel load and retain sight lines. Routine vegetation maintenance and general upkeep of railway land aims to minimise fire risk. Where requested by local residents, councils or fire authorities, vegetation may be cleared. ARTC engages with local authorities to collaborate on fire prevention actions including notification of a fire breaking out, the rapid development of a fire posing risk, or providing fast and safe access to the rail corridor for emergency services.

ARTC's Emergency Management Procedure is publicly available here: **ARTC Emergency Management Procedure**

Residents or other stakeholders can contact ARTC regarding asset or environmental issues (including vegetation management, fuel loads or weeds) via the Enviroline service (via: **Contact Us — ARTC**, 1300 550 402 or enviroline@artc.com.au) is available 24 hours/seven days a week.

Social impact management plan

Issue

The proposed Social Impact Management Plan should be made available online in accordance with the draft *Social Impact Assessment Guideline for State significant projects* (DPIE, 2020e) to promote community confidence in the management of social impacts.

Response

As described in section B14.5.1, and in accordance with new mitigation measure SE3, a detailed social impact management plan (SIMP) would be prepared to manage the implementation of the proposed mitigation measures, and the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring and reporting framework for construction.

The SIMP would be made available online in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (July 2021).

DPE's transitional agreement for the draft Social Impact Assessment guideline does not apply to the proposal as it was released after ARTC submitted the application for the proposal. ARTC has prepared a social impact assessment (Technical Report 13), which meets the SEARs and DPIE's 2017 social impact assessment guidelines (in accordance with the SEARs). Technical Report 13 has been made publicly available as part of the EIS. An addendum social assessment has been prepared following public exhibition in response to particular matters raised by DPE. The addendum social assessment is available separately.

Design standards for lighting of level crossings

Issue

The RMS (now TfNSW) *Guideline Lighting for Railway Crossings* provides for the provision of lighting at all public level crossings and must be used to determine the need for lighting for the proposal. Wherever practicable, lighting is to be provided on all sealed roads, and on unsealed roads with poor alignment that are trafficked at night. Road lighting is recognised as reducing crash risk at night by around 30 per cent.

Response

In accordance with amended mitigation measure TT4, public level crossings would be designed in accordance with relevant guidelines and standards, including the *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b), which provides for the provision of lighting at public level crossings, where appropriate.

Driver set back at level crossings

Issue

Driver set back at level crossings must comply with AS1742.7:2016. On freight routes and in rural areas, this must include provision for trucks and primary industry vehicles that may use a passive level crossing.

Response

The level crossings have been designed to suit the current road arrangements; further refinements would be undertaken during detailed design. This would consider vehicle types catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Amended mitigation measure TT4 provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), ARTC standards and *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b), including provision of warning signage, line marking and other relevant controls.

Interfaces between rail lines

Issue

At locations where the proposal interfaces with other rail networks or sidings, ARTC needs to demonstrate that trains moving between the networks are not held across public level crossings when moving between the Inland Rail corridor and existing rail corridors, and that shunting manoeuvres will not occur across public level crossings.

Response

Where practicable, the proposal design has taken into consideration the placement of level crossings and sidings so that they are not outside the line of sight, e.g. where the proposal interfaces with the Country Regional Network at Curban. During detailed design, the configuration of the ARTC network would continue to be designed such that the location of public level crossings allows trains to clear crossings in accordance with the signposted track speed (noting that this may not be possible in the event of an emergency).

Under normal train operations, trains moving between the networks or undertaking shunting manoeuvres would not be held across public level crossings.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

Approval for installation of new level crossings

Issue

ARTC must comply with Transport for NSW's level crossings policy to obtain approval to construct new level crossings. Approval for the installation or removal of (road) traffic control devices is a function of Transport for NSW, with certain devices delegated to local government on roads other than State roads. Only Transport for NSW holds the authority to approve the installation or removal of internally illuminated devices, and of speed limits, on all roads.

Response

The requirement to comply with Transport for NSW's level crossing policy and seek approval for the installation or removal of (road) traffic controls is noted.

Fencing of the rail corridor

Issue

The EIS states temporary site fencing will be installed to ensure construction areas and areas to be impacted are clearly delineated; however, it does not contain information regarding permanent fencing along the rail corridor. The proposed rail corridor boundaries will be required to be re-defined and agreed.

Response

ARTC has an Inland Rail Program-wide fencing strategy that would guide the detailed design of fencing for the proposal. Fencing would be constructed along the rail corridor where it adjoins private land. Fencing (for stock) is not required in State forest areas. Where the rail corridor abuts an existing public road with stock movements, fencing would be provided on both sides of the proposed rail corridor.

The type of fencing would be discussed with landholders and road managers, and refined during detailed design. In general, unless otherwise agreed, fencing would consist of a standard stock fence (1.2 metres high), with gates provided in locations aligning with access roads and other key access points to the rail corridor from public and private roads.

The EIS presents mapping of the proposed rail corridor. This would be further refined during detailed design, in consultation with Transport for NSW.

5.7.3 Level crossings

Preliminary assessment of proposed level crossings

Issue

Transport for NSW provided a preliminary assessment of the proposed new level crossings and these are detailed in Appendix C of the submission.

Response

ARTC acknowledges Transport for NSW's concerns regarding the level crossings and recognises that Transport for NSW is a key stakeholder for the proposal.

Mitigation measure TT4, provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

Specific responses to Transport for NSW's comments in Appendix C of their submission are provided below.

ARTC would continue to work collaboratively with TfNSW to progress road–rail interface solutions during detailed design. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Sight distance requirements

As noted above, all level crossings would be designed to comply with relevant Australian, State and road authority standards, and would be reviewed by the road manager as part of the detailed design process. These standards include the sighting distance requirements in *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016).

The rail corridor is wider at passive level crossings to account for sight triangles, where practicable, including where the rail corridor traverses private property and State forests.

Grade separation

A response to the issue raised regarding the request to grade separate all new Inland Rail interfaces with classified roads is provided in section 5.7.1.

With regard to Transport for NSW's request that the proposed bridge over Marthaguy Creek be extended to include Oxley Highway, ARTC notes that the current design of the bridge does not provide enough clearance to allow for grade separation without significant changes to the alignment.

Private roads, Crown roads and paper roads

Transport for NSW noted that there are no closures or treatments provided in the map book for a number of private roads, Crown roads and paper roads. Treatments to private roads are beyond the scope of the EIS and are being addressed directly with the impacted landowners as part of the proposal's wider consultation process.

Mitigation measure LP6 provides that, where the proposal affects access to and from a public road, input would be sought from relevant landholders prior to finalising the detailed design. Where any legal access to a property is permanently affected, and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and reasonable. Where an alternative access is not feasible or reasonable, and a property or part of a property is left with no access to a public road, consideration would be given to acquisition of the property or part of the property.

Offset between Newell Highway and level crossing

ARTC confirms that the offset from the Newell Highway has been designed to accommodate Type 1A Road Trains.

Cains Crossing Road

ARTC confirms that there would now be no change to the intersection of Cains Crossing Road and Newell Highway. Additionally, ARTC notes Transport for NSW's request to close one of the ends of Cairns Crossing Road. ARTC will consult with the relevant road manager regarding this, noting that any potential closure would require approval from the relevant road manager.

Dandaloo Road passive level crossings

ARTC notes Transport for NSW's concern about having two passive level crossings close to each other. Following further review of the design, it is confirmed that the existing passive level crossing on Dandaloo Road would be upgraded to an active level crossing if the Narromine West connection is constructed.

5.8 Forestry Corporation of NSW

5.8.1 Electricity supply

Provide details of the electricity supply system

Issue

The Forestry Corporation of NSW (FCNSW) requests details of the electricity supply system proposed to service the Pilliga crossing loop (including the spatial data) (A7-16). FCNSW is more supportive of underground electrical supply on account that overhead powerlines pose an ignition risk for the Pilliga forests and require greater amount of clearance (i.e. permeant forest removal).

Response

The Pilliga crossing loop would be solar powered and there would be no need for overhead powerlines through the State forest that could represent an ignition risk.

5.8.2 Road closures

Impacts on State forest roads needs to be confirmed and resolved

Issue

FCNSW believes there are more State forest roads and tracks that will be impacted from the proposal than are detailed in the EIS (Table 11.2). FCNSW does not accept that the design, as detailed in the EIS, is complete.

FCNSW is committed to continue working with ARTC to reach consensus on the matter of road interactions in State forests.

Response

Table B11.2 provides a list of road intersections near the proposal site. It is not intended to list all roads that may be impacted by the proposal. As described in section A6.3.3 of the EIS, there are a total of 33 interactions with forestry roads. In accordance with mitigation measure TT2, ARTC would undertake further consultation with FCNSW during detailed design regarding impacts to forestry roads. This consultation would ensure all forestry roads are identified and appropriately treated.

Road closures

Issue

The EIS does not present explanation as to why particular road closures in State forest have been chosen. FCNSW requests that ARTC present the findings derived from the Australian Level Crossing Assessment Model and disclose the criteria thresholds that ARTC used in their determination of State forest road closures.

Response

As described in sections A6.3.3 and A7.3.7, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards. Options considered included grade separations, level crossings, consolidation, relocation, diversion and realignment. From both a rail safety and policy perspective, the overarching objective across the Inland Rail program is to, as far as reasonably practicable, minimise the number of level crossings across the alignment.

The Australian Level Crossing Assessment Model (ALCAM) is not used to determine whether a particular road is closed (i.e. no crossing of the corridor provided). ALCAM is a nationally accepted risk tool for level crossings. Once it has been determined that a level crossing is required, ALCAM is a key input into the methodology used to determine the proposed level crossing treatment (active or passive).

The proposal described in the EIS is a reference design, which would be further refined during detailed design. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT2, ARTC would undertake further consultation with FCNSW during detailed design regarding impacts to forestry roads. This consultation would ensure all forestry roads are considered and appropriately treated.

Impacts to timber harvest and haulage, and Pilliga Forest Way

Issue

The EIS does not appear to acknowledge the impacts to timber harvest and haulage caused by the rail line blocking traditional road access to Pilliga Forest Way. FCNSW requests that ARTC commit to providing supplementary vehicle access tracks to connect blocked roads to the nearest level crossing in order to lessen this impact. Alternatively, it is requested that ARTC confirm how the increased length of timber haulage routes will be compensated.

FCNSW requests further discussions, including field investigations, in relation to the proposed realignment of Pilliga Forest Way. All changes to the FCNSW road network need to be formalised through a binding agreement between the parties that considers the interests of FCNSW.

Response

Potential impacts to forestry operations were assessed in sections B12.3.4 and B12.4.4 of the EIS. The assessment identified a range of impacts, including loss (temporary and permanent) of harvestable land and changes to access arrangements.

ARTC recognises that FCNSW is a key stakeholder for the proposal. ARTC would continue to liaise with FCNSW on those aspects of the proposal that are of relevance and interest to FCNSW, including access and forestry operations, in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

ARTC acknowledges the issue of access for timber harvest and haulage, which would continue to be addressed as the design and construction planning progresses. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders (which includes FCNSW) would be ongoing during detailed design, to identify feasible and reasonable measures to minimise impacts on their operations/properties. As noted above, mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (which would include FCNSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure LP14, Forestry Corporation of NSW would continue to be consulted in relation to:

- ▶ Those aspects of construction planning, programming and work methodologies with the potential to affect forestry management practices
- ▶ Minimising the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required
- ▶ Opportunities for beneficial reuse of forest products that would be removed during construction.

The arrangements for compensation will be confirmed during the property acquisition process, in consultation with FCNSW. Changes to FCNSW's road would be managed via the third-party agreement for those FCNSW assets that the proposal would affect.

In addition, it is noted that an inter-governmental agency, Pilliga Forest Working Group, would be established under the leadership of Transport for NSW. FCNSW would be invited as a representative of this working group.

Traffic numbers for Pilliga Forest Way

Issue

FCNSW believes that the EIS underestimates the traffic numbers for Pilliga Forest Way and can provide traffic data for this thoroughfare if required.

Response

As described in section 3.3. of Technical Report 10—Traffic and transport assessment, the assessment methodology included as an input traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the area. The traffic survey included a week of traffic counts on Pilliga Forest Way in both directions. The average two-way weekday count at this location was five vehicles per day. The peak traffic day was on Tuesday 13 November with 10 vehicles per day, while the highest hourly volume observed during the week was three vehicles.

Potential impacts on the road network due to construction traffic are described in section 6.1.1 of Technical Report 10 and summarised in section B11.3.1 of the EIS. With regard to Pilliga Forest Way, an additional 10 vehicles per hour are anticipated during construction in peak periods, bringing the total two-way peak hour traffic volume to about 13 vehicles per hour. At this volume, Pilliga Forest Way is forecast to continue to operate at level of service A. A review of the construction traffic impact assessment for Pilliga Forest Way has been undertaken. The review confirmed that hourly traffic volumes on Pilliga Forest Way would need to exceed about 200 vehicles per hour for there to be a change to the predicted level of service. Therefore, unless FCNSW has data that shows traffic volumes per hour are in excess of 200 vehicles, there would be no changes to the construction traffic impact described in the EIS.

Potential impacts on the road due to operation of the proposal are described in section 6.2.1 of Technical Report 10 and are summarised in section B11.4.1 of the EIS. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. No assessment was undertaken of the level crossings at Pilliga Forest Way.

The operational impact assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 metres during the proposal's opening year at the worst-case level crossing, while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 metres.

As described in section 3.1 of this report, changes to public level crossings are proposed as one of a number of amendments to the proposal. This amendment includes changes to the numbers, locations and treatments for public level crossings. The amendment has been reviewed to determine whether there would be any changes to the outcomes of the traffic impact assessment undertaken for the EIS. The review determined that the Castlereagh Highway is still the busiest location at which a level crossing is proposed; however, as described in the combined Preferred Infrastructure/Amendment Report, the opening year of the proposal would now be 2026, rather than 2025. In addition, as described in section 3.2, further assessment has been undertaken to respond to various queries about the effect of level crossings on the performance of the road network. The maximum delays and associated number of vehicles delayed (at the Castlereagh Highway crossing) for various operational scenarios, based on this further assessment, are provided in Table 5-4.

Delays at all other proposed level crossings, including those proposed on Pilliga Forest Way, would be much less than those reported for the Castlereagh Highway.

TABLE 5-4: CASTLEREAGH HIGHWAY LEVEL CROSSING DELAYS

Scenario ¹		Estimated maximum delay		
Opening year	Train speed (km/hr)	Time (seconds)	No. of vehicles delayed (two-way)	Queue length (metres)
2026	80	121	9	74
2026	115	96	8	66
2040	80	121	10	82
2040	115	96	9	74

1. Based on a train with a maximum length of 1,800 metres

5.8.3 Other restrictions to State forest access

Impacts on the Aloes picnic area

Issue

The EIS indicates the temporary closure of the Aloes picnic and camping site. Clarification is sought as to how long access will be restricted at the Aloes, and whether ARTC will supply alternate recreational facilities at a nearby location while the Aloes area is subject to access restrictions.

Response

As described in section B7.3.1 of the EIS, the 'Aloes' homestead, which includes a picnic area, would be avoided by the proposal. This was confirmed following the completion of the social impact assessment. It is acknowledged that the statement in Table B14.1 of the EIS regarding the temporary closure of Aloes picnic area is incorrect. The picnic area would not need to be closed during construction. Visitors to the picnic area may experience reduced amenity when works occur adjacent to the site.

5.8.4 Culverts and rail over passages

Clearance of culverts

Issue

The clearance of culverts beneath the rail line in State forests needs to be clarified to confirm if they would offer fire fighting vehicle access across the rail line.

Response

While bridges and culverts along the proposal have been specifically designed to manage surface water flows and floodwaters, there is the potential that there would be sufficient clearance for the passage of fire fighting vehicles at some locations. ARTC would provide FCNSW with further information regarding those structures that would have sufficient clearance as the detailed design progresses. Access across the rail corridor would also be provided via the proposed level crossings.

Impacts of surface flow changes

Issue

The surface flow changes impacting State forests beyond the rail line corridor need to be quantified. FCNSW may need to consider impacts to harvest prescriptions and timber availability caused by anthropogenic drainage lines.

Response

As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since exhibition of the EIS, following further consultation and in response to submissions. The updated assessment revised quantitative design limits, including specific objectives for State forest lands. Mapping of surface flows within State forests is provided in the updated flooding and hydrology assessment report.

In accordance with mitigation measure FH1, the design would continue to be refined, where practicable, during the detailed design process, to not worsen existing flooding characteristics. Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. The additional flood modelling, and any mitigation identified as an outcome of modelling, would be undertaken in consultation with the FCNSW.

Issue

FCNSW are concerned that concentration of surface flow as a consequence of culverts will damage forestry roads down contour of the rail line. What controls does ARTC propose to ensure FCNSW's road surfaces are not damaged as a result of the rail line?

Response

The updated assessment revised quantitative design limits, including specific limits for State forest lands and additional assessment regarding velocities at culverts and proposed scour protection (refer to the updated flooding and hydrology assessment report for further information). 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. Mapping of velocities downstream of culverts within State forest areas is provided in the updated flooding and hydrology assessment report.

In accordance with mitigation measure FH2, further detailed hydraulic modelling would be undertaken during detailed design to confirm the locations downstream of culverts that require erosion protection, and to confirm the extent and type of protection required. This would be undertaken in consultation with FCNSW.

ARTC acknowledges FCNSW's concerns regarding damage to forestry roads. Any requirements for roads damaged due to the proposal would be confirmed as part of the third-party agreements, which would be developed in accordance with the program-wide strategy that ARTC has been using to guide management of third-party assets along Inland Rail.

5.8.5 Off-corridor infrastructure

Issue

FCNSW is seeking further information regarding the options for liabilities facing landholders for infrastructure constructed by ARTC that is beyond the corridor footprint (i.e. relinquished to the landholder).

FCNSW is of the position that ARTC remains responsible for all works they construct for the life of those works and that costs of any infrastructure (including road surfaces) with rail-line-specific standards (i.e. approaches to level crossings) be borne by ARTC.

Response

ARTC acknowledges FCNSW's concerns regarding ongoing maintenance costs for infrastructure handed over to landholders at the completion of construction. ARTC is committed to ongoing consultation with stakeholders and affected landholders to resolve issues and opportunities surrounding the delivery of the proposal, which would be discussed and negotiated on a case-by-case basis.

As part of the third-party agreement discussions, ARTC would consider FCNSW's cost of maintaining the additional assets returned to FCNSW, noting that FCNSW may also receive benefit through reduced maintenance expenditure as partially aged existing assets are replaced with new assets.

5.8.6 Operational access roads

Issue

FCNSW requests confirmation as to whether there are operational access roads proposed to be constructed in State forest and, if so, requests copies of the spatial data to consider these designs.

Response

An operational access road would be provided at the Pilliga crossing loop and this would mostly be located within the proposed rail corridor. In accordance with mitigation measure TT2, ARTC would seek input from FCNSW prior to finalising the detailed design of those aspects of the proposal that affect the operation of road infrastructure under FCNSW's management.

5.8.7 Haul roads

Use of construction haul roads for future FCNSW operations

Issue

Once Inland Rail is operational, FCNSW requests confirmation as to whether they would be able to continue to use the construction haul roads to support timber harvesting and fire-fighting activities.

The Map Book in the EIS (Part E Map Book 5 maps 162–168 and 177–187) shows the rail corridor where it departs from Pilliga Forest Way and passes through numerous forestry compartments in the absence of forestry roads.

FCNSW requests confirmation as to whether the haul roads on both sides of the rail line for these sections of track could be preserved for FCNSW operations.

Response

Haul roads within the rail corridor would be retained as operational access roads and are identified in the EIS as an operational component of the proposal.

Other haul roads on FCNSW land would be returned to FCNSW in a condition agreed with FCNSW, either as roads to support timber harvesting and firefighting or rehabilitated to an agreed standard.

5.8.8 Construction planning

Clarification on timing of involvement in construction planning

Issue

FCNSW is unable to comment on construction works and their impacts on State forest if no detail is presented. FCNSW requests information on when the detailed construction planning, programming and work methodologies will be available for review.

Further FCNSW requests that DPIE (now DPE) considers this lack of provision of detail during the EIS process when considering opportunities for stakeholder to contribute to the formulation of project approval conditioning.

Response

ARTC acknowledges FCNSW's concerns and recognises FCNSW as a key stakeholder for the proposal. The EIS is based on reference design that provides sufficient level of information to assess potential environmental impacts and recommend environmental management and mitigation measures. Detailed construction planning would commence when the construction contractor is appointed. ARTC would continue to liaise with FCNSW on those aspects of the proposal that are of relevance and interest to FCNSW, including the operation of the road network with State forests and the potential impacts on forestry operations, in accordance with the communication management plan for the proposal (in accordance with mitigation measure SE1).

In particular, mitigation measure LP14 has been amended to confirm ARTC's commitment to continue to consult with FCNSW in relation to those aspects of construction planning, programming and work methodologies with the potential to affect forestry management practices. This is in addition to the original commitment to continue to consult FCNSW in relation to:

- ▶ Minimising the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required
- ▶ Opportunities for beneficial reuse of forest products that would be removed during construction.

In addition, mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include FCNSW.

As noted above, an inter-governmental agency, Pilliga Forest Working Group, would be established under the leadership of Transport for NSW. FCNSW would be invited as a representative of this working group.

Clarification on consultation process

Issue

FCNSW requests clarification on the consultation process with reference to mitigation measures for construction (notification periods, likely periods for review of technical plans, landholder rights to object/amend, etc.).

Response

As described in section D5.2 of the EIS, a proposal-specific CEMP (and associated sub-plans) and an operational environmental management framework (EMF) would be prepared to guide the approach to environmental management during construction and operation.

The CEMP would 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. It would be prepared in consultation with relevant agencies and in accordance with the *Environmental Management Plan Guideline: Guideline for Infrastructure Projects* (DPIE, 2020d) and the *Inland Rail Construction Environmental Management Framework*. The CEMP would include procedures for ongoing communication with stakeholders. FCNSW would be given the opportunity to comment on the CEMP (and associated sub-plans) during their preparation.

ARTC would continue to liaise with FCNSW on material aspects of the proposal that are of relevance and interest to FCNSW, in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

The periods of review to be allowed for technical plans have not yet been determined, but it is likely that they would reflect the level of detail contained with respective plans, where practicable, and the guideline requirements.

Details of the State significant infrastructure assessment process can be found at: planningportal.nsw.gov.au/major-projects/assessment/state-significant-infrastructure/ssi-process.

A summary of appeal rights is available at: [State Significant Infrastructure \(nsw.gov.au\)](http://State%20Significant%20Infrastructure%20(nsw.gov.au)).

Exclusion zones

Issue

The exclusion zones described in Table D5-3 (LP14) need to be detailed.

Response

Mitigation measure LP14 states that the Forestry Corporation of NSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required. For example, as described in section B12.3.4 of the EIS and section 7.14.5 of Technical Report 11—Agriculture and land use assessment, there is a forestry research area located near the proposal in Cumbil State Forest. The establishment of any exclusion zones would be confirmed during detailed design, in consultation with FCNSW, and detailed in the CEMP.

5.8.9 Construction environmental management plan

Involvement in preparation of management plans

Issue

FCNSW seeks confirmation that it is to be a consultative body on management plans, which outline mechanisms to control activities that may impact State forest (e.g. Flood and Emergency Response Plan (bushfire), Traffic, Transport and Access Management Plan and others).

Response

As noted above, ARTC would continue to liaise with FCNSW on those aspects of the proposal that are of relevance and interest to FCNSW. In accordance with mitigation measure LP14, the FCNSW would continue to be consulted in relation to:

- ▶ Those aspects of construction planning, programming and work methodologies with the potential to affect forestry management practices
- ▶ Measures to minimise the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required
- ▶ Opportunities for beneficial reuse of forest products that would be removed during construction.

Mitigation measure TT6 has been amended to specifically refer to FCNSW as one of the key stakeholders that would be consulted to develop the traffic, transport and access management plan.

Mitigation measure TT7 commits to consult with relevant stakeholders (including FCNSW) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. This measure has been amended to confirm that additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders, where practicable

Mitigation measure FH4 has been amended to confirm ARTC's commitment to consult with relevant key stakeholders, including FCNSW, to develop the flood and emergency response plan.

5.8.10 Corridor clearing and impacts to timber resources

Comments and clarifications on the assumptions made in the EIS regarding timber resources

Issue

Trees pushed over rather than sawn and felled are exposed to tensile pressures, which often affects sawn timber properties and utilisation (i.e. not suitable as a sawlog).

Response

Mitigation measure LP14 provides that FCNSW would continue to be consulted in relation to opportunities for beneficial reuse of forest products that would be removed during construction. ARTC notes the issue raised by FCNSW and would confirm arrangements for beneficial reuse of timber during detailed design, in consultation with FCNSW. This would be detailed in the CEMP.

Issue

Conditions of the integrated forestry operations approvals are not applicable to timber taken under ARTC's project approval.

Response

The assessment of impacts on State forests in section B12.3.4 of the EIS indicated that forest products that would need to be removed for the construction of the proposal could potentially be used for a number of beneficial uses, and that consultation with FCNSW would be conducted to identify opportunities (mitigation measure LP14).

FCNSW's comments regarding reuse opportunities are noted. ARTC would continue to consult with FCNSW to identify suitable opportunities for beneficial reuse.

Costs of rearranging forestry compartments

Issue

FCNSW requests confirmation of the mechanism proposed to be used for recouping the costs of rearranging forestry compartments and forest roads (operationally and administratively) and recreating replacement zone 3B areas.

Response

The proposal has been designed to follow existing roads, where practicable, to minimise severance and fragmentation of State forest areas. As described in section B12.3.4 of the EIS, it is acknowledged that the rearrangement of forestry compartments and access tracks may be required to allow for the efficient harvesting of timber. Level crossings are proposed along the rail corridor within the affected forests to allow the rail corridor to be crossed by access tracks about every 3 to 4 kilometres.

In accordance with mitigation measure LP14, FCNSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices.

ARTC would engage with the relevant valuers to work with FCNSW to agree compensation. Discussions would commence in the third quarter of 2021.

Degree of fragmentation

Issue

The EIS does not contain sufficient detail on the degree of fragmentation and non-traversable nature, of the proposal within State forests.

Response

The map book, presented in Part E of the EIS, provides details of the operational arrangements of the proposal, including through State forests. As discussed in section B12 of the EIS, the proposal would change access arrangements through the State forests with access across the proposal provided by level crossings.

ARTC would continue to consult with FCNSW to discuss, manage and mitigate impacts on FCNSW operations.

Rail line survey

Issue

FCNSW requests confirmation on how the rail line is to be surveyed in heavily timbered areas of State forest before the clearing takes place, and whether clearing is likely to be required to facilitate the survey works.

Response

Any survey would be undertaken in accordance with standard practices and guidelines, which sometimes requires minor vegetation impacts (such as trimming and lopping) to achieve line of sight. ARTC would consult with FCNSW regarding survey plans, access requirements and any impacts that may arise from survey activities, in accordance with the current FCNSW access licence.

Value of forest resource

Issue

FCNSW has quantified and presented to ARTC the value of standing forest resources as well as the lost opportunity costs FCNSW will suffer as a result of permanently removing approximately 433 hectares from the production State. FCNSW request ARTC confirm when discussions and negotiations will commence.

Response

ARTC has engaged external valuers to work with FCNSW to agree compensation. Discussions would commence in the third quarter of 2021.

5.8.11 Fencing and grazing

Issue

FCNSW requests that the response to submissions makes provision for re-establishing fencing and access in State forests where grazing is impacted.

Response

Where existing fencing or access arrangements to properties are changed due to the proposal these will be reinstated or otherwise managed in consultation with landowners through the property acquisition process and the relevant mitigation measures, including LP1, LP5, LP7 and LP9.

5.8.12 Forest materials

Issue

The EIS describes the use of cut-and-fill techniques as part of the rail line construction process. Borrow pits are also referenced as supplementary resources; however, it is unclear from the EIS whether material excavated from State forest for the purposes of construction will be utilised for fill or other purposes. FCNSW requests any likely volumes be quantified.

Response

As described in section A8.10.2 of the EIS, construction would require a range of materials. The majority of structural and general fill would be obtained from cuts along the proposal site and supplemented by material from borrow pits as required. There are no borrow pits proposed within any of the State forests. All material won from State forests would be from cuttings along the rail alignment and this would be expected to be mostly reused in nearby areas for construction of rail embankments and, as required, road works. The earthworks requirements for the proposal would be subject to further refinement during detailed design and construction planning, and following detailed geotechnical investigations.

5.8.13 Excess spoil

Issue

FCNSW has identified that there may be opportunity for ARTC to deliver unwanted spoil to areas of State forest, where forestry roads require reforming (A6-31), and offers ARTC the opportunity to discuss further.

Response

As described in section A8.10.2 of the EIS, it is estimated that there would be an excess of general fill along the full length of the proposal site. The earthworks requirements for the proposal would be subject to further refinement during detailed design and construction planning, and following detailed geotechnical investigations. This would seek to minimise the final volume of excess spoil as far as practicable. Options for the reuse of any excess spoil would be confirmed during detailed design. ARTC would undertake further consultation with FCNSW regarding any feasible reuse options within State forest areas.

5.8.14 Dams

Issue

FCNSW requests clarification on the process for relocating and re-establishing the dam that is to be destroyed in Cumbil State Forest. FCNSW also requests confirmation if any other dams are likely to be impacted in State forests.

Response

The arrangements for relocating the impacted dam in Cumbil State Forest will be confirmed during the property acquisition process, in consultation with FCNSW. There are no other known dams that would be directly impacted by the proposal; however, during detailed design ARTC would undertake further consultation with FCNSW to confirm all impacts to dams and other infrastructure.

5.8.15 Isolation of areas of State forest and sterilisation of timber resources

Severance caused by the rail line

Issue

The EIS does not describe the likely event that severance caused by the rail line will result in areas of State forest becoming inaccessible to timber harvest. Instances include where drainage lines, ridges, rocky outcrops or freehold land boundaries affect the compartment. FCNSW requests clarification on how timber availability impacts as a result of severance will be managed.

Response

The proposal has been designed to follow existing roads, where practicable, to minimise severance and fragmentation of State forest areas. As described in section B12.3.4 of the EIS, it is acknowledged that the rearrangement of forestry compartments and access tracks may be required to allow for the efficient harvesting of timber. Level crossings are proposed along the rail corridor within the affected forests, to allow the rail corridor to be crossed by access tracks about every 3 to 4 kilometres.

In accordance with mitigation measure LP14, the FCNSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices.

Isolation of timber resources

Issue

The Map Book in Part E of the EIS shows thin strips of timber left isolated between the construction footprint and Pilliga Forest Way. It is well documented that isolated patches of timber suffer impacts from wind (internal defect or wind-throw). FCNSW requests clarification on how the responsibility for the damages caused to timber resources resulting from isolation will be managed.

Response

ARTC notes FCNSW's concerns regarding future loss of productivity in State forests as a result of land use changes generated by the proposal. In accordance with mitigation measure LP14, the Forestry Corporation of NSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices.

In addition, an inter-governmental agency, Pilliga Forest Working Group, will be established under the leadership of Transport for NSW. FCNSW will be invited as a representative of this working group.

The arrangements for compensation will be confirmed during the property acquisition process, in consultation with FCNSW. ARTC has engaged external valuers to work with FCNSW to agree compensation and discussions would commence in the third quarter of 2021.

5.8.16 Severance

Issue

FCNSW believes there is a lack of investigation into the effects of severance upon State forest and FCNSW's business and customers in the EIS. FCNSW requests the preparation of a detailed direct impacts table (Table 7.9 in Technical Report 11), similar to that published for agriculture.

Response

An assessment of potential impacts to State forests was provided in section 7.14.5 of Technical Report 11—Agriculture and land use assessment. The assessment identifies that the rearrangement of forestry compartments and access tracks may be required to allow for the efficient harvesting of timber. In accordance with mitigation measure LP14, the FC NSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices.

5.8.17 Use of forestry roads

Use of Pilliga Forest Way

Issue

FCNSW requests confirmation as to whether Pilliga Forest Way and other forestry roads are proposed to be used as part of construction and operation. If they are, details of traffic volumes and likely impacts to road surfaces and drainage are requested.

Response

The proposed strategy for construction access is described in section A8.11 of the EIS. Construction access routes are further detailed in section 5.2.4 of the traffic and transport assessment (Technical Report 10). Pilliga Forest Way and other forestry roads would be used for access to the proposal site within the Pilliga East State Forest and adjoining State forest areas.

Indicative worst case construction traffic volumes for each construction area are provided in sections A8.11.3 and B11.3.1 of the EIS. Actual traffic numbers on individual roads would vary across the construction period depending on the activity being undertaken and these would be further refined during detailed design and construction planning.

In accordance with mitigation measure TT10, a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. Pavement condition monitoring would be carried out during works, as required. Rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.

During operation, there would be low numbers of rail-related road traffic required to support activities such as routine inspection, and maintenance and crew changes.

Impacts of construction work traffic delays

Issue

FCNSW believes there is insufficient detail in the EIS for FCNSW to assess the impacts to its business caused by construction work traffic delays. FCNSW requests ARTC to meet with FCNSW and its timber customers as part of the EIS process, and to confirm the likely timing of such discussions. The parties are to consider future harvest areas and the roading network before establishing closure points and detours.

Response

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with local councils, Transport for NSW, FCNSW, emergency services and public transport/bus operators. Mitigation measure TT6 has been amended to specifically refer to FCNSW as one of the key stakeholders that would be consulted to develop the traffic, transport and access management plan.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

5.8.18 Options for new crossings

Issue

The EIS describes that no new level crossings should be permitted consistent with the Office of the National Rail Safety Regulator's policy (A6-28). FCNSW requests a meeting with ARTC as part of the EIS process to discuss this statement.

Response

ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program. In 2020, ONRSR audited the Inland Rail Road–Rail Crossing Strategy using a sample of crossings in NSW, including some proposed new crossings on the proposal. The objective of the audit was to assess how ARTC is applying the strategy, to ensure level crossing safety risks are eliminated or minimised, so far as is reasonably practicable. The report published in 2020 contained no findings or recommendations requiring action by ARTC.

ONRSR recognises that a number of new level crossings would be required for a project of this size. The ONRSR Level Crossing Policy notes that where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with Commonwealth rail safety legislation.

The methodology used to determine level crossing treatments across the proposal is consistent with Commonwealth rail safety legislation. All level crossings would be designed to meet relevant Australian and NSW road authority standards.

5.8.19 Travelling stock reserves

Issue

Travelling stock reserves are Crown timber land and FCNSW has an interest in the timber resources. FCNSW requests acknowledgement that FCNSW is a relevant stakeholder for the purposes of disturbance of timber and, therefore, consultation is to take place in conjunction with the other listed authorities.

Response

ARTC acknowledges that FCNSW is a relevant stakeholder for the purposes of disturbance of timber. FCNSW would continue to be consulted during detailed design regarding proposed clearing activities on these lands.

5.8.20 Rehabilitation

Issue

FCNSW seeks confirmation that all areas of rail line cuttings will reside within the 40-metre corridor footprint.

FCNSW seeks confirmation that FCNSW will be a consultative body for the development of the landscape and rehabilitation strategy affecting State forest (Technical Report 11, p122).

Response

All operational aspects of the proposal, including cuttings and embankments, will be located within the rail corridor, which will be leased and managed by ARTC.

The rehabilitation strategy (mitigation measure BD12) would be prepared as part of the CEMP, in accordance with relevant legislation, guidelines and standards. Consultation regarding the preparation of all management plans will be in accordance with the conditions of approval for the proposal and involve relevant stakeholders, as required.

5.8.21 Bushfire

Lack of detail regarding bushfire management

Issue

The EIS presents no information of how ARTC (or its contractors) will address the threat of bushfire in State forests. In lieu of the presentation of any details of bushfire response or preparedness, FCNSW would expect that the response to submissions offers such details.

FCNSW has discussed a number of these issues with ARTC since preparation of the EIS began and expects to see them detailed in the response to submissions report.

When working in State forest during the bushfire period (September to March), all construction work is to be supported by fire suppression resources of equivalent capacity to activity/ignition threat. For works described by the EIS, ARTC and its contractors would be required to have at each site, where mobile plant, drill rigs and/or hot works etc are taking place:

- ▶ Purpose-built fire fighting vehicles with a minimum of 400 litres water capacity and trained fire fighters
- ▶ Heavy plant (capable of building mineral earth fire breaks in heavily timbered environments) with operators with bushfire awareness training
- ▶ Communication systems to alert fire authorities of the presence of fire
- ▶ Weather recording tools to monitor conditions and report the fire danger index (FDI) to fire agencies
- ▶ Any other fire monitoring and suppression commitments as agreed with FCNSW and documented in the Master Inland Rail Development Agreement (or other agreement) signed by FCNSW and ARTC.

Response

In accordance with mitigation measure LP21, the flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks. During detailed design, ARTC would undertake further consultation with FCNSW to ensure the plan provides adequate measures.

Refer to responses below regarding ARTC's approach to managing bushfire events when the proposal is operational.

Barrier presented by the proposal

Issue

The rail line will create an impassable barrier to mobile plant and other ground-based fire suppression vehicles that would otherwise operate unimpeded through the forested environment when tracking an active fire edge. FCNSW has expressed this significant concern to ARTC and presented strategies to address the issue. Unless otherwise agreed in writing between ARTC and FCNSW, FCNSW would expect ARTC to:

- ▶ For the life of the project, fund and make available to FCNSW, additional mobile plant of the same capacity used by FCNSW for fire-fighting purposes. During wildfire events, the additional plant would be positioned on the opposite side of the rail line to recommence tracking a fire edge once the fire crosses the rail line.
- ▶ Maintain vehicular access (to a standard required of a Category 1 fire tanker) on both sides of the rail line to ensure crews and equipment are not hindered by severance caused by the rail line
- ▶ Fund any aerial fire suppression works FCNSW requires as a consequence of severance reducing the effectiveness of mobile plant (i.e. slow the fire front and offer time for mobile plant to reposition).

Response

ARTC notes FCNSW's concerns regarding firefighting. In accordance with mitigation measure LP14, FCNSW would continue to be consulted in relation to minimising the potential impacts on forestry management practices.

ARTC has previously held discussions with FCNSW regarding bushfire management. To date, the discussions have included/confirmed:

- ▶ Trains will not operate and traverse the Pilliga East State Forest during a bushfire
- ▶ ARTC has offered to supply mobile ramps and any necessary training for FCNSW to allow excavators and other firefighting equipment to traverse the rail line during a bushfire
- ▶ Prior to re-opening the line, ARTC will inspect the track, complying with ARTC's standard operating procedures 'Responding to a Major Incident'.

The arrangements for compensation will be confirmed during the property acquisition process in consultation with FCNSW. ARTC has engaged external valuers to work with FCNSW to agree compensation, and discussions will commence in 2021.

Application of Fire Danger Index thresholds

Issue

FCNSW requests that the current Fire Danger Index (FDI) thresholds that guide shutdown orders and works limitations in State forests for all industrial works during the bushfire danger period should also apply to construction and operation activities for Inland Rail.

Response

In accordance with mitigation measure LP21, the flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks. During detailed design, ARTC would undertake further consultation with FCNSW to ensure the plan provides adequate measures.

Refer to responses below regarding ARTC's approach to managing bushfire events when the proposal is operational.

Hot works activities

Issue

FCNSW requests that further detail be provided on how hot works activities, such as track grinding and mechanical vegetation removal (slashing), that pose ignition risks will be managed to avoid starting wildfires.

Response

In accordance with mitigation measure LP21, the flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks from construction activities. Measures to be included in this plan include that all works involving potential ignition sources will be subject to a risk assessment or ban on total fire ban days.

During operation, any maintenance activities that represent a bushfire risk would be undertaken in accordance with ARTC's standard operating procedures.

Management of rail line closures caused by bushfires

Issue

FCNSW requests clarification on how rail line closures caused by bushfires are to be managed. FCNSW is concerned that smoke, impeding visibility at level crossings, could lead to collisions between trains and mobile plant/fire appliances and that moving or stationary trains may pose as barriers to escape routes.

Response

During operation, in the event of a bushfire, the following existing ARTC procedures would be implemented, as relevant:

- ▶ There would be a temporary closure of the rail line to prevent trains entering bushfire zone
- ▶ In rare circumstances where trains have already entered or are approaching a bushfire zone, trains would be:
 - ▶ Moved away, where practicable, to where it can be safely managed
 - ▶ Driven in a safe manner, at a reduced speed, using headlight illumination and whistles

- ▶ Relocated clear of level crossings.
- ▶ Hi-rails would travel along the rail corridor to check for track damage.

5.8.22 Blasting

Issue

FCNSW reduces the risk of forest users being impacted by blasting events through the granting of rights to exclusive use of areas of State forest. FCNSW requests confirmation that no blasting will take place within the corridor inside State forest without an exclusive use arrangement in place.

Response

Based on the reference design and assessment presented in the EIS, blasting is not proposed in State forest areas.

5.8.23 Biodiversity

Issue

FCNSW acknowledges that a number of details in the EIS regarding biodiversity management measures are to be developed and managed via plans, strategies and protocols yet to be developed/published. FCNSW requests they be included as a consultative member of any biodiversity advisory panel (or similarly named) to provide input into the proposals affecting State forest.

Response

The CEMP and management plans would be prepared in accordance with relevant legislation, guidelines and standards. Consultation regarding the preparation of all management plans would be in accordance with the mitigation measures and conditions of approval and involve relevant stakeholders as required. FCNSW would continue to be consulted during the detailed design and construction planning process.

5.9 Heritage NSW (Aboriginal Cultural Heritage Regulation)

Adequate Aboriginal consultation

Issue

The Aboriginal consultation for the project has been adequately undertaken and documented. Noted are the favourable comments from the RAPs regarding the manner in which consultation was undertaken and their acceptance of the way the field survey, archaeological test excavations and general approach to the assessment was conducted. Heritage NSW has also noted the RAP support for the proposed mitigation and avoidance recommendations.

Response

ARTC appreciates the acknowledgement of the adequacy of Aboriginal heritage consultation.

Adequacy of the Aboriginal cultural heritage assessment

Issue

The assessment of the Aboriginal cultural heritage is adequate. The assessment has used conventional landscape and Aboriginal site modelling methods to determine areas of potential archaeological sensitivity. Where access has been provided, the project easement has been surveyed to a professional standard in partnership with the registered Aboriginal Parties (RAP).

Response

ARTC notes the acknowledgement of the adequacy of Aboriginal cultural heritage assessment.

Impacts of future investigations

Issue

Heritage NSW understands that future investigations for areas of archaeological potential is ongoing to assess the proposed development footprint in areas previously not surveyed. Heritage NSW is concerned about the consequential increase of harm to Aboriginal sites that will occur despite the actions proposed to minimise harm.

Response

As discussed in section B6.3.2 of the EIS, eight areas of cultural sensitivity (at Wallaby, Ewenmar, Marthaguy, Gulargambone, Tenandra and Baradine creeks, and the Castlereagh and Namoi rivers) are located within the proposal site and would require physical examination prior to construction commencing. For the purposes of the assessment, these areas were conservatively assumed to contain moderate-to-high archaeological potential and the areas that fall within the proposal site have been assumed to be impacted by the proposal. Prior to construction, a targeted archaeological survey would be undertaken for these areas (as described in mitigation measure AH3). Additional areas required for the amended proposal that were not surveyed as part of the EIS would also be subject to targeted archaeological survey (mitigation measure AH3) to identify any new sites. The impacts to any additional sites would be managed in accordance with the Aboriginal cultural heritage plan (mitigation measure AH10).

Six potential archaeological deposits are located within the proposal site and may be directly impacted during construction. These sites would require archaeological testing, prior to the commencement of construction, to confirm the extent of the potential archaeological deposits (mitigation measure AH5). This would involve test excavation and potential salvage. Any findings would require detailed analysis and reporting of any cultural material collected. All investigations would be undertaken in consultation with registered Aboriginal parties, in accordance with the archaeological survey and test excavation methodologies approved for the proposal (mitigation measure AH2), once property access is available.

In accordance with mitigation measure AH10, an Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage. The plan would be prepared in consultation with Heritage NSW and registered Aboriginal parties. This would minimise the potential for residual impacts as far as reasonably practicable.

Potential increase of harm to Aboriginal cultural heritage

Issue

Heritage NSW comments are based on the information presented in the EIS and supporting documentation. It is understood that property access issues constrained the Aboriginal cultural heritage surveys to investigate the entirety of select areas of Aboriginal cultural heritage potential. It is our understanding that further investigations will continue in sync with construction timelines or, when access to areas is permissible, post project approval. Notwithstanding our overall acceptance of the current assessment findings, Heritage New South Wales reserves judgement on any new information that shows a significant increase of harm to Aboriginal Cultural Heritage, whether cumulative or directly.

Response

In accordance with mitigation measure AH3, prior to construction, a targeted archaeological survey would be undertaken for areas identified as culturally sensitive that could not be surveyed due to property access restrictions. Additional mitigation and management measures and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10). If additional sites or items are identified that cannot be avoided, salvage of artefacts would be undertaken prior to construction, in accordance with the salvage methodology (mitigation measure AH2).

ARTC would continue to consult with Heritage NSW and provide updates on the outcomes of further investigations as required.

Recommendations for the management of Aboriginal cultural heritage

Issue

Heritage NSW provided a number of recommendations in relation to impacts to Aboriginal heritage items.

Response

Responses to recommendations provided by NSW Heritage are provided in Table 5-5.

TABLE 5-5: RESPONSES TO ABORIGINAL HERITAGE RECOMMENDATIONS RAISED BY NSW HERITAGE

Recommendation	Response
<p>Recommendation 1—Establish precautions for minimising harm to potential traditional burials</p> <p>The Aboriginal Heritage Information Management System (AHIMS) and archaeological record for western NSW highlight that traditional ancestral remains are buried close to water bodies, especially where source-bordering dunes or texture-contrast soils dominate. The proposed 'Unexpected Finds Protocol' must, therefore, be adequately designed to accommodate added precautions to limit inadvertent harm to Aboriginal burials, including a consultation process designed for that purpose. The construction activities must apply extra care in areas where the project intersects sensitive landscapes, such as alluvium landforms.</p>	<p>In accordance with mitigation measure AH12, an unexpected finds procedure would be developed and included in the Aboriginal cultural heritage management plan (see mitigation measure AH10) to provide a consistent method for managing any unexpected Aboriginal heritage items discovered during construction, including potential heritage items or objects and human skeletal remains. The procedure would define the requirements for managing any human skeletal remains discovered during construction in accordance with mitigation measure NAH8.</p> <p>Amended mitigation measure AH10 notes that the Aboriginal cultural heritage management plan would include measures to manage the potential for impacts to potential Aboriginal heritage items (including burial sites) located in sensitive landscapes (such as alluvium landscapes).</p>
<p>Recommendation 2—Sediment control measures must be implemented</p> <p>The archaeological record points to a strong correlation between Aboriginal sites and creeks within the landscapes intersected by the project boundary. Many of the creeks are prone to bank erosion from ground-disturbance activities. Heritage NSW recommends that adequate sediment control measures are, therefore, put in place to protect Aboriginal sites in proximity to creek lines where construction activities are proposed, prior to work commencing.</p>	<p>Amended mitigation measure AH10 provides that the Aboriginal cultural heritage management plan would include erosion and sediment controls to minimise the potential for impacts to Aboriginal sites located close to watercourses/drainage lines.</p>
<p>Recommendation 3—Cultural plant survey</p> <p>Heritage NSW notes that RAPs frequently identify that their concerns about impacts from a project are not restricted to the management of Aboriginal objects but include non-site values, such as plant species that hold medicinal and food value. When considering incremental harm to Aboriginal cultural heritage, the impacts to values associated with impacts to vegetation and habitat are also important.</p> <p>Although the impacts to vegetation will be mitigated through a proposed land based offset program, Heritage NSW requests that a botanical cultural plant survey be designed, in partnership with the RAPs and willing landowners, for areas productive for that purpose and at optimal periods for plant identification.</p>	<p>The Aboriginal cultural heritage management plan would include measures to minimise and mitigate potential impacts to other Aboriginal cultural values, including plant species that hold medicinal and food value. The proposed measures would be guided by a cultural plant survey (refer to amended mitigation measure AH10).</p>
<p>Recommendation 4—Aboriginal cultural heritage surveys in land-based offset areas</p> <p>Heritage NSW observes that as the last section of Inland Rail to be designed and assessed in NSW, the Narramine to Narrabri assessment completes the investigations that have identified harm to Aboriginal cultural heritage from Inland Rail. They also note that the investigations have encountered higher frequency and density of heritage sources in comparison to other stages of Inland Rail. Consequently, Heritage NSW has identified an opportunity to provide a proportionate offset to the cumulative incurred loss of Aboriginal cultural heritage from the Inland Rail project overall through the implementation of field surveys over additional areas to record Aboriginal sites for future records of Aboriginal land use occupation.</p> <p>It is recommended that the sites proposed for biodiversity offsets form the basis of these investigations, as this will consolidate the commitment to the protection of both Aboriginal cultural heritage and biodiversity.</p>	<p>As described in section B1.5.1 of the EIS, ARTC proposes to purchase and retire biodiversity credits to compensate for impacts to biodiversity as a result of the proposal. This would involve sourcing and establishing stewardship sites that meet the same vegetation and habitat types that will be impacted by the proposal.</p> <p>ARTC has engaged landowners within 100 km of the route in NSW regarding establishing a biodiversity stewardship site so that ARTC can purchase the appropriate credits.</p> <p>Once biodiversity offset sites are secured (in accordance with mitigation measure BD4), new mitigation measure AH9 commits to undertaking an Aboriginal heritage survey at representative locations to record any Aboriginal sites for future records of Aboriginal land use occupation and identify appropriate management strategies.</p> <p>The approach to the survey and reporting would be determined in consultation with the registered Aboriginal parties.</p>

Recommendation	Response
<p>Recommendation 5—Validating Aboriginal scarred trees post project approval</p> <p>Heritage NSW note that some of the images of Aboriginal scarred trees in the assessment report do not show obvious attributes conventionally used to determine traditional cultural practices. Heritage NSW recommend that an adequate identification assessment of the 12 Aboriginal scarred trees reported to be at threat from the proposed development. Heritage New South Wales recommend that the assessment is based on the Aboriginal scarred tree field manual (DEC, 2005) and if uncertainty in determining the origin of the scars persists, seek qualified arborist or tree surgeon with skills in identifying natural tree scars from traditional Aboriginal practice.</p>	<p>Scarred trees in the vicinity of the proposal site were identified through the use of existing AHIMS records and from field surveys conducted with registered Aboriginal parties.</p> <p>Amended mitigation measure AH6 includes a process to re-assess the identified scarred trees that may be impacted by the proposal in accordance with <i>Aboriginal scarred trees in New South Wales: A field manual</i> (DEC, 2005) and with the participation of registered Aboriginal parties.</p> <p>Following exhibition of the EIS, some additional field survey has been undertaken, which allowed for the re-examination of selected scar trees identified in the Heritage NSW submission. This was conducted in June 2021 with archaeologists from JacobsGHD and registered Aboriginal parties from Narromine LALC and Gilgandra LALC. As a result of the re-examination, it was determined that two trees at Boothaguy Creek (#27-6-0037 and #27-6-0041) did not meet the DEC criteria and have been removed from mitigation measure AH6.</p> <p>Additionally, the cultural origin of AHIMS sites #27-6-0035 at Ewenmar Creek and #27-6-0042 at Boothaguy Creek were confirmed. In accordance with AH6, direct impacts on these culturally modified trees would be avoided as far as practicable.</p>

5.10 Heritage NSW—Heritage Council of NSW

Conditions of management for historical archaeology

Issue

Heritage NSW supports the approach outlined in the EIS that proposes test excavations to be undertaken where impacts to archaeology would occur.

Heritage NSW suggests that conditions for the management of historical archaeology may be included in the conditions approval, which require the following:

- ▶ Preparation of a detailed archaeological assessment by a suitably qualified historical archaeologist for each archaeological/heritage item(s) subject to impact.
- ▶ All archaeological investigations must be undertaken by a suitably qualified Excavation Director.
- ▶ Final report should be prepared to publication standard within 12 months of the completion of the archaeological activities, with an electronic copy to be submitted to Heritage NSW.

Response

In accordance with mitigation measure NAH3, if impacts to areas identified as having archaeological potential (Curban Inn site and Convict Road, Baradine) cannot be avoided, an archaeological assessment, research design and methodology would be prepared. Test excavation would be undertaken by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria.

Mitigation measure NAH3 has been amended to include a commitment to preparing a publication standard final report and submitting an electronic version to Heritage NSW within 12 months of completing the archaeological assessment.

Unexpected finds protocol

Issue

An unexpected finds protocol should be included to manage historical archaeology, in accordance with section 146 of the *Heritage Act 1977* (NSW). Any discoveries should be notified to the Heritage Council of NSW.

Response

In accordance with mitigation measure NAH8, an unexpected finds procedure would be developed and included in the heritage management plan, to provide a consistent method for managing any unexpected heritage or archaeological items and unexpected human skeletal remains.

Advice from local councils

Issue

As the proposed development route passes through the curtilage of local heritage items, and other heritage items are situated in the vicinity, advice should be sought from the relevant local councils to ensure appropriate management of the archaeological resource.

Response

In accordance with mitigation measure NAH1, detailed design and construction planning would avoid direct impacts on identified items/sites of no Aboriginal heritage significance, as far as reasonably practicable.

Where impacts on archaeological potential cannot be avoided (Curban Inn site and Convict Road, Baradine), an archaeological assessment, research design and methodology would be prepared (mitigation measure NAH3). Test excavation would be undertaken by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria.

Mitigation measure NAH3 has been amended to include consultation with the relevant local council as part of the archaeological assessment.

In accordance with mitigation measure NAH7, a heritage management plan would be prepared and implemented as part of the CEMP. The plan would be prepared in consultation with the relevant heritage agencies (local councils) and take into account the outcomes of further investigations and surveys during detailed design.

Amended mitigation measure NA4 includes a requirement to consult with the relevant local councils and key stakeholders during preparation of the heritage interpretation strategy (see section 11).

5.11 Natural Resources Access Regulator

This is a pre-approval matter that needs to be sent to landuse.enquiries@dpi.nsw.gov.au to collate a combined response from both National Resource Access Regulator and DPIE Water

Assessment process

Issue

Natural Resources Access Regulator advised DPIE (now DPE) that a combined submission from National Resource Access Regulator and DPIE Water should be requested through landuse.enquiries@dpi.nsw.gov.au.

Response

Noted. A combined submission from DPIE Water and National Resource Access Regulator has been received and responses to issues raised are provided in section 5.4.

6. Response to other key stakeholder submissions

6.1 Baradine Showground Racecourse

Location of the temporary accommodation facility at Baradine

Issue

Locating the temporary accommodation facility on the Baradine Showground site should be considered. The site identified by the EIS is on the racecourse area currently leased by Baradine Central School. The school has agreed to allow a portion of the area to be used for the camp after they receive consultation on the planning and position of the site and compensation is agreed upon. Agreements need to be in writing and with confirmation from the land manager.

Response

Following exhibition of the EIS, further consultation has been undertaken with Baradine Showground Trust, Warrumbungle Shire Council and Baradine Central School in relation to the proposed location of the Baradine temporary workforce accommodation. The location has been amended and the facility is now proposed to be located on the non-operational racecourse area to the south of the original location. Further information is provided in the combined Preferred Infrastructure/Amendment Report.

6.2 Friends of the Pilliga

6.2.1 The wrong project

The proposal is inconsistent with the original intentions

Issue

The original 1996 proposal was intended to support the economic development and export potential of rural areas, using a mixture of existing rail, road and power corridors, plus some new connecting corridors, extending from Melbourne to Darwin via the port of Gladstone. The current project does not do this or use existing corridors. It crosses farms and extensive areas of public forests.

Response

The Inland Rail program has undergone significant refinement over the years since the original 1996 proposal. Building on some of the work undertaken in the 1980s, various papers proposing an inland railway emerged during the 1990s. By the early 2000s, there were at least two significant private sector proposals for an inland railway.

As described in section A6.1.1 of the EIS, alternative freight transport solutions with the potential to address Australia's current and future freight challenges were considered as part of a strategic options assessment set out in the *Inland Rail Programme Business Case* (ARTC, 2015), and examined in the *Melbourne–Brisbane Inland Rail Report* (Inland Rail Implementation Group, 2015).

Three options were assessed by the *Inland Rail Programme Business Case* (ARTC, 2015):

- ▶ Progressive road upgrades
- ▶ Upgrading the existing east coast railway
- ▶ An inland railway.

These options were subjected to a rigorous assessment consistent with Infrastructure Australia's *Reform and Investment Framework* (Infrastructure Australia, 2014). Overall, constructing an inland railway ranked highest, with an average high likelihood of improving outcomes across all criteria.

Alternative routes for Inland Rail as a whole were considered by the following two studies:

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

The shortlist of route options was subjected to more detailed technical, financial and economic assessment. The option involving use of existing track towards Werris Creek had the lowest capital expenditure while still meeting the performance specification. This option had a length of about 1,880 kilometres (km). The option

involving the more direct route between Narromine and Narrabri (via Curban) had the fastest transit time for a reasonable capital expenditure. This option, which had a length of about 1,731 km, became the focus for more detailed route, demand, economic and financial analysis.

Refining the proposed alignment involved an iterative process, with evaluation of the following:

- ▶ Environmental and land issues
- ▶ Railway operations considerations
- ▶ Engineering assessments
- ▶ Capital cost estimates.

The final preferred alignment, between South Dynon in Melbourne and Acacia Ridge in Brisbane, incorporated:

- ▶ Melbourne to Parkes—670 km of existing track and 37 km of new track on a greenfield alignment from Illabo to Stockinbingal, bypassing Cootamundra and the Bethungra spiral
- ▶ Parkes to North Star—307 km of upgraded track, and 291 km of new track on a greenfield alignment from Narromine to Narrabri
- ▶ North Star to Acacia Ridge—271 km of new track on a greenfield alignment, 119 km of existing track upgraded from narrow gauge to dual gauge, and 36 km of the existing coastal route.

Further information on the route history and selection process is provided in the combined Preferred Infrastructure/Amendment Report (see section 3.3.1 of this report) and supporting Route Selection Summary Report.

Little benefit to regional communities

Issue

There will be little benefit to communities in the regions as the project does not stop along its route. Freight hubs will be needed to enable regional produce to access the route. These are not funded under the plan and must be financed separately. Freight trains from these hubs will need to be slotted in between the non-stop trains.

Response

Developing and facilitating access to intermodal terminals/freight hubs does not form part of the scope of the proposal for which approval is sought. ARTC would continue to engage with local councils with regard to the relationship between Inland Rail and any regional intermodal terminals that may be proposed in the future.

An electrified very fast train would be better

Issue

Electric trucks are increasingly competitive with diesel. They are much more flexible with regard to delivery destinations than rail transport and will become even cheaper. The Inland Rail runs a serious risk of becoming a stranded asset or at least increasingly uneconomic.

To move freight long distances, electrification of the line would be required to replace diesel. Building an electrified very fast train Melbourne–Canberra–Sydney would give better value for money and better climate outcomes.

Response

Inland Rail is proposed to enhance and integrate with the existing national freight network, which is used by long-distance diesel trains. Development of an electric freight network does not form part of the proposal for which approval is sought.

ARTC has been tasked by the Australian Government to build Inland Rail to meet certain specifications of the Inland Rail Service Offering, which do not include electrification of the rail line.

6.2.2 The wrong route

The project should not go through the Pilliga

Issue

A number of alternatives were considered for the section of the route between Dubbo/Narromine and Narrabri. One of these used an existing rail corridor through Gwabegar and other private land to Narrabri. According to the EIS this was rejected because there was less potential for conflict with landholders if it went through the forest.

However, there is much more potential for causing permanent environmental damage. The Pilliga is the last remaining large example of temperate woodland in NSW. As such it is a refuge area for a rich diversity of native flora and fauna, communities and ecosystems.

For the sake of landholders and the environment, this section of the project should be diverted along existing rail corridors. It should not go through the Pilliga.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure / Amendment Report and supporting Route Selection Summary Report. This includes consideration of the options for the section of the route between Dubbo/Narromine and Narrabri (through the Pilliga forests), and the justification for the preferred option selected (see section 2.4 of the Route Selection Summary Report).

As described in section A1.5.1 of the EIS, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through refinements during detailed design.

Cumulative biodiversity impacts and adequacy of offsets

Issue

Cumulative impact studies consider only the Narrabri Gas Project. Impacts of other projects (including APA Western Slopes Pipeline, Silverleaf Solar Farm, reactivation of Petroleum Exploration Licences throughout the region and the nearby Australian Wildlife Conservancy Saving Our Species project) have been ignored. The Saving Our Species project has already led to the destruction of an estimated 28,000 hollow-bearing trees within the Pilliga. Estimates of the number of trees with hollows to be removed by this project and the Narrabri Gas Project may be even greater than this. This will result in massive cumulative effect on the native forests.

The project and the Narrabri Gas Project will not be able to mitigate their impacts on the natural environment and will require like-for-like offsets. Suitable tracts of land are increasingly rare throughout the North West and none are as large as the Pilliga. There will not be enough for both projects and the actual protected natural areas will be a lot less when they finish compared with when they started.

Response

Cumulative impacts

Technical Report 1—Biodiversity development assessment report includes an assessment of the potential for cumulative biodiversity impacts (see section 8.6) and the results are summarised in section D1.4.1 of the EIS. The assessment considered publicly available information on major projects in the study area, including the Narrabri Gas Project and Silverleaf Solar Farm. Insufficient information was available on the APA Western Slopes Pipeline at the time the assessment was undertaken. Further information on the potential for cumulative impacts considering this project is provided in the updated biodiversity development assessment report.

The cumulative assessment noted that the cumulative loss and fragmentation of native vegetation and associated habitats would adversely affect native flora and fauna species, including a large number of threatened species. A range of mitigation measures are provided to mitigate the potential impacts identified.

Biodiversity offsets

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance in accordance with the EPBC Act. As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program. ARTC has invited landowners within 100 km of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

In accordance with the Biodiversity Offsets Scheme, *Biodiversity Assessment Method* (DPIE, 2020b), Biodiversity Conservation Regulation 2017 and the EPBC Act, ARTC will seek credits and establish offsets for similar vegetation affected by the construction of Inland Rail in NSW and generally within the same areas. This limits where stewardship sites can be located, what vegetation and habitats will be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors.

The requirement to obtain like-for-like offsets refers to the specific number and types of ecosystem and species credits required to offset the impacts of the proposal in accordance with the Biodiversity Conservation Regulation 2017. Biodiversity offsets are not required to exactly replicate the area of impact. Offsets are required to take into account the landscape attributes of ecosystem and species credits (and dual credit species) within each subregion, including connectivity, patch size and areas of retained native vegetation before and after the impacts of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced within the legislated offset trading rules set out in the Biodiversity Conservation Regulation 2017.

Where ARTC is unable to source suitable offsets for the proposal, they may seek to apply the variation rules for retirement of some ecosystem and species credits, particularly those credits associated with native grasslands, which may be difficult to source. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), another option would be for ARTC to make a payment into the Biodiversity Conservation Fund. The Biodiversity Conservation Trust, which manages the fund, must secure offsets in line with legislated offset rules set out in the Biodiversity Conservation Regulation. The Biodiversity Conservation Trust is required to meet any biodiversity offset credit requirement in a like-for-like manner. This is by retiring like-for-like credits, by funding conservation actions that are listed in the *Ancillary rules: Biodiversity conservation actions* (OEHL, 2017) and benefit the threatened entity impacted, or by funding other conservation measures approved by the NSW Minister for Energy and Environment that directly benefit the entity impacted.

Further information on the biodiversity offset credit process for Inland Rail is provided at:
inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

Fauna mortality impacts

Issue

Fast-moving trains up to 4 km in length will have potential for a high level of collision mortality along the route, which the EIS dismisses as 'unlikely'. This is another cumulative impact on the fauna of the Pilliga.

Response

The EIS and Technical Report 1—Biodiversity development assessment report considered the potential for operational impacts on fauna, including:

- ▶ Injury and mortality of fauna attempting to cross the rail line and roads
- ▶ Impacts on connectivity (and associated impacts on population viability and genetics), particularly for terrestrial fauna in the Pilliga area.

Section B1.5.1 of the EIS notes that measures to enhance connectivity would also assist in minimising the potential for train strike impacts. The EIS notes that these measures would be defined by the proposed fauna connectivity strategy and confirmed during detailed design.

A preliminary fauna connectivity strategy has now been prepared (see Appendix J of the updated biodiversity development assessment report). The preliminary strategy includes a range of measures to minimise mortality as a result of train strike, encourage the safe movement of fauna across the rail line, and minimise impacts on connectivity. These measures include dry passage under bridges, use of combined and dedicated underpasses, canopy bridges and rope bridges. Emerging and new measures, such as barrier poles, virtual fences and targeted removal of ballast, would also be trialed. The goal of the preliminary fauna connectivity strategy is to maintain viable fauna populations in the study area, particularly in the Pilliga forests. Mitigation measure BD6 has been updated

accordingly (see section 11 of this report). The fauna connectivity strategy would be finalised during detailed design in accordance with updated mitigation measure BD6.

Mitigation measure BD15 provides a commitment to monitor the performance of fauna connectivity measures (including impacts on fauna as a result of train operations and maintenance activities) and implement other measures as required. This would include recording of wildlife collisions with trains. ARTC would also monitor the use of crossing structures by target species (including the Pilliga mouse, squirrel glider, koala, rufous bettong and eastern pygmy-possum) and feral predators. The threatened species management plans (BD6) would include appropriate adaptive management measures to address situations where fauna connectivity and population impact thresholds are exceeded.

Aboriginal heritage

Issue

Aboriginal heritage has been addressed on the basis of individual sites and has not addressed landscape significance. Indigenous culture has a holistic view of the significance of landscape.

Aboriginal groups have indicated that consultation has been superficial.

Response

Assessment adequacy

The potential impacts on Aboriginal heritage were assessed in accordance with the SEARs and with reference to the requirements of relevant legislation, policies and/or assessment guidelines, including the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* (DECCW, 2010a) and *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011). An addendum Aboriginal cultural heritage assessment report has been prepared to assess the potential impact of the amended proposal footprint as described in section 3.2 of this report.

The study area for the Aboriginal cultural heritage assessment included the proposal site and the immediate vicinity of the proposal site (for any indirect impacts that could occur as a result of the proposal); however, a review of a much wider area was considered in the early phases of the proposal. This included a review of available Aboriginal Heritage Information Management System (AHIMS) site data, Aboriginal Sites Decision Support Tool issued by Heritage NSW, available archaeological reporting, ethnographic literature and site data from local Aboriginal land councils. Although the impact assessment focused on the proposal site and immediate vicinity of the proposal site, the information collected in the early phases was used to inform the Aboriginal cultural heritage assessment.

As described in section B6.3.2 of the EIS, in addition to archaeological features, Aboriginal cultural heritage values identified within the study area include those associated with permanent water sources, traditional thoroughfares, burial sites, and those associated with Aboriginal culture and dreaming. Consultation with registered Aboriginal parties identified that all Aboriginal cultural heritage values are considered to be of high cultural (social) significance. An assessment of potential impacts on places of cultural value identified in the proposal site is summarised in Table B6.6 of the EIS. The management of impacts on items of cultural significance would be considered with input from the registered Aboriginal parties (see section B6.5.2 of the EIS).

In accordance with mitigation measure AH3, prior to construction, targeted archaeological surveys would be undertaken for areas identified as culturally sensitive, requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10).

As more surveys are undertaken, it will be possible to develop a more detailed understanding of the connectivity of the wider cultural landscape.

New mitigation measure SE3 provides for the preparation and implementation of an Aboriginal community and stakeholder engagement strategy to ensure that local Aboriginal cultural and community values are identified and understood, and that opportunities to reflect Aboriginal community and cultural values in the proposal outcomes are determined.

Consultation

As described in section B6.1.2 of the EIS, Aboriginal consultation has been undertaken in accordance with the requirements of *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010c). This included:

- ▶ Identifying key Aboriginal stakeholders, including native title claimant groups and local Aboriginal land councils (LALCs)
- ▶ Sending letters to relevant organisations requesting details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or place within and adjacent to the proposal site
- ▶ Notification of the proposal, assessment and registration of interest (a total of 33 Aboriginal parties registered interest in the proposal)
- ▶ Presentation of information about the proposal and invitations to participate in targeted field surveys.

Further information on the consultation process is provided in chapter 4 of Technical Report 6—Aboriginal cultural heritage assessment report.

An Aboriginal Community and Stakeholder Engagement Preliminary Framework has been prepared to provide an overarching framework for engagement with Aboriginal stakeholders and communities during future stages of the proposal. The framework also draws together the commitments for these stages that are considered most relevant to Aboriginal communities.

A detailed Aboriginal community and stakeholder engagement strategy and action plan would be prepared by ARTC during the detailed design phase in accordance with the framework and new mitigation measure SE3.

Biosecurity/weed impacts

Issue

Each new development going through the Pilliga increases access to feral animals and weeds. This is observed along part of the Binnaway–Gwabegar railway route adjacent to a section of the Pilliga Nature Reserve near Yearinan. African Lovegrass crowds out native grasses and the species that depend on them. It is spreading along the railway line and into the adjacent protected areas. This grass is also the most common species found on well pads, along frequently used roads and along the highway. It will now have increasing access due to the Inland Rail.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk and ought reasonably to know it must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction, as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015* (NSW).

A framework CEMP was provided as Appendix F of the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures. During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur in accordance with ARTC's standard operating procedures to meet its obligations under the *Biosecurity Act 2015*.

6.2.3 The EIS

Representation of the Santos Narrabri Gas Project on EIS maps

Issue

The Santos Narrabri Gas Project is shown on maps throughout the EIS as a spot. The project covers an area of around 90,000 hectares and there is overlap of about 20 kilometres with the project route. The extent of the project should be shown on all relevant maps.

Response

The figures provided in the EIS are at a small scale and provide an indication of the location of other proposed projects. It is recognised by the EIS and assessments undertaken that the Narrabri Gas Project occupies a larger area. The EIS (chapter D1) notes that the Narrabri Gas Project is centred about 20 km south-west of Narrabri. It also notes that the project would involve development of up to 850 wells; a gas processing facility; a water treatment facility; a compression facility; and supporting workforce accommodation facilities, infrastructure corridors, access roads, and gas and water gathering lines. It describes that the project would be located on lot 1 of DP 771141 and surrounding State forests, and that the proposal site is located on the northern boundary of lot 1. This broader location has been taken into account as part of the cumulative impact assessments undertaken for the EIS.

Cumulative biodiversity impacts

Issue

Cumulative impacts are to be addressed by providing biodiversity offsets. With increasing developments and their associated fragmentation of the Pilliga, sufficient like-for-like offsets do not exist, especially when the advantages of the size of the Pilliga are considered.

Response

A response to this issue is provided in section 6.2.2.

Adequacy of the risk assessment

Issue

The environmental risk assessment seems only to require assessing risk to the project not risk to biodiversity, general environment, economy or society. It underestimates the impacts it is likely to cause.

Response

The environmental risk assessment (Appendix E of the EIS) was prepared early in the EIS process to assist with scoping potential issues and impacts in conjunction with those identified by the SEARs (as described in section A9.1 of the EIS). The assessment involved a preliminary, desktop-level risk assessment to broadly identify potential environmental impacts and risks associated with constructing and operating the proposal. The focus was on environmental risks (including risk as a result of the proposal to the community and environment) not on project risks (risks to the proposal).

For example, in relation to biodiversity, the assessment identified that, without mitigation, the proposal had the potential for a range of impacts and risks, including:

- ▶ Direct impacts on listed threatened flora species and endangered terrestrial ecological populations and communities
- ▶ Clearing of native vegetation (including vegetation in the Pilliga State forests) resulting in loss of fauna habitat, habitat fragmentation and loss of connectivity
- ▶ Impact on potential habitat for listed threatened fauna species.

In relation to potential socio-economic and land use/property impacts, the assessment identified that, without mitigation, the proposal had the potential for a range of impacts and risks, including:

- ▶ Temporary impacts on amenity for residents, visitors, businesses and other sensitive receivers, as a result of noise, dust and visual impacts during construction
- ▶ Direct impacts on community recreation facilities as a result of the proposal's land requirements, particularly in State forests

- ▶ Indirect impacts on agricultural land use/production and livestock from construction activities, including impacts from changes to access, noise and air pollution
- ▶ Disruption to forestry practices as a result of works within State forests.

Further information is provided in Appendix E of the EIS.

Impacts of water drawdown

Issue

Predicted water drawdown is described as ‘within the bounds of natural variability’. The water is lost to the system and is actually ‘on top of’ natural variability.

Response

Groundwater level changes due to climate variability were considered in section 5.8.1 of Technical Report 4—Groundwater assessment by reviewing historical data from Water NSW for select bores along the alignment.

The phrase ‘within the bounds of natural variability’ was used in section 7.1.3 of the technical report and in section B2.3.2 of the EIS to provide context for the less than 1 m change in groundwater levels that was predicted to occur due to pumping from the majority of borefields.

It is noted that the predicted minor change described would occur ‘on top of’ natural variability; however, the point made in the technical report and EIS is that a drawdown of less than 1 m would be well within the historical range of variations caused by climate variability in the past based on the historical review undertaken as part of the groundwater assessment. This would be unlikely to impact on groundwater dependent ecosystems.

Safety of level crossings

Issue

Level crossings without warning lights are a danger to vehicular traffic through the forest at night. The headlight on the locomotive is long gone and the dark moving train is not easily visible. This is much less of a problem in more open country.

Response

Freight trains on ARTC’s networks must be operated in accordance with ARTC’s rules and procedures, which include the following related to train visibility:

- ▶ Trains must have a working headlight fitted to the leading locomotive and travel with the headlight switched on ‘full’ when the train is moving on the ARTC network.
- ▶ Where provided, number lights on the leading end of the leading locomotive must be lit during travel.
- ▶ If provided, locomotive ditch lights or fog lights must be switched on when the locomotive is moving on the Main Line.
- ▶ Rail traffic whistles must be sounded during approach to level crossings. When the whistles are sounded (at level crossings) the ditch/fog lights in some locomotives automatically flash on and off to make them more visible.

Amended mitigation measure TT4 provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b), which specifies that lighting should be provided at public level crossings, and that this should illuminate the road alignment both on approach to the crossing and at the crossing, where appropriate.

6.3 GrainCorp Operation Pty Ltd

6.3.1 Traffic and transport

Approval process for increased train length and additional connections

Issue

The EIS should detail the approval process required to permit the 3,600-m-long trains to operate on Inland Rail and specify thresholds of incremental change not needing consent/approval.

Are further approval mechanisms intended to be undertaken to allow the additional rail connections to be constructed?

Response

The operation of 3,600-m long trains would be subject to a separate assessment and approval process under the EP&A Act. While components of the proposal would include infrastructure to accommodate possible future augmentation, including a possible future requirement for 3600-m long trains, this is not part of the proposal for which approval is being sought.

In relation to this and any other changes following approval, as described in section D5.4.2 of the EIS, proposed changes would be reviewed for consistency with the results of the assessments described in the EIS, relevant mitigation measures, performance outcomes and the conditions of approval. If any proposed changes are not consistent with the approvals and assessment results, appropriate modifications to the project approval would be sought in accordance with the requirements of the EP&A Act and the terms of the approval for the proposal.

Operational degradation of existing rail lines and poor connectivity with Inland Rail

Issue

An operational degradation issue exists for the east–west movement of regional freight traffic. There is a need to facilitate access to existing and proposed intermodals, industrial areas and GrainCorp sites, and create rail logistic pathways to all existing and potential market destinations.

GrainCorp disputes the assertion that *‘the proposal would not have any impacts on train paths when in operation’* and suggests that the Inland Rail mainline priority and existing train priority matrix would mandate impacts on regional train scheduling and operations.

The EIS should demonstrate why the proposal has minimal connectivity to Inland Rail, particularly in high-production agricultural areas, where there is an opportunity for road freight movements to be shifted to rail. The provision of operationally efficient connections to existing regional lines will be of outstanding benefit to both existing and new markets domestically and for export. The operational costs of additional train kilometres travelled due to inefficient connections should be demonstrated by a benefit-cost analysis.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value for money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

Train movements on existing rail lines are not expected to be impacted by Inland Rail. Any regional trains seeking to use Inland Rail would need to be scheduled.

The social and economic assessments were undertaken in accordance with the SEARs and with reference to the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2013a). The approach adopted for the assessment reflects the recognised industry approach to undertaking an EIS. Due to the nature of the incremental assessment approach adopted for the EIS, a project-specific cost-benefit analysis has not been undertaken, as the results would not capture the full benefits that are expected to be delivered upon completion of Inland Rail.

Impacts on regional roads during construction and operation

Issue

GrainCorp has concerns with regard to the reliance on the successful contractor to prepare and implement the traffic, transport and access management plan. The EIS does not provide a complete assessment of the impact to the region's roads and any subsequent negative outcome for the transport of grain to GrainCorp facilities.

There should be no lasting impacts on the regional road network as a result of the project. A rail possession strategy and traffic, transport and access management plan must be prepared, in consultation with Transport for NSW, local councils, GrainCorp and rail operators to minimise transfer of rail freight and construction traffic impacts on the road network.

Any approval needs to contain conditions that mandate road condition surveys/reports and rectification.

Response

The EIS, and supporting technical reports, were prepared in accordance with the requirements of the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS.

ARTC acknowledges GrainCorp's concerns. ARTC would continue to liaise with GrainCorp on relevant aspects of the proposal, including access, in accordance with the communication management plan for the proposal (required by mitigation measure SE1).

ARTC commits to implementing additional reasonable and feasible measures to minimise the potential impacts of the proposal on the local road network. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, emergency services and public transport/bus operators. Mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT10 provides that a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes prior to and following completion of construction. Pavement condition monitoring would be carried out during works, as required. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. The mitigation measure has been amended to confirm that rectification measures would be implemented, as needed, during and/or following completion of construction to address any damage caused by construction.

Failure to address importance of impacts caused by level crossings

Issue

The introduction of 51 additional level crossings, some close to GrainCorp facilities, have the potential to significantly impact the company's operations and have safety implications of additional level crossings for the wider community. GrainCorp requests that the proponent prepare and make public a Level Crossing Report, which must include the cumulative impacts of multiple level crossings on transit time throughout the region, particularly Higher Mass Limits vehicles during peak harvest and intercity road freight, and the cumulative impacts on the wider rail network.

GrainCorp strongly supports a minimum of all State and regional roads be grade separated.

Construction of additional connections may have impacts that have not been assessed appropriately on existing level crossings.

Response

ARTC has used a consistent methodology to develop all proposed road–rail interface treatments across the Inland Rail Program. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised that a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It is noted that the approach ensures level crossing safety risks are eliminated or minimised, so far as is reasonably practicable, in accordance with Commonwealth rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC.

Based on the methodology that was audited by ONRSR, higher order treatments, such as grade separation, are not considered justified on the majority of State and regional roads, as the cost to grade separate would be grossly disproportionate to the benefits. Instead, level crossings with active controls, consisting of flashing lights and bells, and boom barriers, would be installed at all classified road locations. This is the highest form of level crossing control under *AS1742.7-2016 Manual of uniform traffic control devices Part 7: Railway crossings* (Standards Australia, 2016).

ARTC also notes that, as part of the financial year 20/21 Federal Budget, the Australian Government allocated \$150 million for additional grade separations in NSW, with the NSW government contributing an additional \$37.5 million. This will be additional to grade separations that are already included in project scope. The specific projects to be implemented with this funding are being identified by the Australian Government in conjunction with the NSW Government.

In accordance with new mitigation measure, TT5, a public level crossing treatment report would be prepared to document the level crossing process design and assessment process that has been undertaken. The report would be developed in consultation with Transport for NSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline *Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011). A justification would be provided where no works are proposed on existing level crossings.

With regards to potential impacts on the company's operation, an assessment of potential delays to road traffic at level crossings was undertaken as detailed in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed. The assessment determined that there would be a maximum delay of 96 seconds and a maximum queue length of about 39 m during the proposal's opening year (2026); while in 2040 the delay would still be 96 seconds but the maximum queue length would be about 46 m.

Additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the potential impacts of a higher level of traffic activity, the traffic analysis at the proposed Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS, at 66 m and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway crossing. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to cumulative delays for regional travel in the vicinity of the proposal.

In accordance with mitigation measure TT11, the operation of all level crossings constructed on classified roads as part of the proposal would be reviewed, after Inland Rail commences operation, to confirm that the level of protection is appropriate and that the proposed infrastructure is appropriate for the traffic conditions.

Provision in design for passage of agricultural machinery

Issue

All public road–rail crossings (level crossings and bridges) should incorporate an allowance for passage of a maximum dimension agricultural vehicle.

Response

As described in sections A6.3.3 and A7.3.7, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with the Office of the National Rail Safety Regulator's (ONRSR) policies and guidelines has been used to determine proposed level crossing treatments (active or passive). The approach to this involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified.

The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types that need to be catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Mitigation measure TT4 provides that public level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016) and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

Viability of the ballast and capping material strategy

Issue

GrainCorp disputes the viability of the ballast and capping sourcing strategy. The focus on the Dubbo Regional LGA is impractical due to the excessive haulage route distances and would have a significant impact on the availability of trucking resources for the agricultural sector.

The EIS has failed to adequately demonstrate that local sources cannot be found. The construction contractor must undertake a quarry material availability assessment to identify appropriate resource locations within distances that do not place undue impact on existing enterprises.

Response

Section A6.3.4 of the EIS describes the options assessment process for the supply of construction materials for the proposal. The supply of options considered were material excavated from cuttings along the proposal site, existing commercial quarries and establishment of borrow pits. The options assessment included a review of currently approved commercial quarries in the region. The assessment determined that while proposal cuttings and borrow pits could supply general and structural fill material, it would be more feasible to obtain capping and ballast from commercial quarries.

Construction of the proposal would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS.

Based on the preliminary requirements identified in the EIS, access to the proposal site would be undertaken as described in section A8.11 of the EIS. The potential impacts associated with materials transport were assessed in section 6.1 of Technical Report 10—Traffic and transport assessment.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

Mitigation measure TT6 provides that a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction (including access for materials). The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. The plan would include, as appropriate, additional reasonable and feasible measures identified as an outcome of consultation (in accordance with mitigation measure TT7).

6.3.2 Flooding

Flood impacts at Narromine

Issue

GrainCorp is concerned that the large scale at which flood modelling has been undertaken for the EIS has not accurately captured the complexity of flood hydraulics at GrainCorp's Narromine site. This is highlighted by the lack of any afflux increase when 22.8 per cent more rainfall is added to the model to account for future climate change predictions.

The proponent needs to provide assurance that the flood model is 'fit for purpose' and can be relied on to determine flood impacts at a location with such unusual hydraulic characteristics.

6.3.2.1 Response

Technical Report 3—Flooding and hydrology assessment was prepared by a team of qualified and experienced hydrological professionals in accordance with the SEARs and relevant guidelines and requirements, including *Australian Rainfall and Runoff* (Ball et al., 2019) as described in section B3.1.1 of the EIS. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited.

The climate change assessment involved modelling the one per cent annual exceedance probability (1 % AEP) event with a 22.8 per cent increase in rainfall depth in accordance with *Australian Rainfall and Runoff*. This is based on the upper range projection for greenhouse gas concentrations for the year 2090. The hydraulic models were run with the inflow hydrographs resulting from the 1% AEP event with climate change both for the existing and operational conditions. Afflux resulting from the 1% AEP event with climate change can be similar to afflux resulting from the 1% AEP event under the existing climate.

Flood modelling was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments. In addition, as described in section 4 of Technical Report 3, and in the updated flooding and hydrology assessment report, ARTC has consulted with local landowners and other stakeholders to confirm that the flood modelling is representative of observed conditions.

Potential rainfall data limitations for flood impact assessment

Issue

GrainCorp requests clarity regarding the use of input data to the flood model to ensure major flood levels are determined on a best available understanding of the past 100 years of climate data.

Response

It is recognised that the 1955 flood event was the largest recent flood event in this region. While the rainfall and streamflow gauge records do not include this event, the assessment has been undertaken in accordance with *Australian Rainfall and Runoff*, which provides an appropriate methodology for the estimation of floods in the absence of any site-specific information. The flood models were developed adopting a calibration and validation process that used recorded rainfall, streamflow, flood level data, and information on flood behaviour provided by landowners. Design flood estimates are based on design rainfall events from the Bureau of Meteorology, model parameter values obtained from the calibration process, and procedures recommended in *Australian Rainfall and Runoff*.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

Omission of flood risk assessment in response to La Niña climate conditions

Issue

The flood risk for the region is known to be significantly elevated during La Niña yet this does not seem to have been considered in the flood risk assessment.

Flood flow predictions for the modified 1-in-100 year event (inclusive of an allowance for climate change) should be compared to 1955 rainfall conditions to determine whether the flood model is correctly parameterised.

Response

As described above, the flooding and hydrology assessment has been undertaken in accordance with *Australian Rainfall and Runoff*, which provides an appropriate methodology for the estimation of floods in the absence of site-specific information, such as the 1955 flood event.

The period of observed rainfall that forms the basis of the design rainfall intensities developed by the Bureau of Meteorology and adopted for this assessment is sufficient to include climatic variability such as La Niña and El Niño.

Unclear usage of sub-daily rainfall to predict flooding

Issue

The EIS should provide clarity regarding the assessment of sub-daily rainfall storm events in terms of flooding of land adjacent to the rail alignment.

Response

The design flood estimates are based on depths, durations and temporal distributions of design rainfall available from the Bureau of Meteorology. Assessment of the design rainfall has been undertaken in accordance with *Australian Rainfall and Runoff* and includes consideration of sub-daily rainfall events and high-intensity short duration events.

The catchment hydrology models were used to simulate design storm events with durations ranging from 15 minutes up to 168 hours to ensure the critical duration was represented. The adopted peak discharge and critical storm duration for each flood event for each point of interest along the proposal site are presented in Appendix C of Technical Report 3 and in the updated flooding and hydrology assessment report.

6.3.3 Noise

Consideration of GrainCorp sites as commercial/industrial and relevance to assessment of all impacts

Issue

The EIS considers GrainCorp sites as commercial/industrial (non-residential) noise-sensitive land uses. The assessment guidelines do not consider a receiver type definition suitable to the facilities that GrainCorp sites offer (i.e. night-time sleep accommodation) to meet obligations under its Occupational Health and Safety Management System. Noise impacts at GrainCorp's sites should be assessed considering all existing operational activities.

Response

Noise and vibration sensitive receiver types for construction assessments are classified in accordance with the *Interim Construction Noise Guideline* (DECC, 2009) receiver classifications and associated criteria. These criteria consider the typical variety of activities and expectations for each receiver classification. Consideration must also be given to the types of noises and levels that are a feature of a receiver site or generated at the site itself.

Construction noise at GrainCorp's Narwonah and Narromine sites

Issue

Construction noise levels at the Narwonah and Narromine sites exceed guideline levels. GrainCorp expects early involvement in development of the construction noise and vibration management plan and that it will be completed to GrainCorp's satisfaction. GrainCorp also expects to be consulted regarding the 'in use' status of Narwonah site.

Response

ARTC is proposing a range of measures to mitigate the potential construction noise impacts. In accordance with mitigation measure CNV1, location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, and detailed reviews of local receivers, as required. The statements would confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures.

Mitigation measure CNV4 confirms that the Inland Rail NSW Construction Noise and Vibration Management Framework (see Appendix L of the EIS) would be implemented, and the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the noise and vibration assessment. The measure commits ARTC to implementing all feasible and reasonable noise and vibration measures during construction. In accordance with mitigation measure CNV4, any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan, and the construction noise and vibration impact statements. Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.

Noise and vibration during construction would be managed and monitored in accordance with the construction noise and vibration management plan, as required by mitigation measure CNV3. The management plan would be prepared and implemented as part of the CEMP in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.

Operational noise

Issue

The EIS should provide clarification as to whether activities at the Narwonah and Narromine sites are likely to be negatively impacted by operational noise.

The receiver type definition applied to the sites must consider GrainCorp's obligations under its Occupational Health & Safety Management System (as noted above).

Response

Noise and vibration sensitive receiver types for operational assessments are classified in accordance with the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). The GrainCorp facilities are classified as commercial/industrial receivers. It is ARTC's understanding that GrainCorp's concerns relate to its employees, which is a matter relevant to work health and safety legislation. This is not covered by the SEARs, and the *Rail Infrastructure Noise Guideline* does not specifically require assessment at industrial premises.

GrainCorp's Narromine facility is located immediately adjacent to existing operational railway lines and would already be impacted by rail noise. With operation of the proposal there would be increased frequency of railway passby noise. Commercial/industrial receivers do not qualify for consideration for noise mitigation in accordance with the *Rail Infrastructure Noise Guideline*. It is noted that GrainCorp's Narwonah facility is located outside of the operational noise study area and would not be impacted by the proposal.

ARTC acknowledges there may be potential operational noise impacts to employees resting or sleeping at the worker's accommodation identified by GrainCorp; however, notes the EIS process may not be the appropriate pathway to address these concerns. ARTC would continue to consult with GrainCorp to understand the type and construction of the worker's accommodation buildings to assess potential internal railway noise levels within these buildings.

6.3.4 Social and economic

Impact on housing and accommodation

Issue

Concerned that the assessment makes an erroneous assumption that there will be negligible impact on the local housing market by the expected 2,000 construction workers over four years, asserting that nearly all workers (typically males under 45 years) will be accommodated in worker accommodation facilities.

Requests a more robust assessment of the impact on local housing stock and the potential for a detrimental outcome for both GrainCorp employees and the communities in which they live.

Response

Due to the nature of rail construction work, the skillsets required will change at different stages of construction, which means that individual workers would turnover somewhat frequently. As a result of the temporary and short-term nature of the majority of construction roles, it is unlikely that large numbers of construction workers would choose to relocate to live in the region. Furthermore, given that accommodation would be available to non-resident construction workers at low or no cost, coupled with the low availability of suitable rental housing close to the work sites, it is likely that the majority of workers would choose to stay in the proposed temporary workforce accommodation facilities.

As a result of these factors, it is considered unlikely there would be much demand on local tourist accommodation or the local housing market; however, as noted in section B14.3.2 of the EIS, there is potential for small increase in demand for rental housing during construction due to some non-resident construction workers choosing to rent locally. The consequence of a small increase in demand is expected to be minimal as, if this change did occur, it is expected to be local and small scale.

ARTC would continue to work with local councils and other local and regional service providers to minimise the potential impacts of construction on local communities and services. New mitigation measure SE4 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to ensure these needs are met with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan (mitigation measure SE11).

Impact on availability of workers

Issue

GrainCorp is concerned about its ability, and that of local grain growers, to afford, attract and retain workers due to the creation of other (possibly higher-paid) employment opportunities.

Response

While some local workers may be attracted to local construction positions, these opportunities would be relatively short term and most roles would require technical skills, certification and experience. It is unlikely that there would be a significant overlap between the requirements for the construction workforce and the skills and experience required for GrainCorp and local grain growers. In accordance with mitigation measures SE11 and SE12, the workforce management plan would include recruitment, skills and training measures to upskill the local workforce who may be unemployed or underemployed and assist them to develop skills that would improve their suitability for employment.

Infrastructure contributions ('legacy' items)

Issue

A project of this size would have a significant effect on the local community. GrainCorp is supportive of any options to require the proponent to provide legacy infrastructure to be utilised by the wider community from improved public amenity and economic sustainability.

Response

GrainCorp's support for improved public amenity and economic sustainability is noted. Several local councils have identified legacy items that they have requested ARTC provide. Responses to these issues are provided in section 4 of this report.

Impacts on emergency services

Issue

Local emergency services will experience real impact as a result of the construction activities and the influx of construction workers. The workforce management plan should contain a specific 'emergency services' section, developed with the early involvement of GrainCorp.

Response

As described in Technical Report 13, ARTC and the social assessment team met with the Central West Regional Emergency Management Committee to understand local issues and inform the assessment of potential social impacts. This was considered appropriate given the level of information available during preparation of the Social Assessment. Consultation with the committee confirmed that, while they did not anticipate much increased demand on local emergency services during construction, there may be a need to increase resources at some smaller towns and there may be affects due to changes to road conditions, such as changes to response times, as noted in section B14.3.5 of the EIS.

The committee confirmed that ARTC should consult with the respective local emergency management committees as the design progresses to make use of their local knowledge and inform discussions about potential changes that may affect emergency service provision.

ARTC commits to proactively managing the potential for impacts on emergency services during construction. In accordance with mitigation measure SE2 the communication management plan would include measures to ensure ongoing consultation with local emergency services providers to inform providers about the locations of level crossings and changes to access routes and road conditions. The workforce management plan would include appropriate processes and measures to manage potential increased demand on emergency service providers due to a non-resident construction workforce.

As noted above, new mitigation measure SE4 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to ensure these needs are met with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers and would be detailed in the workforce management plan.

It is expected that engagement would occur with the relevant regional and local emergency health services in the pre-construction phase, when timing and impacts are able to be confirmed. This would assist service providers understand potential demands on their services and plan their resources appropriately.

6.3.5 Biosecurity

Biosecurity management plan

Issue

GrainCorp expects early involvement in the development of the Biosecurity Management Plan, and that it will be completed to GrainCorp's satisfaction.

Response

Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning, where appropriate, in accordance with the community management plan for the proposal.

6.4 Knitting Nannas New England North West

Cumulative biodiversity impacts and adequacy of offsets

Issue

The Pilliga will be further fragmented by the rail line, adding to the fragmentation caused by the Narrabri Gas Project. Cumulative effects have not been taken into account. Both of these projects will require like-for-like offsets. It is not possible to offset the environmental damage, as The Pilliga is unique, and no suitable, comparable offsets exist.

Response

Cumulative impacts

Technical Report 1—Biodiversity development assessment report includes an assessment of the potential for cumulative biodiversity impacts (see section 8.6), and the results are summarised in section D1.4.1 of the EIS. The assessment considered publicly available information on major projects in the study area, including the Narrabri Gas Project and Silverleaf Solar Farm. Insufficient information was available on the APA Western Slopes Pipeline at the time the assessment was undertaken. Further information on the potential for cumulative impacts considering this project is provided in the updated biodiversity development assessment report.

The cumulative assessment noted that the cumulative loss and fragmentation of native vegetation and associated habitats would adversely affect native flora and fauna species, including a large number of threatened species. A range of mitigation measures are provided to mitigate the potential impacts identified.

Biodiversity offsets

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program. ARTC has invited landowners within 100 kilometres of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

In accordance with the Biodiversity Offsets Scheme, *Biodiversity Assessment Method*, Biodiversity Conservation Regulation 2017 and the EPBC Act, ARTC will seek credits, and establish offsets for, similar vegetation affected by the construction of Inland Rail in NSW and generally within the same areas. This limits where stewardship sites can be located, what vegetation and habitats will be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors.

The requirement to obtain like-for-like offsets refers to the specific number and types of ecosystem and species credits required to offset the impacts of the proposal, in accordance with the Biodiversity Conservation Regulation 2017. Biodiversity offsets are not required to exactly replicate the area of impact. However, offsets are required to take into account the landscape attributes of ecosystem and species credits (and dual credit species) within each subregion, including connectivity, patch size and areas of retained native vegetation before and after the impacts of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced within the legislated offset trading rules set out in the Biodiversity Conservation Regulation 2017.

Where ARTC is unable to source suitable offsets for the proposal, they may seek to apply the variation rules for retirement of some ecosystem and species credits, particularly those credits associated with native grasslands, which may be difficult to source. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), another option would be for ARTC to make a payment into the Biodiversity Conservation Fund. The Biodiversity Conservation Trust, which manages the fund, must secure offsets in line with legislated offset rules set out in the Biodiversity Conservation Regulation.

The Biodiversity Conservation Trust is required to meet any biodiversity offset credit requirement in a like-for-like manner. This is by retiring like-for-like credits, by funding conservation actions that are listed in the *Ancillary rules: Biodiversity conservation actions* (OEH, 2017) and benefit the threatened entity impacted, or by funding other conservation measures approved by the NSW Minister for Energy and Environment that directly benefit the entity impacted.

Further information on the biodiversity offset credit process for Inland Rail is provided at:
inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

The project should not go through the Pilliga

Issue

There is an existing rail corridor through Gwabegar and other private land to Narrabri. It would be less expensive and more environmentally sound to use this corridor. The rail corridors should not go through the Pilliga. This will cause permanent damage.

The importance of the Pilliga forests in maintaining biodiversity is crucial, as acknowledged by the EIS. The results of surveys indicate the value of the Pilliga.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure / Amendment Report and supporting Route Selection Summary Report. This includes consideration of options for the section of the route between Baradine and Narrabri (through the Pilliga forests), and the justification for the preferred option selected (see section 2.4.5 of the Route Selection Summary Report).

As described in section A1.5.1 of the EIS, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through refinements during detailed design.

Alternative project

Issue

The project does not make environmental or economic sense. A passenger/freight line Melbourne/Canberra/Sydney/Brisbane would likely be financially viable and help mitigate climate change, removing many vehicles from the road.

Response

The Inland Rail program has undergone significant refinement over the years since the original 1996 proposal. As described in section A6.1.1 of the EIS, alternative freight transport solutions with the potential to address Australia's current and future freight challenges were considered as part of a strategic options assessment set out in the *Inland Rail Programme Business Case* (ARTC, 2015), and examined in the *Melbourne–Brisbane Inland Rail Report* (Inland Rail Implementation Group, 2015).

Three options were assessed by the *Inland Rail Programme Business Case* (ARTC, 2015):

- ▶ Progressive road upgrades
- ▶ Upgrading the existing east coast railway
- ▶ An inland railway.

These options were subjected to a rigorous assessment consistent with Infrastructure Australia's *Reform and Investment Framework* (Infrastructure Australia, 2014). Overall, constructing an inland railway ranked highest, with an average high likelihood of improving outcomes across all criteria.

Inland Rail is proposed to enhance and integrate with the existing freight rail network. Development of a passenger rail line does not form part of the proposal for which approval is being sought. ARTC has been tasked by the Federal Government to build Inland Rail to meet certain specifications of the Service Offering, which do not include a passenger rail line.

6.5 Narrabri Shire Council Floodplain Risk Management Committee

6.5.1 Route alternatives and options

Consider alternative alignment for the section around Narrabri

Issue

The committee is supportive of Inland Rail but not in the proposed location immediately downstream of Narrabri and crossing the Namoi River Floodplain in the widest location available, with an enormous bridge immediately downstream of the town. By moving the alignment approximately 7 kilometres downstream it is possible to cross Bohena Creek, the Namoi River and Narrabri Creek with one structure half the length of the existing proposed structure across the Namoi and Narrabri Creek. This location would have a number of benefits and requests that this alternative alignment be investigated.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) appropriate justification and information on the design of the project and alternative rail alignments considered, particularly near the towns of Narramine and Narrabri, and how these alternatives were analysed to inform the selection of the preferred route. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure / Amendment Report and supporting Route Selection Summary Report. This includes consideration of options near Narrabri, and the justification for the preferred option selected (see section 2.4.6 of the Route Selection Summary Report).

6.5.2 Stakeholder engagement

Lack of consultation

Issue

There has been a lack of consultation with the flood committee and a significant number of assumptions made on many local issues such as:

- ▶ The use of local roads
- ▶ The identification of any potential local heritage items and discussions with heritage practitioners, historical societies, etc.
- ▶ Potential flooding.

Response

Use of local roads

ARTC acknowledges the committee's concerns in relation to interactions with local road infrastructure, and recognises that Narrabri Shire Council is a key stakeholder for the proposal. ARTC would continue to liaise with Narrabri Shire Council in relation to these concerns, and other aspects of the proposal that are of relevance and interest to Council.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, as far as reasonably practicable. Mitigation measure TT2 commits ARTC to seeking input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

In relation to construction, mitigation measure TT7 commits ARTC to consulting with relevant stakeholders (including local councils) to minimise impacts on road users and landholders during construction. In accordance with mitigation measure TT7, any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible.

Mitigation measure TT6 also commits to developing the traffic, transport and access management plan in consultation with local councils.

Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning in accordance with the community management plan for the proposal.

Local heritage items

As described in section 3.3 of Technical Report 7—Non-Aboriginal heritage assessment and statement of heritage impact, consultation with local historical societies was undertaken to identify and source further information on potential heritage items. While not detailed explicitly in chapter B7 of the EIS, consultation was undertaken with the Narrabri Historical Society in late 2018 (prior to the field survey).

Flooding

As described in section 4 of Technical Report 3 (and in the updated flooding and hydrology assessment report described in section 3.2 of this report), ARTC has consulted with local landholders and other stakeholders to confirm that the flood modelling is representative of observed conditions and based on local knowledge.

Consultation and flooding

Issue

Concerns include:

- ▶ No explanation was given as to why Mulgate Creek and local tributary flooding were not included in the EIS or flood modelling
- ▶ ARTC has not been transparent
- ▶ There is a lack of awareness of Council's Draft Risk Plan
- ▶ Potential flooding and/or afflux issues of the project have not been discussed with the public.

Response

The updated flooding and hydrology assessment includes additional assessment at Narrabri as a result of regional flooding in the Namoi River and Narrabri Creek, and local catchment flooding, including in Mulgate Creek and Long Gully. The updated approach is consistent with that adopted in the *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study—Namoi River, Mulgate Creek and Long Gully* (WRM, 2019a).

A range of previous flood studies were considered in the flooding and hydrology assessment, as described in section 3.3.5 of Technical Report 3. The updated flooding and hydrology assessment includes discussion of additional flood studies, including Narrabri Shire Council's draft risk plan.

Consultation undertaken for the EIS and proposal is described in chapter A4 of the EIS. Consultation undertaken for the flooding and hydrology assessment is described in section 4 of Technical Report 3 (Flooding and hydrology assessment) and in the updated flooding and hydrology assessment report.

6.5.3 Flooding

Flooding impacts at Narrabri

Issue

The committee is concerned about the potential for impacts at Narrabri and how the impacts were assessed and modelled. Concerns include:

- ▶ The township of Narrabri is highly susceptible to flooding, both riverine and localised—there is no other town in inland NSW that is more susceptible to flooding than Narrabri.
- ▶ The proposed location immediately downstream of Narrabri is questioned as a result of the potential negative flood impacts on the town.
- ▶ There are discrepancies between the project and Council's flood modelling.
- ▶ ARTC has potentially underestimated the number of buildings within Narrabri where the project would increase above floor level flooding by more than 10 millimetres.

- ▶ A blockage factor was not used for the bridge impact assessment and it was assumed that the bridge piers would not accumulate debris and cause additional blockage, which is not consistent with recommendations in *Australian Rainfall and Runoff* (Ball et al., 2019).
- ▶ The impact on Mulgate Creek flooding was not estimated.
- ▶ The rail design does not comply with ARTC design objectives, with afflux exceeding the criteria at multiple properties.

Response

Underestimation of impacts within Narrabri and near Bohena Creek

The design flood level results produced from the calibrated and validated flood models were used to estimate the number of buildings at risk of flooding above floor level, with the results presented in section 7.1.3 of Technical Report 3 and summarised in section B3 of the EIS.

Buildings considered by Technical Report 3 and the updated flooding and hydrology assessment include all residences, educational facilities, health facilities, community facilities, commercial/industrial premises and other structures, such as garages. The floor levels of buildings were adopted from survey, where available, or were estimated as 0.3 metres above ground level. ARTC believes there is a sound basis for its flood modelling processes. There could be a range of reasons why the estimated number of buildings differ between the flooding and hydrology assessment and the *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study—Namoi River, Mulgate Creek and Long Gully* (WRM, 2019a), including differences in the study area, differences in what buildings were included in the assessment and different assumptions regarding floor levels.

For the Bohena Creek catchment, there are differences in the magnitude of peak flow rate modelled between the flooding and hydrology assessment for the proposal and the *Bohena Creek Flood Study* (WRM, 2019b). Water levels and flows recorded at the Bohena Creek gauge (419905) were reviewed and considered in the estimation of design flows and flood levels. The streamflow data at this location has a limited number of records for the period of 1995 to 2021, with significant gaps after 2005. As such, it was considered that an at-site flood frequency assessment for this gauge may not be representative of flood events similar to the one per cent annual exceedance probability (1% AEP) event.

The available observed data was used in conjunction with rainfall data to calibrate a RORB hydrology model for the Bohena Creek catchment. The RORB model was calibrated to observed events and was used to simulate the range of design flood events using the recommended procedures in *Australian Rainfall and Runoff* (Ball et al., 2019). In addition, the Bohena Creek hydraulic TUFLOW model was calibrated against two flood events and acceptable calibration results were achieved. ARTC has undertaken additional consultation with Narrabri Shire Council and its flooding consultants regarding these differences. Based on this it is considered that the ARTC predictions are more conservative than the *Bohena Creek Flood Study* and this would be further assessed during detailed design. In addition, a site inspection with Council and local landowners would also be undertaken during detailed design to review historic flood levels as part of the refinement of flood modelling, as described below

The proposal has been, and would continue to be, designed to minimise the potential for flooding risks. In accordance with mitigation measure FH1, the design would continue to be refined, where practicable, during the detailed design process to not worsen existing flooding characteristics. Further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service, and potentially impacted landholders.

Bridge blockage factor and accumulation of debris on bridge piers

The minimum and maximum spans between bridge piers for all proposed bridges are 14 metres (m) and 33 m, respectively. This is a large opening and it is considered unlikely to be blocked by floating debris that would significantly impede flood flows. An appropriate bridge loss coefficient was included in the models to account for bridge piers and superstructure impeding flood flows, and this already adequately allows for any blockage by debris. No additional blockage factor due to debris is required in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). However, noting the sensitivity of the town of Narrabri to flooding, a sensitivity analysis was undertaken to assess potential afflux impacts due to flood debris collecting on the Narrabri bridge piers. The analysis, presented in the updated flooding and hydrology assessment report, predicts that there would be negligible afflux impacts and as such, this has not been included in the flood models.

Mulgate Creek

The updated flooding and hydrology assessment provides additional assessment for Narrabri due to regional flooding in the Namoi River and Narrabri Creek and local catchment flooding, including in Mulgate Creek and Long Gully. The updated approach is consistent with that adopted in the *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study—Namoi River, Mulgate Creek and Long Gully* (WRM, 2019a).

Compliance with quantitative design limits

The proposal has been designed to, as a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event; in particular, the proposal has been designed to comply with the proposed quantitative design limits. The updated flooding and hydrology assessment includes revised quantitative design limits (refer to the updated flooding and hydrology assessment report for further information).

ARTC acknowledges that constructing the proposal across farmland and other areas would affect the existing hydrological regime. The proposal seeks to minimise these impacts by including bridges and culverts in the railway embankment. As described above, in accordance with mitigation measure FH1, the design would be further refined during the detailed design process to minimise impacts as far as practicable.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

Compliance with legislative and planning requirements

Issue

The committee is concerned about compliance with relevant floodplain management plans and legislative instruments. The committee expects that ARTC has, and will continue to, adhere to all applicable legislative requirements they are bound by throughout the planning process. Concerns include:

- ▶ The proposed rail embankment crosses the Lower Namoi Valley floodplain, which is a declared floodplain under the Water Management (General) Regulation 2018. Under this plan, any flood works on the floodplain are regulated by the Floodplain Management Plan for the Lower Namoi Valley Order 2020.
- ▶ ARTC has stated that the project is not a 'flood work' as defined by the plan; however, the rail embankment on the Namoi River floodplain would appear to fit within this definition and, therefore, would be a flood work. Although the project is a State significant project and is not subject to the conditions of the plan, it would be expected that the Minister would need to consider the criteria stated for this type of flood work.
- ▶ The project would generally not be permitted within the AD zone.
- ▶ The flood level impacts at residential and commercial properties shown in the EIS would indicate that the project would not comply with the Narrabri LEP.
- ▶ Narrabri Shire Council has recently completed a Floodplain Management Plan for Narrabri. The current recommendation within the plan would mean that the project would not be approved as it proposes flood impacts exceeding 10 millimetres on external property.

Response

The documents mentioned in Narrabri Shire Council Floodplain Risk Management Committee's submission do not directly apply to the proposal as a State significant infrastructure project. Nevertheless, an assessment of the consistency of the proposal with these plans has been undertaken, and is provided in the updated flooding and hydrology assessment report.

6.6 NSW Farmers and the Country Women's Association of NSW (by Holding Redlich)

Holding Redlich made a submission on behalf of the NSW Farmers and the Country Women's Association of NSW (CWA).

6.6.1 Duties of the proponent and the consent authority in the application of ecologically sustainable development and the precautionary principle

Minister's regard to the objects of the EP&A Act and the precautionary principle in the decision-making process

Issue

In determining the Narromine to Narrabri State Significant Infrastructure, the Minister is to have regard to the objects in section 1.3 of the EP&A Act, including object (b), which states that the object of the EP&A Act is to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.

The precautionary principle requires that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the submission's view, the EIS for the project is so deficient in its rigour that the Minister, as consent authority, cannot be reasonably satisfied that there is not a serious and/or irreversible threat to the environment, as well as human life and property, as a result of the construction and operation of the proposed development.

The submission strongly urges the Minister to take these impacts seriously and requires the ARTC, as the proponent, to provide sufficiently rigorous environmental assessment so that the Minister and the community can be sure that these impacts can be avoided, managed and/or mitigated to the greatest extent possible.

Response

ARTC is committed to applying the principles of ecologically sustainable development in assessing the proposal, including the precautionary principle, in accordance with appropriate legislation and policy requirements as they relate to the assessment. ARTC notes the issues raised in the submission but does not agree with the assertion made in its analysis of the precautionary principle.

The EIS and supporting technical reports were prepared in accordance with the requirements of the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS.

The proponent of a State significant infrastructure/critical State significant infrastructure project is required to prepare an EIS for a proposal in accordance with the SEARs. The SEARs and clause 7(1)(f) of Schedule 2 of the EP&A Regulation require an EIS to provide '*the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4)*'. This justification is provided in chapter D6 of the EIS, which includes consideration of the precautionary principle. As part of this assessment, the EIS contains a large number of mitigation measures that are designed to avoid, mitigate, offset or manage the environmental impact or harm that may otherwise be caused by the proposal. ARTC is not proposing to postpone any measures in light of any uncertainty about the assessment, or the risks or impacts being assessed. Instead, mitigation measures have been provided where these impacts cannot be avoided. Accordingly, ARTC believes the EIS will allow the NSW Minister for Planning to apply the precautionary principle in determining the proposal.

Although ARTC believes that the assessment in the EIS indicates that there is no threat of serious or irreversible environmental damage from the proposal, ARTC notes the fundamentals of the precautionary principle, which requires an appropriate risk-weighted approach to assess the merits of projects and appropriately avoid, manage and mitigate impacts described in the EIS. The EIS and the planning approval process is a mechanism to allow the Minister to assess whether this has been appropriately applied.

6.6.2 Inadequate community participation

ARTC's community engagement has been inadequate

Issue

The extent of community engagement undertaken by the ARTC has been appalling. There has been an express reluctance on the part of the ARTC to produce documents and disclose material that would allow landowners, as well as stakeholders, such as NSW Farmers and the CWA, to consider and respond to concerns regarding the impacts of the project. This includes involvement in route options selection and information provided to landholders (including the reference design).

The credibility of the claims regarding the adequacy of the community engagement conducted is questioned. The Minister is asked to consider this when assessing whether the project has met the minimum requirements of the SEARs.

Response

Consultation with the community and key stakeholders commenced in 2015. As described in section A4.2 of the EIS, engagement with the community and key stakeholders was carried out during the following three periods of consultation prior to exhibiting the EIS:

- ▶ Inland Rail announcement and preliminary consultation—2015 to end 2017
- ▶ Route option assessment—February 2018 to July 2019
- ▶ Preliminary design development and environmental assessment—July 2019 to October 2020.

During this period, the following consultation activities were undertaken:

- ▶ Establishment and operation of communication and information tools, including the Inland Rail website; email address; project information phone line; fact sheets; proposal information packs; mail outs; e-newsletter; briefing papers; local media and social media updates, releases and contacts
- ▶ Meetings of the community consultative committee and sub-committees (Narromine, Gilgandra and Narrabri)
- ▶ Eight town hall meetings and community information sessions in Narrabri, Baradine, Gilgandra, Curban and Narromine in 2018
- ▶ Community information sessions in Narromine in August 2019
- ▶ Community information sessions in Narromine, Gilgandra, Baradine, Curban and Narrabri in March 2020
- ▶ Community information sessions at Narromine, Gilgandra, Curban, Coonamble, Baradine and Narrabri in October 2020
- ▶ About 200 face-to-face meetings with landholders in February 2018
- ▶ Meetings with about 100 landholders between July 2019 and February 2020
- ▶ Meetings with about 92 landholders between July and October 2020
- ▶ Distribution of project newsletters
- ▶ Meetings with local and NSW government agencies, community and business groups, and other key stakeholders between July 2019 and February 2020
- ▶ Online EIS briefings during August 2020 with the Community Consultative Committee; Australian, NSW and local government agencies; and the general public.

The purpose of consultation was to raise awareness about Inland Rail and the proposal, understand community and stakeholder issues, and obtain important feedback to help shape the proposal's route, design and environmental assessment. Further information is provided in chapter A4 of the EIS.

The consultation contributed to the project team's understanding of the potential impacts and has enabled the design to respond to and minimise potential impacts as far as possible. Measures to minimise and manage impacts that cannot be avoided have been developed as an outcome of the environmental assessment process, as described in the chapters in Parts B and C of the EIS. Impacts would continue to be minimised through the detailed design and construction planning phases, taking into account the input of stakeholders and the local community, and in accordance with the mitigation measures and conditions of approval (if approved).

The reference design evolved over a period of about two years and involved many iterations and refinements, incorporating a range of considerations at each stage. Key environmental issues were examined throughout the design development process. Consultation has been carried out with affected stakeholders to identify key potential impacts at an early stage. Where practicable, impacts have been avoided or appropriate mitigation measures developed in response to this input. This has resulted in a number of design changes that have mitigated some of the potentially significant impacts.

Examples of design refinements and construction commitments that have been adopted for the proposal (as exhibited) based on feedback received include:

- ▶ Areas of existing vegetation were avoided as far as practicable
- ▶ Bridges and culvert lengths were extended over floodplains at a number of locations to minimise the potential for increased flooding impacts on properties
- ▶ The location of the bridge over the Macquarie River was determined with consideration of known Aboriginal heritage sites and, where practicable, it avoided these sites
- ▶ The alignment was modified at South Narromine, Black Hollow, Curban (between Berida Road and the Castlereagh Highway) where an alternative route location was available with a lower potential for community impacts
- ▶ The proposed locations of the temporary workforce accommodation have been developed in consultation with councils, to maximise the potential for economic benefits to towns in the study area and minimise the potential for social impacts
- ▶ To minimise impacts on properties, construction areas would be accessed via existing roads together with the proposed haul roads within the proposal site.

As described in the combined Preferred Infrastructure/Amendment Report and summarised in section 3.1 of this report, a number of amendments to the exhibited proposal are proposed to further minimise the potential environmental impacts of the proposal and to respond to matters raised in submissions received.

The SEARs require that the proposal must be informed by consultation, including with relevant State and local government agencies, infrastructure and service providers, special interest and industry groups (including agriculture businesses), affected landowners, businesses and the community. Based on the consultation undertaken, as described above, this requirement is considered to have been met.

ARTC acknowledges the need for ongoing consultation. In accordance with mitigation measure SE1, ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy. The mitigation measure commits to developing and implementing a project-specific communication management plan prior to and during construction, to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquiries and complaints are managed and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

Other mitigation measures commit to ongoing consultation in relation to specific issues, detailed design, construction planning and development of the required management plans, including (but not limited to) FH1, AH2, AH3, AH5, AH6, AH13, NAH7, CNV-C11, ONV2, ONV3, TT4, LP1, LP2, LP5, LP7-LP9, LP13, LP15, SE-C12, WM2, WR9, WR13, FH4 and FH5 (see section 11 for a full list of mitigation measures (as updated)).

6.6.3 Inadequate flooding and hydrology assessment and concerns regarding groundwater

Underestimation of flows in key areas—Backwater Cowal and Warrumbungles Watershed

Issue

ARTC should be required, at a minimum, to address why such significant discrepancies exist regarding the modelling and actual flow rates in Backwater Cowal and the Warrumbungles Watershed, and justify why their desktop analysis is to be preferred over the real experiences of those in the community.

Response

Technical Report 3—Flooding and hydrology assessment was prepared by a team of qualified and experienced hydrological professionals in accordance with the SEARs and relevant guidelines and requirements, including *Australian Rainfall and Runoff* (Ball et al., 2019) as described in section B3.1.1 of the EIS.

The modelling has considered flows in all catchments, including those within the Backwater Cowal and Warrumbungles, in accordance with the methodology provided in *Australian Rainfall and Runoff*. The modelling has undergone a comprehensive calibration and validation process to determine appropriate model parameters. The design flood estimates are based on design rainfall depths from the Bureau of Meteorology (BoM, 2016).

Flood modelling was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (ROB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments. In addition, as described in section 4 of Technical Report 3, and in the updated flooding and hydrology assessment report, ARTC has consulted with local landowners and other stakeholders to confirm that the flood modelling is representative of observed conditions. Updated detailed flood modelling of the Webb Siding, Backwater Cowal and Macquarie River is provided in the updated flooding and hydrology assessment report.

Durability and safety

Issue

We understand that, where culverts are proposed to be used, they will be designed to the two per cent annual exceedance probability (2% AEP). Such design parameters are said to be justified because the ARTC has a policy of clearing waterways blocked due to debris or rubbish greater than 20 per cent within 28 days; however, we know from experience, from communities like those around Bogan Gate, that such maintenance does not occur. We also know that derailments on the freight network are not uncommon.

It is concluded, based on the information detailed in the submission, that the proposed culverts will fail, and damage will occur that could result in a derailment, as well as significant damage to large parcels of productive farmland.

Response

Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

Risk of unacceptable groundwater impacts

Issue

This risk of groundwater drawdown is identified. While the assessment concludes that the risks are low, provided the recommended mitigation measures are employed, the community remain concerned that the analysis is not sufficiently rigorous.

Response

The groundwater assessment was undertaken, and Technical Report 4—Groundwater assessment prepared, in accordance with the SEARs, the *NSW Aquifer Interference Policy* (Department of Primary Industries, 2012b) and relevant legislation and guidelines, as described in section B2.1.1 of the EIS. The assessment methodology is described in section 4 of Technical Report 4. The assessment included an assessment of potential groundwater drawdown for:

- ▶ Shallow proposal features, i.e. all proposal features with the potential to cause drawdown except for the proposed bore field bores
- ▶ Deep proposal features, i.e. the proposed bore field bores.

The potential for drawdown associated with the shallow proposal features was assessed by comparing available groundwater level data to proposal design levels. The results were conveyed in long sections, which showed that proposal excavations are relatively minor and unlikely to intersect the water table. As such, groundwater level drawdown associated with shallow proposal features is not anticipated.

An initial qualitative assessment of the potential risk of groundwater drawdown was undertaken prior to detailed assessment to guide the methodology used. This initial assessment determined that the risk to groundwater levels would be low due to the following:

- ▶ The majority of the proposed bore fields, with the exception of bore fields PB1 and PB2, would target deep aquifers beneath the Great Artesian Basin, with significant vertical separation between the aquifers that the proposal would target and the aquifers that are currently pumped by existing bores.
- ▶ Bore fields PB1 and PB2 would be located outside the Great Artesian Basin.
- ▶ Groundwater extraction for construction water is proposed to occur for a period of less than 500 working days at each bore field.

As a result, the potential for drawdown associated with deep proposal features was assessed through analytical element groundwater modelling, an approach that is commensurate with the qualitatively assessed low risk of groundwater impact, the limited level of problem complexity, and data availability. The assessment of the bore fields is considered sufficiently rigorous and the approach is generally consistent with the *Australian Groundwater Modelling Guidelines* (Barnett et.al., 2012).

The results were assessed against the NSW Aquifer Interference Policy's minimal impact considerations and impacts were generally predicted to be less than these criteria. The exception was at one bore outside of the Great Artesian Basin, where drawdown of about 3.5 metres was predicted.

The analysis approach taken as part of the groundwater assessment was considered conservative; however, commitments to minimising the potential for impacts due to groundwater drawdown are defined by a number of mitigation measures, including WR3, WR4, WR5, WR-CI1, WR7, WR8, WR9, WR10, WR12, WR-14, WR-CI3 and WR-CI4. In particular, mitigation measure WR4 commits to installing test bores and further investigation by a qualified hydrogeologist, to confirm the depth and location of the proposed bore fields, so that impacts from the extraction of groundwater are minimised. In addition, in accordance with new mitigation measure WR14, a bore field extraction plan would be prepared as part of the soil and water management plan and would be provided to DPE Water prior to construction of the proposed bore field bores. The plan would include information regarding the locations, water source, depth and proposed volumes of water take per year for the proposed bore field bores, as well as any measures to minimise the potential for impacts due to the extraction of groundwater for construction water.

Ability to reuse project bores

Issue

ARTC has raised the potential for the project's bores to be retained following the construction, and that this presents a long-term benefit to the local community. The accuracy of this statement is concerning from a legal perspective, noting that the construction of bores for the purpose of Inland Rail may not be capable of being transferred and used by local councils and members of the community by operation of relevant planning laws. This benefit should be disregarded in the assessment of the project.

Response

As described in section A8.7 of the EIS, where there is benefit to the local community, the potential for retaining facilities installed for construction (e.g. bores and sedimentation basins) would be investigated and negotiated in consultation with relevant stakeholders (e.g. local councils). Any legislative approvals associated with retention and ongoing use of these facilities would be the responsibility of the party who takes ownership.

This is not considered to be a primary benefit of the proposal, but an opportunity presented for further consideration.

6.6.4 Unacceptable impact on soils and erosion

Significant impacts on soils and erosion

Issue

Damage from scouring and gullyng caused by flow concentrations is already evident on land along the proposed alignment, demonstrating that the impacts on soils and erosion will be significant where culvert banks are proposed. This is because construction of significant earthen embankments on this land, and a reliance on culverts, will redirect and increase the velocity of flows.

ARTC has not met requirement 4 in Item 12 of the SEARs, which requires the proponent to assess erosion risks to ensure that the environmental values of the land, including soils, subsoils and landforms, are protected.

Response

As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since exhibition of the EIS. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, and proposed scour protection. 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.

An assessment of potential changes to flows and related impacts, such as changes in depth (afflux), velocity and flood hazard, has been undertaken where culverts are provided, as described in section 7.2 of Technical Report 3 and in the updated flooding and hydrology assessment report. In accordance with mitigation measure FH1, the design would continue to be refined, where practicable, during the detailed design process, to not worsen existing flooding characteristics.

Further detailed flood modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS.

The additional flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Additionally, in accordance with mitigation measure FH2, further modelling would be undertaken during detailed design to confirm the locations downstream of culverts that require erosion protection, and to confirm the extent and type of protection required.

6.6.5 Failure to carry out a proper cost-benefit analysis

Assessment of the costs/benefits of the Inland Rail project

Issue

The analysis provided by the ARTC and in KPMG's economic benefit is inadequate and does not reflect the current project costs. The current budget is far in excess of the initial capital cost that was used in May 2016 by Infrastructure Australia for the business case.

Response

The economic assessment for the EIS was undertaken, and Technical Report 14—Economic assessment prepared, in accordance with the SEARs, and relevant guidelines, including the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2013a), as described in section B14.1.1 of the EIS. A proposal-specific cost-benefit analysis is not a standard part of the requirements for the assessment of State significant infrastructure projects in accordance with the EP&A Act in NSW.

The purpose of the investment case (*Inland Rail Programme Business Case* (ARTC, 2015)) was to assess the economic merits of Inland Rail and consider whether they provided justification for developing Inland Rail. It evaluated the benefit, cost and risk of alternative options and provided a rationale for the preferred solution.

Due to the nature of the incremental assessment approach adopted for the EIS, a project-specific cost benefit analysis has not been undertaken as the results will not capture the full benefits that are expected to be delivered upon completion of Inland Rail. Therefore, as agreed with the NSW Government, costs have not been included in Technical Report 14.

While there are benefits that are only attributable to the completion of the overarching Inland Rail Program, the approach adopted assesses both incremental user and non-user benefits as well as impacts on the broader economy.

Accordingly, Technical Report 14 focused on the anticipated benefit streams attributable to the Narromine to Narrabri section of Inland Rail. These incremental benefits are not additive across multiple sections and cannot be summed due to interdependencies of each section.

Use of multi-criteria analysis in route selection

Issue

ARTC has not undertaken a proper cost-benefit analysis and has engaged in optimism bias, relying on a multi-criteria analysis that has enabled them to ignore costs, important assumptions and unbiased economic modelling in order to generate skewed results.

Response

The economic assessment (Technical Report 14) was undertaken in accordance with the SEARs and relevant guidelines, as identified in the SEARs and section B14.1. The methodology for the economic assessment is described in more detail in section 2 of Technical Report 14. The approach adopted for the assessment reflects the recognised industry approach to undertaking economic assessments for an environmental impact assessment.

The Inland Rail business case was prepared to consider whether there is justification for undertaking Inland Rail as a whole. It evaluated the benefit, cost and risk of alternative options and provided a rationale for the preferred solution. A cost-benefit assessment is not usually part of the assessment requirements for project approval in accordance with the EP&A Act. A proposal-specific cost-benefit assessment would not capture the full impact that is expected to be delivered upon completion of Inland Rail. While there are benefits that are only attributable to the completion of the overarching program, the approach adopted does assess both incremental user and non-user benefits as well as impacts on the broader economy.

Accordingly, the economic assessment focused on the anticipated benefit streams attributable to proposal. These incremental benefits are not additive across multiple sections and cannot be summed due to interdependencies of each section.

Consideration of the alternative alignment to Coonamble using the existing track

Issue

No robust economic analysis has been undertaken of an alternative proposal that would follow the existing rail line to Coonamble. Anything that increases time has not been considered, even if the resultant benefits could, in a cost/benefit sense, offset any additional travel time.

There are numerous benefits that would arise from augmenting the existing rail line to Coonamble, rather than principally relying on new greenfield track. Greater use of this line presents an opportunity to provide tangible benefits to this regional community, with few disadvantages.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of an alternative alignment via Coonamble (see section 2.4.3 of the Route Selection Summary Report) and the justification for the preferred option selected.

As described in section A7.3.6 of the EIS, the proposal includes a connection with the existing Dubbo to Coonamble Line at Curban and four other connections with existing rail lines at Narromine and Narrabri, which would provide connectivity between Inland Rail and the existing rail network.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, which may provide future opportunities for regional communities along the alignment to connect to Inland Rail.

Consideration of an alternative alignment further to the west of Narrabri

Issue

There are similar issues in relation to the failure to consider an alternative alignment of the proposed rail corridor at Narrabri. Significant benefits could be obtained if the alignment was moved 10 kilometres further west from Narrabri.

The significant environmental and human costs of the anticipated flooding and hydrology impacts of the proposed alignment of the rail corridor at Narrabri would trigger the application of the precautionary principle, justifying the refusal of the application.

Response

A response to issues raised regarding consideration of other route options is provided in the above response.

Conclusions regarding economic analysis in the EIS

Issue

Failure to undertake a transparent and fulsome economic analysis is critical to the assessment of the project and is grounds for refusing the application.

Response

The economic assessment (Technical Report 14) was undertaken in accordance with the SEARs and relevant guidelines, as identified in the SEARs and section B14.1. The methodology for the economic assessment is described in more detail in section 2 of Technical Report 14. The approach adopted for the assessment reflects the recognised industry approach to undertaking economic assessments for an environmental impact assessment.

The mitigation measures provided in the EIS (as updated—see section 11 of this report) have been developed to minimise the potential impacts, and enhance the benefits, identified by both the social and economic assessments.

6.6.6 Inadequate ecological assessment

Deficiencies in the ecological assessment

Issue

The submission expresses concern regarding deficiencies in the ecological assessment, including:

- ▶ The assessment has been limited to the study area only, being the temporary construction footprint plus a buffer area of 50 metres from the proposed alignment, and does not consider any impacts (other than via database search) beyond the immediate footprint, which is an unreasonably narrow scope given the potential for direct and indirect impacts.
- ▶ The site assessments were undertaken during extended drought conditions which, as admitted in the EIS, substantially impacted the conditions in the survey areas and had an effect on the vegetation integrity and detectability of threatened species.

- ▶ The assessment does not assess changes to surface hydrology on ecology due to the ARTC classifying the potential for changes to hydrology as 'minimal', which is a major gap given the nature of the flood-prone environment and the potential for the project to cause significant changes in surface hydrology (as noted above).

Response

The biodiversity assessment was undertaken, and Technical Report 1—Biodiversity development assessment report prepared, in accordance with the SEARs, the *Biodiversity Assessment Method* (DPIE, 2020b) and relevant legislation and guidelines, as described in section B1.1.1 of the EIS.

Scope of study area

As described in section 8.1.1 of Technical Report 1, investigations included an initial broader study area to identify key constraints early in the design process and assist with avoiding and minimising impacts, where practicable. ARTC has, where practicable, altered the proposal route to avoid and minimise ecological impacts during the proposal planning stage.

At the end of phase 1 of the route selection process, while a preferred option had been selected in some parts, a wider study area was defined to allow for a further phase of investigations to occur prior to finalising a preferred route. The phase 2 study area varied in width, from about 5 kilometres wide south and east of Narromine, to about 500 metres in other sections. The alignment layouts were developed in response to ongoing environmental and engineering investigations and consultation with landowners of impacted properties and those adjacent to the proposal site.

The results of early biodiversity surveys (e.g. the September and November 2018 surveys) were considered as part of narrowing of the project investigation corridor, as were reviews of regional vegetation mapping.

Once the construction footprint was finalised, direct impacts were assessed within this corridor in accordance with sections 9.1.1.2 to 9.1.4.2 of the *Biodiversity Assessment Method*. The potential for indirect impacts was assessed within 50 metres of the footprint boundary in accordance with section 9.1.4.3 of the *Biodiversity Assessment Method*.

Effect of drought on assessment findings

Technical Report 1 describes the constraints imposed by access and drought. The survey and assessment approach were also discussed with the Biodiversity Conservation and Science Division of DPIE (now DPE). As noted in section 3.6.3 of the report, the impact assessment and conclusions of the report were based on information obtained from a variety of sources in addition to the field survey data. Where it was considered that the likelihood of observing a particular threatened species was diminished due to the extent of survey effort or seasonal or climatic factors, this was indicated. An assessment of the likelihood of occurrence of threatened species is provided on the basis of known distributional ranges, previous records in the locality and habitat and resource availability at the proposal site. The assessment of impacts includes those threatened species recorded in the study area during the field surveys as well as those species not detected but considered likely to occur or to be impacted.

Surveys were conducted in suitable habitat where practicable with regard to access, time and seasonal constraints. In most cases, some assumption of presence was required, based on known records, results of surveys, and habitat values present, and offsets were calculated accordingly.

Additional surveys were conducted in spring 2020 and autumn 2021 to make the most of improved conditions. The results of the surveys are incorporated into the updated biodiversity development assessment report.

Changes to surface hydrological conditions

Hydrological processes are addressed in section 9.2.8 of the Technical Report 1. The addition of water crossing structures results in an increase in the number of impervious surfaces compared to that present in the greenfield landscape. This would cause an increase in the volume of runoff that is able to mobilise to a watercourse, which can lead to increased erosion and sedimentation downstream. The increase in runoff may contain sediments and gross pollutant from the rail formation, cuttings and trackside drainage systems. This runoff could be high in heavy metals (from brake pads, track wear and points use) or organics (from minor oil, grease and diesel spills from locomotives operating along the track). Given the generally ephemeral nature of the watercourses within/close to the proposal site and the proposed mitigation measures, changes to hydrology are likely to be minimal in the context of impacts on riparian habitat relevant to threatened species.

6.6.7 Failure to adequately assess noise and vibration impacts and commit to appropriate acoustic attenuation treatments

Deficiencies in construction noise assessment

Issue

The adequacy of the assessment of noise and vibration impacts during the construction phase needs to be understood in the context that construction works are proposed to be undertaken during extended hours, seven days a week, and into the night-time period. In this regard, we note that the deficiency in the construction noise assessment as ARTC proposes that construction noise management levels be determined by reference to the minimum background noise levels in the *NSW Industrial Noise Policy* (which has been superseded by the *NSW Noise Policy for Industry*), rather than the existing ambient noise levels at receiver locations.

Response

The construction noise and vibration assessment (Technical Report 8—Noise and vibration assessment—construction and other operations) was undertaken in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), which recommends the criteria for sensitive receivers during recommended standard hours as the rating background noise level plus 10 dB, and for outside standard hours, the rating background level plus five dB.

While the *NSW Industrial Noise Policy* (NSW EPA, 2000) has been superseded by the *Noise Policy for Industry* (NSW EPA, 2017), the *Interim Construction Noise Guideline* still refers to the *NSW Industrial Noise Policy* for the setting of rating background levels (background or ambient noise). The *Noise Policy for Industry* (NSW EPA, 2017) states that where the measured noise levels are less than 35 dB(A) for daytime and less than 30 dB(A) for evening or night-time, then the rating background level for the assessment is set at 35 dB(A) for daytime and 30 dB(A) for evening and night-time.

As described in section 4 of Technical Report 8, noise monitoring was undertaken at 21 locations. These locations were selected to provide a good representation of the existing noise environment. They were identified with reference to topography, distance from the proposal site, and contribution from other noise activities, such as industry, road or rail noise. The monitoring results show that the above minimum rating background levels were relevant for most locations. At three locations the measured background noise levels were higher than the minimum levels; however, to provide a consistent and conservative approach, the minimum levels were adopted across the entire study area.

The proposed construction hours include periods defined in the *Noise Policy for Industry* as day, evening and night-time; therefore, the rating background level minimum levels for these periods have been used as a basis for the construction noise criteria applied in the assessment.

Management of construction impacts

Issue

As a result of the number of impacted receivers and the severity and duration of the stated impacts, the Minister must require that any construction works be conducted during standard day time hours only and not during night-time periods (10pm to 7am). The proposed impacts on sleep disturbance are unacceptable and the EIS does not demonstrate that the impacts can be appropriately managed, as per Item 15 of the SEARs.

Response

As described in section A8.8.2 of the EIS, to shorten the length of construction as far as practicable, and minimise associated disruptions to the community, the following primary proposal construction hours are proposed:

- ▶ Monday to Friday: 6am to 6pm
- ▶ Saturday: 6am to 6pm
- ▶ Sundays: 6am to 6pm
- ▶ Public holidays: no work.

To provide respite for the community, no work would be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except in the following circumstances:

- ▶ Where potentially affected receivers agree that the work can be undertaken

- ▶ Where construction noise levels do not exceed the rating background level by more than 5 dB(A) at residential receivers
- ▶ No more than the noise management levels specified in the *Interim Construction Noise Guideline* (DECC, 2009) (Table 3) at non-residential sensitive receivers.

In accordance with *Noise Policy for Industry* (NSW EPA, 2017), nighttime is defined as 10pm to 7am; as such, the primary proposal construction hours would involve work within the early morning (6am to 7am), which falls within the night-time period. Therefore, there is expected to be generally limited sleep disturbance for most receivers during this time period and the length of exposure for most receivers would be limited as construction activities progress along the proposal site.

Some discrete construction activities would also need to be undertaken outside the primary proposal construction hours, as described in section A8.8.2 of the EIS. These would include work where there are no sensitive receivers and work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line) (which typically occur for a period of 72 hours, four times a year). Other discrete construction activities would also need to occur outside the primary proposal construction hours, such as large concrete pours and girder or deck installations at some bridges; however, these would be limited to 48 hours at any one location.

The approach to managing out-of-hours work is described in the following response.

Consultation regarding construction hours and potential impacts

Issue

The veracity of the claim made that the ARTC has consulted with 118 affected landowners with '*about half indicating they would support the primary proposal construction hours*' is questioned.

No evidence as to landowner support has been provided by the ARTC as part of the EIS. In addition, it is not clear whether ARTC disclosed the duration and severity of the impacts and/or provided those landowners with a copy of the construction noise assessment at this time. If the impacts were not transparently explained to the affected parties, then any verbal consent provided by the landowners cannot be said to be informed consent and should not be accepted on this basis.

Response

As described in section B8.1.2 of the EIS and section 5.4 of the consultation report (Appendix C of the EIS), ARTC undertook consultation between July 2019 and February 2020 with 118 directly affected landholders regarding the proposed working hours. About half of the people consulted said they would support the primary proposal construction hours.

The results of the construction noise assessment were not available at the time of the consultation. As a result, input regarding support or objection for the proposed working hours was sought to provide an indication of community sentiment. During the consultation, ARTC explained that extended construction hours could reduce the duration of noise impacts in some circumstances, such as at isolated sensitive receivers close to trackwork with no major structures, as the work front would move quicker. It is estimated, at this stage of the design process, that constructing the proposal during the primary proposal construction hours would reduce the overall construction program by up to six months.

Public exhibition of the EIS also provided the opportunity for the broader community and other stakeholders to provide comments in relation to the primary proposal construction hours. ARTC has not stated or assumed that the verbal feedback sought from landowners constitutes informed consent and would continue to engage with them during the detailed design and construction phase. ARTC would also negotiate community agreements with impacted landowners in accordance with the *Draft Construction Noise Guideline* (NSW EPA, 2020) prior to construction, if appropriate.

Adoption of inappropriate operational noise criteria

Issue

The operational noise assessment has adopted criteria based on the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013) rather than by reference to the existing background noise levels at receiver locations, which are far below the adopted criteria. This results in misleading conclusions regarding the acceptability of operational noise impacts. This is because compliance with the criteria alone does not mean that there will be no change in noise experienced by sensitive receivers and is not evidence that those impacts are acceptable.

ARTC must be required, at a minimum, to acknowledge, assess, and mitigate the actual noise impacts that will be experienced at receiver locations, whether or not they comply with the criteria.

Response

The operational rail noise assessment described in Technical Report 9—Noise and vibration assessment—operational noise, was undertaken in accordance with the SEARs and relevant guidelines, including the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). SEARs item 15 (Noise and Vibration—Amenity) defines the requirements to be addressed and relevant guidelines to consider.

The lowest (most stringent) noise criteria from the *Rail Infrastructure Noise Guideline* were adopted to assess potential railway noise impacts for the proposal.

It is acknowledged by ARTC that railway operations would occur in areas where the existing ambient noise levels may be relatively low. ARTC also acknowledges that assessing potential noise impacts from railway infrastructure operations does not require noise limit criteria to be established with reference to the existing background noise levels.

Commitments to managing noise impacts from rail operations are defined by a number of mitigation measures, including ONV1, ONV2, ONV4 and ONV5. In accordance with mitigation measure ONV1, an operational noise and vibration review would be undertaken to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. Mitigation measure ONV5 provides that operational noise and vibration compliance monitoring would be undertaken, once Inland Rail has commenced operation, at representative locations, to compare actual noise performance against that predicted by the operational noise and vibration review. Compliance monitoring requirements would be defined by the operational noise and vibration review.

In accordance with measure ONV5, the results of monitoring would be included in an operational noise and vibration compliance report. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.

Condition of rollingstock and track

Issue

The modelling assumes that rollingstock and track are in good working condition, which is a baseless assumption and ignores potential increased operational noise impacts that will be experienced by sensitive receivers.

Response

The operational noise assessment described in Technical Report 9 adopted noise emission levels for individual types of rollingstock that are based on existing rollingstock. The noise emission levels considered a wide range of locomotive and freight rollingstock noise levels accounting for the age and type of rollingstock currently in use in NSW. Therefore, a conservative assessment approach has been adopted.

While rollingstock operators would be responsible for maintaining the condition of their stock, an amendment to the *Protection of the Environment Operations Act 1997* (NSW) was passed on 5 July 2019 to include rollingstock operations as a scheduled activity under Schedule 1 of the Act. As of August 2020, rollingstock operators on ARTC's network in NSW will now require an environment protection licence (EPL) issued by the EPA. This change will mean that rollingstock operators' environmental performance outcomes, such as noise from locomotives and carriages, will be regulated by the NSW EPA.

The condition of the rail track, once constructed, will be managed in accordance with the conditions of approval, ARTC's existing EPL (EPL no. 3142) (or a new EPL obtained for the proposal), and ARTC's standard operating procedures, which specify routine maintenance requirements.

No commitment to carry out acoustic attenuation treatments

Issue

ARTC has not specified what mitigation options are proposed at sensitive receiver locations, and there is no commitment to carry out these impact mitigation works prior to the operation of Inland Rail, leaving sensitive receivers vulnerable.

Response

In accordance with mitigation measures ONV1 and ONV2, an operational noise and vibration review would be undertaken to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design.

While the rail alignment may be unlikely to materially change, detailed design and construction planning provides the opportunity to refine the works to be undertaken. As part of this process, further work would be undertaken to investigate the noise mitigation options for individual potentially affected sensitive receivers. The specific noise mitigation for each sensitive receiver would be determined on a case-by-case basis considering a range of environmental, engineering and site-specific factors. Landowner preferences would also be considered.

At this stage of the design process, features such as building construction (e.g. form and function) and the acoustic performance of existing individual at-property elements (e.g. facades and windows) cannot be quantified. It is also important that received railway noise levels are validated. Possible at-property treatments include upgraded acoustic glazing, acoustic window and door seals, acoustic insulation for the roof, fresh air ventilation (acoustic ducting) or air-conditioning, and 'acoustic' fences. These matters would be addressed during detailed design.

Noise mitigation work for those receivers confirmed as requiring mitigation in the year of opening would be implemented prior to the commencement of operation of the proposal, or as otherwise required by the conditions of approval.

Failure to identify and categorise all sensitive receivers

Issue

No ground-truthing of aerial imaging has been undertaken to ensure that all sensitive receivers have been captured in the assessment, nor has the ARTC identified the nature of each receiver (i.e. type of occupancy) and the sensitivity of that receiver location.

Response

The sensitive receivers identified in the construction noise and vibration assessment (Technical Report 8) and the operational assessment (Technical Report 9) were identified in accordance with regulatory and guideline requirements. Receivers identified included residential, non-residential (such as schools, hospitals, childcare centres and commercial premises) and other structures (such as sheds) from a range of sources, including aerial photography, building outline analysis and other online sources. These were supplemented by further information from the ARTC consultation team and, in some cases, ground truthing.

ARTC has followed industry best practice to identify sensitive receivers. This included identifying all structures within the study areas for the assessments using a national geospatial dataset of buildings from 2018. Confirmation of receiver types and mitigation requirements would be undertaken as part of the location and activity specific construction noise and vibration impact statements (to be prepared in accordance with mitigation measure CNV1) and the operational noise and vibration review (to be undertaken in accordance with mitigation measure ONV1).

No justification regarding why operational exceedances are acceptable

Issue

No detailed analysis or reasoning is provided in the operational noise assessment to support why exceedances of the relevant noise criteria are acceptable and/or capable of mitigation, contrary to the SEARs.

Response

The assessment of potential operational rail noise and vibration impacts is provided in Technical Report 9, and the results are summarised in chapter B9 of the EIS. The methodology for the operational rail noise assessment is described in chapter 4 of Technical Report 9. The assessment was undertaken in accordance with the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013), as specified by the SEARs. As described in section 3.2.1 of Technical Report 9, the *Rail Infrastructure Noise Guideline* provides non-mandatory railway noise assessment criteria for sensitive receivers and specifies that mitigation may be considered where certain trigger levels are exceeded.

As the proposal consists of new track construction, the trigger levels for sensitive receivers for new rail line developments have been adopted. The assessment criteria for new rail line developments are more stringent, on the premise that the environment surrounding the future rail line may not currently experience railway noise and new rail line developments have greater opportunity to apply mitigation options during the planning and design stage.

Potential operational impacts would be managed in accordance with the mitigation measures provided. In accordance with mitigation measure ONV1, an operational noise and vibration review would be undertaken to review the potential for operational impacts, and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. Mitigation measure ONV2 provides that feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy.

Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners.

Inadequate consideration of sleep disturbance impacts during operation

Issue

The assessment of impacts on sleep disturbance is inadequate and the ARTC should be required to undertake a detailed assessment of impacts on sleep disturbance prior to approval being granted.

Response

As noted in the previous response, the assessment of operational rail noise was prepared in accordance with all relevant guidelines and addresses the SEARs. This includes the assessment of sleep disturbance.

As described in section 11.4 of Technical Report 9, the L_{Amax} (maximum) rail noise management criteria from the *Rail Infrastructure Noise Guideline* were adopted to assess potential sleep disturbance impacts, such as awakening, disrupted sleep, or a general reduction to the quality of sleep over time. Night-time and maximum noise trigger levels were included in the assessment to protect the community during the more sensitive time periods.

The assessment found that the L_{Amax} criteria would be exceeded at 35 sensitive receivers, by up to 11 dBA during the night-time period; however, the assessment found that the criteria would generally be achieved where receivers are located further than 400 metres from the rail corridor.

As noted in section 11.4 of Technical Report 9, however, railway noise has the potential to be audible at sensitive land uses, both externally and internally, even where the noise management criteria are achieved. Therefore, the assessment referenced guidance on sleep disturbance from the World Health Organization, to further evaluate the potential for noise-related impacts.

As described in section B9.4.2 of the EIS, the guidance from the World Health Organization suggests that sleep quality can be preserved where maximum outside noise levels are 49 dB(A). Noise levels above 49 dB(A) could occur within 1 kilometre of the rail corridor; however, the distance is only a guide to where night-time noise levels may have the potential to result in sleep disturbance, as individuals respond to noise differently.

Potential impacts would be managed by the mitigation measures noted in the above responses.

Imposition of conditions

Issue

ARTC has failed to meet the requirements of Item 15 of the SEARs. Consequently, because the Minister cannot be satisfied that the noise and vibration impacts arising during construction and operation of the project can be effectively managed to minimise adverse impacts, the project must be refused. Otherwise, conditions of consent must be imposed as listed in the submission (included in the response below).

Response

The approval or otherwise of the proposal is a matter for the Minister for Planning.

Responses to the recommended conditions of consent are provided below.

a) Limit construction noise to normal daytime construction hours only to ensure that impacts on sensitive receivers from construction noise are acceptable.

As described above, the majority of works in the defined night-time period would be between 6am and 7am in the morning. Work outside the primary proposal construction hours would be otherwise limited to discrete locations and short periods (up to 72 hours for rail possessions and up to 48 hours for discrete construction activities). Therefore, there is expected to be generally limited sleep disturbance for most receivers and the length of exposure for most receivers would be limited as construction activities progress along the proposal site.

With the implementation of an out-of-hours work protocol (mitigation measure CNV5), and construction noise and vibration management plan (mitigation measure CNV3), including appropriate community consultation, the potential impacts are considered manageable.

b) Require mitigation and management strategies to be applied to construction noise as per the Transport for New South Wales Construction Noise and Vibration Strategy (ST-157/4.1).

In accordance with mitigation measures CNV3, CNV4 and CNV5, a construction noise and vibration management plan would be prepared and implemented as part of the CEMP, in accordance with the *Inland Rail NSW Construction Noise and Vibration Management Framework*. The framework was developed specifically for all NSW Inland Rail proposals and fulfils the recommendation in the *Interim Construction Noise Guideline* (DECC, 2009) for organisations to detail best practice, project-specific approaches to minimise noise impacts from pre-construction activities and construction, and provide the public with transparency. The framework is the Inland Rail equivalent of Transport for NSW's Construction Noise and Vibration Strategy, which applies to Transport for NSW's rail network, including many metropolitan and urban rail lines.

c) Require the ARTC to undertake site inspections of sensitive receiver locations and commit the ARTC to carrying out works for acoustic attenuation treatments at sensitive receiver locations prior to the completion and operation of the rail line.

As described above, the sensitive receiver datasets used in the construction noise and vibration assessment (Technical Report 8) and operational assessment (Technical Report 9) noise assessments are considered to be acceptable. In accordance with mitigation measures ONV1 and ONV2, noise mitigation work for those receivers confirmed as requiring mitigation in the year of opening would be implemented prior to the commencement of operation of the proposal, or as otherwise required by the conditions of approval.

d) Require the ARTC to conduct a detailed assessment of sleep disturbance impacts from the project, as per the World Health Organisation's Night Noise Guidelines for Europe criterion (49 dBA external, windows open), and commit the ARTC to carrying out works for acoustic attenuation treatments at sensitive receiver locations prior to the completion and operation of the rail line.

The *Rail Infrastructure Noise Guideline* (NSW EPA, 2013), which is the relevant guideline for the assessment of the proposal, was developed by the NSW EPA to provide a consistent and transparent approach to assessing rail noise. The guideline makes reference to the World Health Organization (WHO) *Night Noise Guidelines for Europe* in the development of the rail noise criteria. The WHO recommends an interim target of 55 dB(A) for airborne noise. The *Rail Infrastructure Noise Guideline* makes the following statement regarding the WHO Night Noise Guidelines for Europe:

This is an indicator of long-term health effects and is a representation of a one year external L_{Aeq} over an eight-hour (night) period and cannot be compared directly with the noise trigger levels within this guideline.

However, the consensus is that L_{Aeq} by itself is an inadequate predictor of the potential of a varying noise to disturb people. The L_{Amax} descriptor addresses the maximum noise level due to individual pass-by events and provides a way to account for the potential disturbance from such individual events. For the time being, the L_{Amax} noise level descriptor and the number of anticipated L_{Amax} events during the night-time period will continue to be included in rail-noise assessments.

As such, in accordance with the SEARs, the proposal has been assessed against the *Rail Infrastructure Noise Guideline* criteria.

e) Require the appointment of an independent project Acoustic Advisor.

The appointment of an independent acoustic advisor is a matter for DPE.

f) Specify an acceptable Operational Noise and Vibration Criteria which is appropriate considering the acoustic sensitivity of the rural environment.

As described above, the criteria used in the construction and operation noise and vibration assessments are in accordance with the relevant guidelines specified in the SEARs.

g) Undertake operational noise validation during operation.

In accordance with mitigation measure ONV5, operational noise and vibration compliance monitoring would be undertaken, once Inland Rail has commenced operation, at representative locations to compare actual noise performance against that predicted by the operational noise and vibration review (mitigation measure ONV1). Compliance monitoring requirements would be defined by the operational noise and vibration review. The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.

h) Require preparation of an operational noise compliance report which is to be made freely available to the public.

The operational noise and vibration compliance monitoring report (mitigation measure ONV5) would be provided to DPE and, if required, made public in accordance with any conditions of approval.

6.6.8 Inadequate visual impact assessment

Narrow scope of assessment

Issue

The EIS has adopted an extremely narrow scope of visual impact assessment, contrary to Item 18 of the SEARs. The visual impacts of the proposal from private property have not been considered, despite the fact that many private landowners will be impacted by the proposal.

This narrow scope has been adopted without explanation or justification and is simply unacceptable, particularly for a project of this scale and in a location that otherwise enjoys high visual amenity.

Response

The landscape and visual impact assessment has been undertaken in accordance with the SEARs and guidelines for visual impact assessment in NSW. The assessment methodology is summarised in section B13.1.2 of the EIS and is described in more detail in Technical Report 12—Landscape and visual assessment.

The assessment considers potential impacts on sensitive viewpoints and provides a more general assessment on sensitive receivers. It does not provide individual property specific assessment as this is not required by the SEARs or relevant guidelines. As described in section B13.2.2 of the EIS, sensitive visual receivers within the study area include:

- ▶ Residents of rural properties and residential areas of the outer edges of Narromine and Narrabri that have views to the proposal site
- ▶ Road users
- ▶ Rural and industrial workers
- ▶ Visitors to recreational areas/lookouts with views to the proposal site.

A total of 32 viewpoints were selected as representative locations to assess the potential visual impacts of the proposal. The locations of the viewpoints are representative of the range of views to the proposal site.

Although viewpoint photos were not taken from private property, photos were taken adjacent to private properties, where properties would have views towards the proposal, on publicly accessible land, and are representative of views from these properties. The assessment was undertaken in accordance with *Environmental Impact Assessment Practice Note—Guideline for landscape character and visual impact assessment* (Roads and Maritime Services, 2013a), which notes that representative viewpoints can be used as part of the assessment when a viewpoint cannot be physically accessed (on private property).

Of the 32 selected viewpoints, the 10 viewpoints are representative of views from residents on private property (these include viewpoints VP01, VP03, VP04, VP09, VP19, VP20, VP21, VP22, VP30, and VP32).

As described in section A7.6.2 of the EIS, and in accordance with mitigation measure LV2, an urban design and landscape plan will be prepared to provide a consistent approach to design and landscaping. The plan would be prepared in accordance with the urban design and landscaping objectives identified for the proposal and relevant guidelines, policies and strategies (as listed in section A7.6.2 of the EIS). These include ARTC's *Inland Rail Landscape and Rehabilitation Strategy* and the *Inland Rail Landscape and Rehabilitation Framework*, which have

been developed to establish governing landscape objectives and principles, as well as outline landscape and rehabilitation treatment solutions for various phases of the overall Inland Rail program.

Photomontages and visual impacts

Issue

Concerns are expressed about the number and selection of photomontages, which are considered to be highly selective such that they cannot be said to portray a realistic or reasonable depiction of the visual impacts of the project. This very convenient selection of photomontages is clearly not representative of the views and viewer settings across the length of the proposal and is inadequate to enable a reasonable assessment of the visual impact of the proposal.

Response

Photomontages are a tool to assist in understanding the visual impacts of a proposal and have been used to supplement the impact assessment.

As described in section 13.1.2, a series of locations were selected for the production of visual representations (photomontages). These were prepared to visually represent the views from selected locations with the introduction of the proposal. The viewpoints selected for the eight photomontages prepared for the EIS were selected to demonstrate the range of visual impacts associated with the proposal. The viewpoints focused on the visible elements of the proposal that were considered to generate the greatest impacts, such as bridges, rail on embankments and borrow pits. The photomontage methodology was guided by industry accepted techniques recommended in *Visual Representation of Development Proposals, Technical Guidance Note 06/19* (Landscape Institute, 2019).

Reasonableness of conclusions about impacts from nominated viewpoints

Issue

We also question the reasonableness of some of the conclusions drawn regarding the nature of the impact of the project from the nominated viewpoints (as detailed in the submission), including:

- ▶ The focus of the visual impact assessment was on level crossings and excluded other key infrastructure
- ▶ Viewpoints for bridges were selected at a distance from the proposed alignment such as selected viewpoints to the Castlereagh River Bridge (viewpoints 9 and 10)
- ▶ Viewpoints of elevated rail line do not provide the extent of the proposed elevations
- ▶ Reference to future planting to reduce the visual impact of the proposal is not adequate.

Response

Focus of visual impacts at level crossing locations

The landscape and visual impact assessment (Technical Report 12) was prepared in accordance with the SEARs and relevant policies and guidelines, including *Environmental Impact Assessment Practice Note—Guideline for landscape character and visual impact assessment* (Roads and Maritime Services, 2013a). The guideline notes that representative viewpoints can be used when viewpoints cannot be physically accessed (on private property).

Viewpoints were selected to consider impacts from a range of different sensitive receivers and impacts of the different visible elements of the proposal, including bridges, rail on embankment, borrow pits, rail at grade, level crossings, double-stacked trains and tree removal. Of the 32 representative viewpoints assessed, impacts at 24 viewpoints were selected based on potential visible proposal elements other than level crossings. Furthermore, viewpoints that described the visual impacts of level crossings also considered vegetation removal and the extents of rail corridor to either side of the level crossing.

Viewpoints for bridges selected at a distance from the proposed alignment

Viewpoints were selected to represent a range of sensitive receivers at a range of distances from the proposal. Viewpoint 9 was selected to represent views from the township of Curban towards the proposed bridge and Viewpoint 10 was selected to represent road users travelling along National Park Road, a sub-arterial road.

Viewpoints do not provide the extent of the proposed elevations of structures

As is typical for State significant infrastructure projects in NSW, the visual impact assessment was based on the reference design, which provided a suitable level of detail to undertake the assessment (including the locations of structures, extents of vegetation clearance, proposed road alignments, etc.).

Photomontages prepared as part of the EIS show some of the elevated infrastructure (see viewpoint locations 5, 18, 19, 21 and 22 in Appendix A of Technical Report 12).

As described in section A7.6.2 of the EIS, and in accordance with mitigation measure LV2, an urban design and landscape plan would be prepared by a suitably qualified consultant in consultation with relevant stakeholders. The urban design and landscape plan would guide the appropriate urban design responses for key infrastructure and landscaping approaches. The plan would be context specific and include a vision, and place-specific objectives and principles to ensure the design is well integrated into its surrounding environment. The plan would be prepared in accordance with the urban design and landscaping objectives identified for the proposal and relevant guidelines, policies and strategies (as listed in section A7.6.2 of the EIS). These include *ARTC's Inland Rail Landscape and Rehabilitation Strategy* and the *Inland Rail Landscape and Rehabilitation Framework*, which have been developed to establish governing landscape objectives and principles, as well as outline landscape and rehabilitation treatment solutions for various phases of the overall Inland Rail program.

Reference to future planting to reduce the visual impact of the proposal not adequate

The potential visual impacts of construction and operation were assessed based on a combination of the sensitivity of the viewpoints and the magnitude of the change from each viewpoint (see section B13.1.2 of the EIS) in accordance with the relevant assessment guidelines (listed in section B13.1 of the EIS). The criteria for defining sensitivity and magnitude are described in section 3.4 of Technical Report 12. The sensitivity of visual receivers depends on the location of receiver, the importance of their view, land uses and the extent of existing screening. The magnitude of change is based on the size and scale of the change, geographical extent of effects and duration and reversibility of effects.

Table 3.5 on Technical Report 12 outlines the criteria for the magnitude of change ratings used in the visual impact assessment, which range from negligible to high. Where mitigation measures have the potential to be effective in neutralising adverse effects and/or improving the view, a rating of negligible is used. Where mitigation measures are unlikely to reduce the impacts of the change, a high rating is used.

The visual impact assessment took into consideration the potential for the impact to be mitigated, including the use of vegetation screening at appropriate locations. This approach is consistent with the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Management & Assessment, 2013).

Mitigation measure LV2 provides that the urban design and landscape plan would include vegetation screening in strategic locations to visually mitigate impacts from new structures and rail operations, including around bridges and locations where the proposal would be visible from sensitive receiver locations. This includes locations close to residences, where the presence of screening would not impact safe rail operations. Detailed landscape plans would be prepared during the next phase of the design process.

6.6.9 Failure to address access, fragmentation and severance issues

Loss of access and the fragmentation and severance of properties

Issue

Loss of access and the fragmentation and severance of properties remains a considerable concern to many, if not all, of the landowners along the proposed alignment. This covers circumstances where, for example, the rail corridor would have the effect of cutting off a property from its principal access point to a public road. It also extends to cover access within a property itself, including access to internal road networks as well as farming infrastructure such as stock yards, dams, bores, etc. It also covers connectivity between properties where farms are run as family cooperatives or community enterprises across multiple properties in different ownerships. The submission identifies a range of landholder concerns in relation to property fragmentation and access.

Response

Severance and fragmentation of rural properties are considered in Technical Report 11—Agriculture and land use assessment, and the results are summarised in sections B12.3.6 and B12.4.6 of the EIS. It is identified that property severance could affect the configuration of a property, affecting efficiency, productivity and viability, for example, as a result of changes in access arrangement for the movement of farm machinery or stock to different areas of a property. Other identified property impacts include impeded access, changes to internal roads and load limits, and the isolation of hubs within a farm's operational layout. The EIS acknowledges that some severed portions may become unviable due to the size of the remaining area, configuration or access.

These impacts would differ for each property, potentially affecting properties that operate as a single management unit, changing property configurations, with the potential for severance of parts of properties and isolation of key agricultural infrastructure. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

ARTC acknowledges this issue, which will continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures and opportunities to minimise impacts on their operations/properties.

All property acquisitions would be undertaken in consultation with landowners and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable.

In accordance with mitigation measure LP3, during the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. The agreements may include (for example):

- ▶ Measures to minimise property impacts, including on agricultural operations
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible
- ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (such as new or adjusted accesses to the public road network or internal access networks), divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

Other mitigation measures relevant to addressing the potential impacts of the proposal on properties and agricultural enterprises include:

- ▶ LP10—Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock-train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
- ▶ LP20—Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
- ▶ LP22—ARTC will develop a 'Call Train Control' process to enable landowners to use level crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.

In relation to the potential impacts of construction, in accordance with mitigation measure LP4, property owners and occupants would be consulted in accordance with the communication management plan to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

Amended mitigation measure LP5 provides that, where construction is located on or immediately adjacent to private properties, and has the potential to affect farm operational arrangements, property specific measures would be identified and implemented in consultation with landholders to address identified issues, where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

The full set of (updated) mitigation measures is provided in section 11 of this report.

Private access issues

Issue

ARTC has provided verbal assurances to landowners that access issues will be resolved at the detailed design phase. This approach is unacceptable and contrary to Item 5 of the SEARs.

It appears as though the ARTC have sought to locate the proposed corridor along lot boundaries; however, this has not taken into account ownership arrangements, such as where a neighbouring property might be in different ownership but run as part of the one enterprise. Also, land might be in separate ownership but run as a family cooperative with other neighbouring properties, with access to shared road networks and farming infrastructure critical to operation.

Response

Severance and fragmentation of rural properties is considered in Technical Report 11—Agriculture and land use assessment, and the results are summarised in sections B12.3.6 and B12.4.6 of the EIS. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

As described above, these impacts would differ for each property, potentially affecting properties that operate as a single management unit, changing property configurations, with the potential for severance of parts of properties and isolation of key agricultural infrastructure.

As noted in the response above, ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements as far as practicable. Property acquisition discussions have commenced and are ongoing.

The detailed approaches to addressing potential access issues can only be determined at the detailed design stage, and in consultation with each affected property owner. ARTC's commitments to managing potential access and property impacts are described in the above response.

Compensation for access impacts

Issue

Issues may not be capable of being adequately compensated under compulsory acquisition legislation. Unless suitable arrangements are made through the project conditions, the ruthless approach to the management of costs will prevail, leaving landowners without all-weather access to their properties.

Response

Potential impacts associated with the proposal have been considered and assessed by the EIS in accordance with the SEARs, relevant legislation and guidelines. Appropriate mitigation measures would be implemented during detailed design, construction and operation of the proposal to mitigate the potential impacts on the local community.

ARTC will continue to work with all potentially affected stakeholders to minimise potential impacts in accordance with the mitigation measures (see section 11 of this report) and the conditions of approval. LP1 provides that the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable, and that consultation with landholders would be ongoing during detailed design, to identify feasible and reasonable measures to minimise impacts on their operations/properties.

ARTC would design, construct and operate the project in accordance with the conditions that form part of the approval by the Minister for Planning (if approved)

In relation to potential impacts on external access, in accordance with mitigation measure LP6, where the proposal affects access to and from a public road, input would be sought from relevant landholders prior to finalising the detailed design. Where any legal access to a property is permanently affected and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and reasonable. Where alternative access is not feasible or reasonable, and a property or part of a property is left with no access to a public road, consideration would be given to acquisition of the property or part of the property in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) (Land Acquisition Act). In accordance with the Land Acquisition Act, ARTC's preference is for acquisition by agreement where practicable.

Mitigation measure LP3 provides that, where land is acquired, compensation would be assessed in accordance with the Land Acquisition Act. Depending on the individual circumstances of each land/business owner and the proposed impacts on the land and to operations, compensation may take the form of money or land/works—as agreed by the parties.

As part of the negotiation process, each property subject to acquisition would be assessed on an individual basis, as the potential impacts of the proposal and specific design elements localised to that property would ultimately influence how the compensation is determined and would need to account for other ancillary impacts specific to each property. An example of this may relate to the final design and location of a level crossing point. If an internal level crossing does not have a sufficient design width to enable a combine harvester to cross with the header attached, then the operator will need to detach the header to the comb trailer, cross and then reattach. It is this level of detail that is required and why it is important that detailed designs are completed, and each property is assessed independently.

For potential internal access impacts, amended mitigation measure LP7 provides that where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

6.6.10 Failure to consider the impact of the rail line on the farming capacity of the district

Adequacy of the assessment

Issue

The agricultural assessment was undertaken on the basis of a desktop analysis with no detailed on-ground investigations. There has also been no attempt to conduct any meaningful engagement with landowners to fill this information gap or understand the nature of farming operations in the region.

As a result, the assessment lacks specificity and reflects inaccurate understandings of the existing land use in the region.

Response

Consultation and engagement activities in relation to the proposal and the potential impacts have been underway since November 2017, as outlined in Chapter A4 of the EIS. The findings of these activities as they relate to land use and property are described in sections 3.1.3 and 6 of Technical Report 11—Agriculture and land use assessment. Section B12.2 of the EIS provides an overview of general land uses in the proposal site and the study area. The use of this mapping provided consistent categorisation of land uses across both the proposal site and study area. These spatial land use mapping outputs were ground-truthed during an inspection of the proposal site in November 2018, as outlined in section 4.1 of Technical Report 11.

In addition, in late 2019, ARTC engaged an agricultural consultant, to undertake one-on-one consultation with around 100 landholders who own property or reside in the study area. The key issues identified through that process informed the agricultural and land use assessment.

ARTC acknowledges potential impacts on land use, which will continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures opportunities to minimise impacts on their operations/properties.

Impacts on agricultural land

Issue

There would be a permanent and irreversible loss of at least 25 per cent agricultural production in this region, which does not account for ancillary losses caused by the impacts of severance, sterilisation of farmland, reduced productivity of soils due to erosion and flooding impacts, and potential noise and vibration impacts on livestock. This calculation also does not account for the fact that much of the land that is being used for grazing is also suitable for high-value cropping as well.

Response

The agriculture and land use assessment (Technical Report 11) recognises and identifies the various agricultural land uses within the region and considers a wide range of potential impacts, including severance and fragmentation of rural properties, flooding of agricultural lands, erosion and scour, and animal welfare and stock behaviour concerns.

Section B12.4.2 of the EIS notes that the permanent (operational) land requirements (as estimated at the time the EIS was prepared) would result in about 1,300 hectares (ha) of land being removed from agricultural production. This represents about 0.04 per cent of all agricultural land across the five LGAs that comprise the regional study area for the assessment. The amendments to the proposal, as described in the combined Preferred Infrastructure/Amendment Report, would increase the amount of agricultural land affected by the proposal's operational footprint. It is estimated that the amended proposal would affect about 1,458 ha of agricultural land (a 158 ha increase compared to the exhibited proposal). This represents about 0.04 per cent of agricultural land across the five LGAs that comprise the study area for the assessment.

Potential indirect impacts on agricultural production may occur as a result of both construction and operational activities that alter the ability of landholders to fully utilise the productive capacity of their land. These potential indirect impacts could include interruption to management where landholders could be delayed in completing various crop and livestock husbandry operations. Other indirect impacts could arise from dust, noise and operational lights, competition for labour required for agricultural related activities (particularly during the construction phase). In addition, the use of water during construction could reduce water availability for agriculture and there is the potential for the risk of bushfires during construction and operation.

ARTC acknowledges this issue, which will continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures and opportunities to minimise impacts on their operations/properties.

Regarding potential noise and vibration impacts on livestock, section 7.9 of Technical Report 11 considers the potential impacts of noise on livestock grazing patterns, finding that the few abnormal behavioural changes noted in published studies were well within the range of activity variation within a group of animals.

Impacts on biophysical strategic agricultural land

Issue

The assessment of the impact on biophysical strategic agricultural land does not incorporate a site verification process or acknowledge the potential for significant impacts, calculated at a 7 per cent permanent loss of Biophysical Strategic Agricultural Land.

Response

The EIS and supporting assessments have been undertaken in accordance with the requirements for State significant infrastructure and the SEARs. Technical Report 11—Agriculture and land use assessment considers biophysical strategic agricultural land mapped at a regional scale by the NSW Government. While the biophysical strategic agricultural land mapping provides an indication of strategic agricultural land, Technical Report 11 notes that variability in natural resource conditions, climatic influences and managerial expertise can also influence economic returns. A land use conflict risk assessment was undertaken in accordance with the *Land use conflict risk assessment guide* (DPI, 2011) to inform the agriculture and land use assessment (see Appendix A of Technical Report 11). The potential impact on agricultural land, including disturbance of mapped biophysical strategic agricultural land, was identified as having a high-risk rating.

As summarised in section B12.3.3 of the EIS, the proposal would impact less than 1 per cent of agricultural land and biophysical strategic agricultural land within the study area. In accordance with mitigation measure LP1, the design would continue to be refined to minimise the proposal's land requirements and associated property impacts, as far as reasonably practicable.

Mitigation measures

Issue

The mitigation measures are ambiguous and will be ineffective in managing the impacts on agricultural land use. In particular:

- ▶ It is inadequate for the ARTC to simply assert that 'feasible and reasonable property-specific measures' will be implemented to mitigate impacts, without clearly identifying what those measures are and how those measures will in fact mitigate the impacts caused by the project.
- ▶ ARTC has not made any real commitments to carry out any mitigation works or provide indicative timeframes for when these works would be conducted.

Response

The agriculture and land use assessment has been undertaken in accordance with the SEARs and relevant guidelines by experienced agricultural assessment professionals. The proposed mitigation measures have been developed as an outcome of the assessment to effectively mitigate, where practicable, the potential impacts on agricultural land use.

The further development of detailed measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures (provided in section 11 of this report) and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

ARTC acknowledges the issues raised in relation to the potential property impacts. ARTC has committed to continue to liaise with property owners on relevant aspects of the proposal, including potential property impacts and measures to address these impacts. A range of mitigation measures confirm this commitment, which has been strengthened by amendments to a number of the measures originally provided in the EIS. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning, where appropriate, in accordance with the community management plan for the proposal. Mitigation measure SE1 provides for the development and implementation of a project-specific communication management plan to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquiries and complaints are managed, and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design, to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Mitigation measure LP4 provides that property owners and occupants would be consulted in accordance with the communication management plan, to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

In accordance with amended mitigation measure LP5, where construction is located on, or immediately adjacent to, private properties, and has the potential to affect farm operational arrangements, property specific measures would be identified and implemented in consultation with landholders to address identified issues, where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

6.6.11 No proper quantitative assessment of air quality impacts

Potential for air quality impacts

Issue

The submission expresses concern about the potential for air quality impacts, including:

- ▶ The potential for adverse air quality impacts arising from fine particulates PM₁₀ and PM_{2.5} and other carcinogenic substances to residences located in close proximity (that is, within at least 1 kilometre) to the rail corridor or crossing loops.
- ▶ The risk of potential impacts of fuel emissions (from the diesel) on certain specialist crops is also of concern.
- ▶ The assessment of point sources from things like borrow pits and concrete batching plants; however, no evidence is provided to support the assertion that impacts will not persist for more than 50 metres, or whether the cumulative impacts of such point sources have even been considered.

Response

Operational assessment approach

The operational air quality impact assessment for the proposal is described in section B10.4 of the EIS. The assessment included consideration of key pollutants relevant to train emissions, such as nitrogen dioxide, sulfur dioxide, carbon monoxide, PM₁₀, PM_{2.5} and benzene, in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2016) (the Approved Methods). These criteria are provided for the protection of human health and the environment. The exception is the criteria for hydrogen fluoride, which are included for the protection of general and specialist crops (including grapes and stone fruit); however, hydrogen fluoride is not a significant emission from diesel fuel combustion, as evidenced by the lack of hydrogen fluoride emission factors in standard sources; therefore, assessment of impacts against these criteria was not considered to be required.

The assessment referenced the *Northern Sydney Freight Corridor Strathfield Rail Underpass Air Quality Assessment* (Parsons Brinckerhoff, 2012) when considering potential worst-case emissions from locomotives, including nitrogen dioxide, sulfur dioxide, carbon monoxide, PM₁₀, PM_{2.5} and benzene. The 2012 assessment was a quantitative assessment undertaken in accordance with the Approved Methods. It predicted compliance with the criteria for all modelled pollutants within 50 metres of the track. Operational train movements for the proposal would be substantially lower than those considered by the 2012 reference study and the background pollutant concentrations are lower for the proposal. As a result, the operational emissions are expected to be much lower for the proposal than the reference study.

In summary, there is considered to be a low risk of air quality impacts for locomotives in transit. As described in section B10.1.2 of the EIS, and further below, the highest-risk impacts are likely to occur from rail exhaust emissions as a result of locomotives idling on the crossing loops. A quantitative air quality assessment was undertaken for locomotives idling at crossing loops. It used estimated locomotive emission rates and dispersion modelling to determine the distance from crossing loops at which compliance with the most critical air pollutant criteria would be achieved. The conservative dispersion modelling assessment found that compliance with the criteria was achieved within 25 metres of crossing loops. No receptors were found to be within 25 metres of the proposed crossing loop locations. As a result, the assessment concluded that there would be no regional or localised impacts from locomotives idling at crossing loops.

As such, there are no expected human health or environmental impacts, including any impacts on crops.

Assessment of construction infrastructure such as borrow pits and batching plants

The assessment of point sources sites, including borrow pits and concrete batching plants, was completed using a Level 1 Impact Assessment methodology in accordance with the Approved Methods. This assessment used calculated emission rates, worst-case meteorological data and background air quality data as inputs into dispersion modelling.

The output of the dispersion model was used to produce a screening buffer distance, which represented the maximum (worst-case) distance from each source where there was a potential for impacts. As described in sections B10.3.1 and C3.3.6 of the EIS, these distances vary depending on the construction activity (e.g. 50 metres for rail and road infrastructure and 550 metres for borrow pit activities). Assessment of cumulative impacts (source impact plus background concentrations) was carried out for each of these sources. Where the assessment predicted potential impacts on sensitive receivers, mitigation measures, including measures AQ1 and AQ2, would be implemented.

The impact of multiple sources was not considered significant due to the separation of these sources in most instances, and the already conservative methodology used to develop the screening buffer distances.

Emissions considered

Issue

The only emissions considered are oxides of nitrogen. This is an unreasonably narrow scope that does not meet the requirements of Item 13 of the SEARs.

Response

The qualitative assessment of the potential impacts of train movements along the rail corridor is described in chapter B10 of the EIS. The assessment made reference to the results of the *Northern Sydney Freight Corridor Strathfield Rail Underpass Air Quality Assessment* (Parsons Brinckerhoff, 2012), which identified compliance with the criteria for all modelled pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, PM₁₀, PM_{2.5} and benzene) within 50 metres (m) of the track. As noted above, given the frequency of train movements as part of this proposal are substantially lower than those in the 2012 reference study, the operational emissions are expected to be much lower.

As described in section B10.1.2 of the EIS, during operation, the highest-risk impacts are likely to occur from rail exhaust emissions as a result of locomotives idling on the crossing loops.

Quantitative dispersion modelling was carried out to understand potential operational impacts associated with locomotive exhaust emissions at crossing loop locations. This model assumed that exhaust from two locomotives would be emitted at the same location for an entire hour under worst-case meteorological conditions. This is considered a highly conservative assumption, as it is not likely that trains would spend a full hour at the crossing loop.

Nitrogen dioxide (NO₂) was identified as the critical pollutant for the assessment, meaning that predicted compliance with the criteria for NO₂ would indicate compliance with the criteria for all other pollutants from that source.

The critical pollutant for the assessment is typically determined by comparing the predicted emission rate with the relevant criteria. NO₂ is commonly the critical pollutant for operations where the primary emission source is engine exhaust.

The modelling predicted compliance with the NO₂ criteria at a distance of about 25 m from the emission source. As there are no sensitive receivers within 25 m of the proposed crossing loop locations, the operational impacts associated with trains idling at crossing loops are considered negligible. As a result of the predicted compliance with the criteria for NO₂, compliance is expected for other exhaust pollutants, including sulfur dioxide, carbon monoxide, PM₁₀, PM_{2.5} and benzene.

Background air quality

Issue

The assessment arbitrarily adopted a 70th percentile level when assessing background air quality levels. By subjectively electing to ignore the highest 30 per cent of pollution events, Inland Rail creates an artificial and unrealistic picture of the existing ambient background levels.

Response

As described in section B10.2.1 of the EIS, the 70th percentile 24-hour concentration was adopted for background values for PM₁₀ and PM_{2.5} to assess the potential construction impacts. This method is considered appropriate for assessment of impacts from the construction phase of the proposal based on the intermittent and changing location of air quality emissions.

The incremental impact (not including background) of a project is determined by assuming that worst-case meteorological conditions occur simultaneously with worst-case emission rates. The cumulative impact is then determined by adding the incremental impact to the background values. The 100th percentile background values are adopted for operational air quality assessments for projects that have long operational lifespans. Adoption of the 100th percentile background values for the construction phase of the proposal would result in an unreasonably conservative approach.

Adequacy of the air quality impact assessment

Issue

There has been a failure to carry out a sufficiently rigorous assessment, noting the above, and including that there is only a qualitative assessment of air quality impacts during the operation of freight trains.

Response

A qualitative operational air quality assessment was undertaken based on a review of the proposal, the background air quality and location of sensitive receptors in relation to the proposal. As described in section B10.4 of the EIS, the majority of the proposal traverses a rural area with few sensitive receivers and lower existing emission levels, and, therefore, lower background pollutant concentrations, compared to other transport corridors in NSW.

As described above, the air quality assessment has reviewed emissions from a rail corridor with higher volumes of trains and emissions than the proposal, in an area with higher existing background levels. Based on this, it is concluded that the emissions to air associated with exhaust emissions from locomotives in transit would not exceed the relevant impact assessment criteria described in the Approved Methods.

6.6.12 Misguided approach to compulsory acquisition

Compensation for impacts and use of the Just Terms Act as justification

Issue

ARTC's position is that property impacts are compensable (stated by the ARTC in its communications with various landowners).

The EIS reflects a misguided understanding of the NSW compulsory acquisition legislation. Under the current arrangements, not all of the landowners impacted by the project will need to have land acquired. Without acquisition, it is not possible for these landowners to make a claim for compensation and, consequently, there is no capacity for redress for the impacts of the project on their properties.

Given this, the Just Terms Act cannot be used as a justification to address impacts of the project.

Response

It is acknowledged that the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) only applies to properties that are subject to acquisition. In accordance with the requirements for State significant infrastructure under Division 5.2 of the EP&A Act, ARTC is required to prepare an EIS to consider any potential impacts of the proposal and work with the relevant regulators to ensure they are satisfied the impacts are reasonably mitigated or alternative solutions have been implemented.

The proposal would be designed, constructed and operated in accordance with the conditions of approval, the mitigation measures, and all other relevant legislative requirements and approvals.

ARTC acknowledges the potential for property impacts and these will continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures and opportunities to minimise impacts on their operations/properties. The measures that would be agreed in relation to acquisition (in accordance with mitigation measure LP3) specifically relate to this process and have not been used to justify or provide the only response to the potential land use and property impacts of the proposal.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements.

Other mitigation measures relevant to addressing the potential impacts of the proposal on properties and agricultural enterprises are provided in the response in section 6.6.9.

Conditions imposed

Issue

The project must be refused if the impacts cannot be mitigated by the stated measures.

If the impacts are said to be acceptable (and we say they are not), then the Minister, as consent authority, should impose conditions similar to those imposed for State significant mining, petroleum and extractive industry developments, seeking to mitigate the negative impacts arising from the project. Such conditions have been held to be enforceable by the Court.

Response

The approval or refusal of the proposal, and the conditions of approval, are a matter for the Minister for Planning and DPE.

6.6.13 Inadequate fencing standards

Provision of adequate fencing between the rail corridor and farmland

Issue

The provision of adequate fencing between the rail corridor and farmland is a central concern for landowners whose properties will be impacted by the alignment. It is noted that ARTC has said that the type of fencing provided would be described directly with landholders and refined during the detailed design.

The submitter stated that they understand that the ARTC has referred to the minimum (and default) fencing standard along the rail corridor as being a four-strand fence (likely barb). A fence of this type is utterly inadequate and also not in keeping with the usual fencing practices of the area. Matters regarding the standards for appropriate fencing and the liabilities of an acquiring authority in respect of fencing have been considered by the Court and are noted in the submission.

The conditions of consent for that approval should mandate the adoption of a fencing standard consistent with earlier decisions of the Court. The required fencing standards should be clear and specified with more detail. Fencing should comply with relevant Australian Standards and requirements relating to exempt development.

Response

Fencing would be constructed along the rail corridor where it adjoins private land. Where the rail corridor abuts an existing public road with stock movements, fencing would be provided on both sides of the proposed rail corridor.

The type of fencing would be described with landholders and refined during detailed design.

In accordance with mitigation measure LP10, livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.

Fencing would be constructed to a district standard and, where practicable, would account for any specific livestock requirements and consideration would be given for specific types of fencing, e.g. across a floodway. Given the nature of the proposal, ARTC intends to provide fencing is of a sufficient standard to prevent livestock from straying onto the rail corridor.

In relation to maintenance, mitigation measure LP11 provides that maintenance agreements would be established for fencing along the rail corridor where it adjoins private properties. The agreements would include protocols for reporting damage and arranging repairs of shared boundary fencing.

For properties affected by acquisition, fencing requirements and commitments would be defined by the property adjustment plans prepared during acquisition negotiations.

6.6.14 Need to refuse the Narromine to Narrabri State significant infrastructure

Minister to refuse the project

Issue

In the context of the issues raised in the submission, the Minister should refuse the project as currently formulated. The adverse impacts of the project, including in relation to flooding and hydrology, acoustics, ecology, visual impacts, access and use of land, the farming capacity of the land, and air quality far outweigh the marginal (at best) economic and other public benefits of the development.

Balancing all of these relevant factors, and applying the precautionary principle, means that the Minister must find that the project is contrary to the public interest and should be determined by refusal.

Response

The approval or refusal of the proposal is a matter for the Minister for Planning.

6.6.15 Flooding and hydrology

Comments regarding the quantitative design limits

Issue

The quantitative design objectives adopted by ARTC are reasonable for afflux, flood hazard and flood duration. The scour/erosion potential design objectives are vague and no design objectives have been provided to minimise the changes in the flow patterns. In addition, no consideration has been given to uncertainty and model sensitivity.

Response

The proposal has been designed to, as a minimum, provide for the conveyance of flood flows for up to and including the one per cent annual exceedance probability (1% AEP) event. In particular, the proposal has been designed to comply with the proposed quantitative design limits. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since the EIS was exhibited. The updated assessment includes revised quantitative design limits.

These quantitative design limits apply outside the rail corridor, for events up to and including the 1% AEP flood event. The limits have been established in consultation with DPE and are based on relevant policies, planning controls and guidelines listed in section 2 of Technical Report 3, and in the updated flooding and hydrology assessment report, other Inland Rail projects, and similar infrastructure projects in NSW. Adopting these limits would minimise the risk to public safety, buildings, existing highways and roads, existing rail lines, and land uses. The inclusion of limits relating to uncertainty and model sensitivity is not considered necessary.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

Design discharge estimates for the Macquarie River/Castlereagh River

Issue

The adopted methodology to estimate flows for the major catchments is reasonable; however, no information has been provided in the EIS to enable an independent review of the modelling assumptions made and determine whether the methodologies have been implemented appropriately.

The design discharges adopted for the Macquarie River were reported to be consistent with the design discharges estimated for the Narromine Flood Study by Lyall & Associates (2009), which provides some confidence in the Macquarie River discharge estimates.

No information has been provided or is publicly available to determine whether the Castlereagh River discharges have been determined correctly or are appropriate.

Response

Detailed flood modelling was undertaken for the proposal and is provided in Technical Report 3 and summarised in section B3 of the EIS. The assessment is based on detailed hydrologic and hydraulic modelling performed for the full proposal extent, undertaken in accordance with the SEARs, and relevant legislation and guidelines.

Flood modelling was carried out in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). The modelling used standard industry models (RORB and TUFLOW) that have been calibrated and validated to historical flood data. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments. In addition, as described in section 4 of Technical Report 3, and in the updated flooding and hydrology assessment report, ARTC has consulted with local landowners and other stakeholders to check that the flood modelling is representative of observed conditions and based on local knowledge.

As noted in the submission, the design discharges for the Macquarie River are consistent with those adopted by Narromine Shire Council from the *Narromine Floodplain Risk Management Study and Plan* (Lyll & Associates, 2009). The flood discharges in the Castlereagh River have been estimated using *Australian Rainfall and Runoff* and were included in the independent review by BMT. The independent review noted a minor issue with the predicted inflows for the Castlereagh River and this has been addressed in the updated flooding and hydrology assessment report.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

Design discharge estimates for creek catchments

6.6.15.1 Issue

The EIS states that design discharges for the creek catchments were determined using RORB rainfall runoff routing models in accordance with *Australian Rainfall and Runoff*. While this methodology is reasonable, no details of the models are provided. *Australian Rainfall and Runoff* also notes that there is a high level of uncertainty in the discharge estimates using regional parameters, even when a consistent and appropriate model configuration has been used.

A comparison of the RORB design discharges to design discharges estimated using an alternative regional methodology (Regional Flood Frequency Estimation Model) at three selected waterways (Webb's Siding, Tenandra Creek and Gulargambone Creek), undertaken as part of the submission, showed significant differences, with some being higher and others lower. Given the uncertainty surrounding the estimates, both methods should be used and the higher of the two adopted.

Response

The methodology used in the assessment is described in section 3 of Technical Report 3 and in the updated flooding and hydrology assessment report. As noted in the submission, the runoff-routing model RORB was used to develop the hydrology models in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). In addition, as noted above, the flood model calibration report is provided as an appendix to the updated flooding and hydrology assessment report. The flood model calibration report provides further information on the hydrology and hydraulic models.

With respect to the three watercourses identified in the submission:

- ▶ Wallaby Creek (Webb Siding)—the 1% AEP design flow used for the assessment is higher than the Regional Flood Frequency Estimation model and is considered to be appropriate. The 20% AEP flow used for the assessment is about three times higher than the Regional Flood Frequency Estimation model and is considered appropriate to reflect the rapid runoff from the Sappa Bulga Ranges.
- ▶ Tenandra Creek—peak flows estimated using the Regional Flood Frequency Estimation model for the catchment area of Tenandra Creek have wide confidence limits, as all stream gauges used to estimate peak flows have catchment areas that are at least three times larger than the catchment area of Tenandra Creek. Therefore, peak flows estimated using the RORB model are considered more reliable.
- ▶ Gulargambone Creek—the adopted peak flows for Gulargambone Creek are consistent with the peak flows adopted in the *Gulargambone Flood Study Report* (Jacobs GHD, 2016) and are, therefore, considered appropriate.

Comments on the hydraulic modelling methodology

Issue

The models and methodology used to estimate flood levels, velocities and flood impacts of the proposal are appropriate. The following comments were provided regarding the hydraulic modelling methodology:

- ▶ The hydraulic modelling package adopted for the EIS (TUFLOW) is used widely across Australia and is suitable to assess the impacts of the project. Although it is not documented, it would appear that the upper

catchment inflows have been derived using the hydrology model results and a 'rain-on-grid' approach has been adopted for runoff within the modelling area. If this is the case, this methodology is appropriate.

- ▶ Ground level roughness values (Manning's 'n') used in the modelling were not provided. The adopted roughness values will change both the peak flood levels and peak flood velocity across the floodplain, and should have been provided in the EIS. At the very least, a sensitivity analysis to changes in ground level roughness should have been undertaken. No sensitivity analysis was documented.
- ▶ The documented methodology to model the culverts and bridges in the EIS appears appropriate; however, no details have been provided to determine whether appropriate parameters have been applied other than the commentary in the peer review (Appendix B of Technical Report 3).

Response

The flood modelling has used standard industry models (RORB and TUFLOW) with rain on grid inputs. These were developed adopting a calibration and validation process that used recorded rainfall, streamflow, flood level data and information on flood behaviour provided by landowners. Flood modelling (including that for bridges and culverts) was carried out in accordance with *Australian Rainfall and Runoff*. The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address review comments.

Surface roughness was based on typical industry standard values for different land use types. The adopted surface roughness values (Manning's 'n') for different land uses are provided in Table 6-1. The land use and planning layers for NSW and aerial photography were reviewed for each model. Sensitivity analyses were undertaken as part of model calibration to refine adopted surface roughness for 'river/creek' and 'transport corridor' land uses in accordance with the relevant guidelines. The flood calibration report for the proposal has been provided as an appendix to the updated flooding and hydrology assessment report.

The flood model calibration report (Appendix J of the updated flooding and hydrology assessment report), provides further information about the hydrology and hydraulic models.

TABLE 6-1: ADOPTED SURFACE ROUGHNESS VALUES

Land use	Manning's 'n' value
River/creek	0.035 (0.07 for dense vegetation)
Dam	0.02
Swamp	0.06
Grazing	0.05
Pasture	0.04
Non-irrigated cropping	0.045
Irrigated cropping	0.06
Cotton cropping	0.08
Horticulture	0.06
Residential	0.15
Developed areas	0.1
Paved road	0.02
Dirt road	0.025
Transport corridor	0.03 (0.1 for forest)
Forest	0.1
Mining	0.1

Comments on flood level impacts and flood mapping

Issue

Flood level impacts were provided along the railway line via a series of 14 maps covering the 306 kilometres of the proposal. Overall, the flood mapping provided is inadequate and unsuitable for an individual landholder to identify the magnitude and extent of flood level impacts at their property. Specific comments were provided as follows:

- ▶ In the Webb's Siding area (where detailed mapping is available), the predicted flood afflux exceeds 0.2 metres for most creek crossings and exceeds 0.5 metres at several locations. This suggests that more culverts are required to satisfy the ARTC quantitative design objective.
- ▶ For the Castlereagh River, the afflux would exceed 0.2 metres for the one per cent AEP event and impact 11 existing dwellings. The EIS provides no discussion as to how this impact would be mitigated but it would appear a larger bridge is required.
- ▶ In the Warrumbungles Watershed reach, any exceedances of the afflux quantitative design criteria would appear to be confined to the proposed rail corridor study area and therefore very localised.

Response

Mapping of potential impacts following construction of the proposal is provided in Appendix G of Technical Report 3 and in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results for a range of flood events from the 20 per cent annual exceedance probability (20% AEP) event to the probable maximum flood (PMF) event are provided. ARTC has undertaken meetings with landowners directly affected by the proposal and this included discussion of flood modelling results to date.

Presentation of maps for all areas, all modelled events and all potential parameters within an EIS is challenging. In some cases, this is a matter for detailed design. ARTC has met with landowners/landholders directly affected by the proposal. This included discussion of the flood modelling (including flow routing) results to date. Web based mapping of existing flood extents and afflux for the 1% AEP event is also available on ARTC's Inland Rail web site at <https://inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri/consultation/>

In accordance with mitigation measure FH1, additional flood modelling would be undertaken during the detailed design process. The additional flood modelling, and any mitigation identified as an outcome of modelling, would be undertaken in consultation with impacted landowners/landholders. During this consultation, ARTC would provide more detailed information to landowners/landholders regarding the effects of the proposal at their properties and proposed mitigation measures.

Updated results are provided in the updated flooding and hydrology assessment report for the predicted afflux and building impacts for the full proposal extent, including the Webbs Siding area, Castlereagh River and Warrumbungles Watershed.

The proposal has been designed to, as a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event; in particular, it is designed to comply with the proposed quantitative design limits (which have been revised by the updated flooding and hydrology assessment). ARTC acknowledges that construction of the proposal across farmland and other areas would affect the existing hydrological regime. The proposal seeks to minimise the potential impacts by including bridges and culverts in the railway embankment. As described above, where the quantitative design limits cannot be achieved, alternative measures would be implemented.

Comments on predicted flow changes and impacts

Issue

The flood mapping shows that the Macquarie River overflows into the Backwater Cowal at Webb's Siding for events greater than the 2% AEP event. The overflowing floodwater drains along the Backwater Cowal and away from the Narromine township for rare to extreme events.

The proposed railway is located directly across the overflow path from the Macquarie River to the Backwater Cowal. The proposal would obstruct the overflows and divert flows back along the Macquarie river for the larger events. The EIS predicts that the change in flows due to the proposed rail would increase above-floor flooding to 605 dwellings in Narromine for the 1% AEP plus climate change event and 2,520 dwellings for the 0.2% AEP event. This is a poor outcome for Narromine. Additional viaduct length (up to 2 kilometres long) or an alternative railway location away from Webb's Siding would be required to mitigate the impacts at Narromine.

Further to this, the existing railway between Dubbo and Narromine may also be preventing the Macquarie River from overflowing into the Backwater Cowal and diverting flows into Narromine for the more frequent events. The construction of Inland Rail would appear to provide opportunity to increase the waterway opening of the existing rail to mitigate flooding in Narromine.

The changes to the flow patterns occur in areas of very flat topography both in the Webb's Siding area and the Warrumbungles Watershed. It is difficult to determine the impact of this change with the available flood mapping. It is suggested that ARTC engage with each landholder with higher resolution maps to explain the predicted impacts and attempt to address any concerns.

Response

Updated detailed flood modelling of the Webb Siding, Backwater Cowal and Macquarie River is provided in the updated flooding and hydrology assessment report. Potential impacts to Narromine are also considered, including those in the rare events such as the 0.2% AEP event.

Modifications to the existing railway between Dubbo and Narromine to address existing flooding issues are beyond the scope of the proposal; however, it is noted that this is being investigated by Narromine Shire Council as part of the proposed flood mitigation scheme for Narromine. Interaction between the proposal and Council's proposed scheme is described in the updated flooding and hydrology assessment report.

As described above, ARTC has undertaken meetings with landowners/landholders directly affected by the proposal to discuss flood modelling results. In conjunction with refining the flood modelling during detailed design, ARTC would provide more detailed information to landowners/landholders regarding the potential impacts of the proposal at their properties and proposed mitigation measures.

Comments on predicted flow changes and impacts for creek catchments

Issue

The flood mapping shows changes to flow patterns along much of the rail alignment for all flood events investigated from the 20% AEP (frequent) event to the extreme events. The changes to the flow patterns occur in areas of very flat topography both in the Webb's Siding area and the Warrumbungles Watershed. Overall, it suggests that there are insufficient culvert locations to prevent changes in the distribution in flow. The impact of these changes will vary at each individual property as it depends on the site infrastructure such as fences and whether the individual paddocks are cropped. It is difficult to determine the impact of these changes with the available flood mapping. It is suggested that ARTC engage with each landholder with higher resolution maps to explain the predicted impacts and attempt to address any concerns.

Response

As described in Technical Report 3 and in the updated flooding and hydrology assessment report, many of the existing watercourses have complex overflow interactions during flood events. Additionally, the flat topography in other areas, such as around Webb Siding and the Warrumbungles Watershed, result in flood behaviour that is generally characterised by widespread shallow flows with low velocities. Culverts and bridges are generally proposed around existing drainage lines, watercourses, and within floodplains and associated overflow areas to minimise changes to natural flow patterns, and redistribution of additional flows between watercourses and within local areas (e.g. at individual properties) as far as practicable.

Flood models NFM, N2N9, N2N10, N2N11–12, N2N13 and N2N14 have been updated to address comments arising from the independent review (as described in the updated flooding and hydrology assessment report) and are presented in the updated flooding and hydrology assessment. These models show an improved representation of sheet flows with reduced changes in flow patterns.

As described above, ARTC has undertaken meetings with landowners/landholders directly affected by the proposal to discuss flood modelling results. In conjunction with refining the flood modelling during detailed design, ARTC would provide more detailed information to landowners/landholders regarding the potential impacts of the proposal at their properties and proposed mitigation measures.

Comments on geomorphological assessment

Issue

The EIS includes a geomorphological assessment of waterways based on the River Styles framework. The assessment found that most waterways that cross the proposal are in a moderate to poor geomorphic condition and all waterways have a moderate to high fragility. This means that the watercourses, particularly those within the Warrumbungles Watershed, are prone to erosion and sedimentation, have catchments that produce high sediment loads and there is little vegetation along the waterways to prevent accelerated rates of erosion.

Response

The NSW *River Styles framework* (Brierley and Fryirs, 2003) was used by the geomorphological assessment to provide a basis for the identification of potential impacts and the proposed approach to at-site specific mitigation measures that would be required. In accordance with mitigation measure FH2, further detailed hydraulic modelling would be undertaken during detailed design to confirm the locations downstream of culverts that require erosion protection, and the extent and type of protection required.

As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since exhibition of the EIS. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, additional assessment of geomorphological impacts, and further information on proposed scour protection. 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.

Comments on velocity impacts and creek erosion

Issue

The hydraulic model was used to assess the changes in velocity due to the proposal and the potential impact this would have on the geomorphological condition of the waterway. The results are presented as a series of figures (Figure 7.11 to Figure 7.14) in Technical Report 3 showing the change in maximum velocity at a single point in each waterway.

These figures are misleading and likely to be wrong because they predict that the railway will reduce 5% AEP velocity at about 25 of the waterways, some with substantial reductions. A reduction in velocity would be expected to occur upstream of the railway (due to the afflux) and an increase in velocity would be expected downstream due to the confinement of the flows. The use of a single, undefined point at the railway, with inconsistent results, provides no confidence that an appropriate analysis has been undertaken.

Of particular note, more than a 50 per cent reduction in the 5% AEP velocity was predicted for the large waterways of the Macquarie River and Castlereagh River. If this was true, it would mean that the rail bridge would be a significant and likely unacceptable obstruction to the flow.

Response

The updated flooding and hydrology assessment report includes revised quantitative design limits that apply at the rail corridor boundary. Further detailed analysis of velocity in relation to the revised limits, additional assessment of geomorphological impacts and further information on proposed scour protection is provided in the updated flooding and hydrology assessment report for all watercourses that cross the proposal site, including the Macquarie River and Castlereagh River.

Comments on velocity impacts and overbank erosion impacts

Issue

The EIS provides existing conditions velocity maps for the 20% AEP event only. For this event, the mapping colour scheme shows most overbank velocities below 1 metre per second (m/s). This scale is too coarse to determine where existing condition scour would occur on the sandy loam soils and the vertosol soils (which would erode at 0.5 m/s). Much of the Warrumbungles Watershed contains vertosol soils.

Maximum velocity maps along the waterways and overbank areas for the other events were not provided and, hence, the existing erosion potential of the overbank areas is not known. Also, maximum velocities under the proposed conditions were not provided for any events and velocity impact maps showing impacts between 0.1 m/s and 0.5 m/s cannot be used to determine whether the increase has risen above the thresholds at which erosion would occur.

The information presented in the EIS report is not sufficient to determine whether the proposed railway would cause increased soil erosion in the overbank areas.

Response

Velocity maps for both the existing and operational (change in velocity) conditions for all modelled flood events are provided in Appendix D and Appendix G, respectively, of Technical Report 3, and in the updated flooding and hydrology assessment report. Many of the existing watercourses have complex overflow interactions during flood events. Additionally, the flat topography around Webb Siding and the Warrumbungles Watershed result in existing flood behaviour that is generally characterised by widespread shallow flows with low velocities. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, and proposed scour protection.

Culverts and bridges are generally proposed around existing drainage lines, watercourses, and within floodplains and associated overflow areas to minimise changes in natural flow patterns and redistribution of additional flows between watercourses. The updated flood and geomorphological assessments predict that the existing overland flood behaviour is not expected to significantly change following construction of the proposal.

Comments on adopted blockage factors

Issue

The EIS states that a blockage assessment was undertaken in accordance with Australian Rainfall and Runoff (Ball et al., 2019); however, no mapping or results are presented to demonstrate the impacts. The EIS states that a blockage factor of 100 per cent was recommended at Mt Tenandra, within the Warrumbungles Watershed. Given that Tenandra Creek was identified as having a discontinuous river style (highly erosive) and has vertosol soils (also highly erosive), it could be concluded that significant erosion would occur if the waterway opening was blocked.

Blockage factors for the other waterways within the Warrumbungles Watershed are not provided; however, it could be expected that similar blockage factors and subsequent erosion would be encountered.

6.6.15.2 Response

The updated flooding and hydrology assessment includes a blockage risk assessment in accordance with *Australian Rainfall and Runoff*. This considers the potential for debris to be generated within the catchment area of the culvert. The types of debris considered are broadly categorised as floating debris of various sizes from small branches through to logs or trees, and non-floating debris which is the sediment load. A blockage factor was calculated for each structure based on the risk or potential for blockage to occur due to both floating and non-floating debris. Calculated blockage factors for culverts range between zero and 100 per cent, depending on the culvert location and assessed risk rating. Further information on culvert blockage factors is provided in the updated flooding and hydrology assessment report.

6.7 North West Local Land Services

6.7.1 Travelling stock reserve issues

Rail corridor alignment through travelling stock reserve (TSR) R27999 (Arrow TSR)

Issue

The rail corridor is proposed to traverse folios 6/1195493 and 7/1195493 immediately north of Narrabri. These lots are a key component of TSR R27999 which facilitates the movement of walking livestock within the region and forms a major junction and connection point for walking stock at the regional level. The loss of the ability to move stock along these lots will have a major adverse impact on the functionality of TSR network.

The proposal to align the corridor to the south-eastern side of the lots will create an approximate 40-metre wide and 700-metre long corridor for livestock to walk through. It is likely that stock, including large mobs of cattle over 1,000 head, will not always move through this long corridor quick enough to avoid all passing trains. This will create risks for livestock, stock managers and road users such as those on the high-use adjoining Newell Highway. These risks extend to livestock within holding yards in close proximity to the passing trains.

Running the rail corridor through the identified lots would not be possible without raising the risk to TSR users and livestock to an unacceptable level.

Response

ARTC acknowledges that travelling stock reserves are important to the agricultural industry and that it is important to provide a safe environment along the reserves. Following exhibition of the EIS, the proposed alignment through this reserve has been changed, as described in the combined Preferred Infrastructure/Amendment Report, to minimise impacts on its ongoing usage.

In accordance with mitigation measure LP12, ARTC would continue to consult with North West Local Land Services during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made, as required, subject to maintaining rail safety.

Travelling stock reserve R941—Barrington TSR

Issue

The proposed alignment of the track will not have any major impacts on the travelling stock reserve; however, access to R941 will need to be maintained between Bohena Creek and the 'Barrington' property driveway.

Response

Access across the proposal site for this travelling stock reserve would be provided under the Bohena Creek bridge.

In accordance with mitigation measure LP12, ARTC would continue to consult with North West Local Land Services during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made as required, subject to maintaining rail safety.

TSR R44590 and R941—Calrosie TSR

Issue

The proposed alignment of the track will not have any major impacts on the TSR; however, access will be required to R44590 as there are no private property entrances between Bohena Creek and Spring Creek.

Response

As noted above, access across the proposal site would be provided under the Bohena Creek bridge and, in accordance with mitigation measure LP12, ARTC would continue to consult with North West Local Land Services during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made as required, subject to maintaining rail safety.

Biosecurity management

Issue

The rail corridor passes through a range of tenures and land uses. As with roadways and other linear corridors of high trafficability, the risk of introducing high-risk biosecurity matters and/or regionally determined priority weed species into new areas is significantly increased. With a multitude of neighbours, it will be imperative for ARTC to manage and implement its obligations under the *Biosecurity Act 2015* to a high standard. Statements in the EIS are primarily focused on weed management, with negligible attention given to pest (feral) animal control. North West Local Land Services requires a stronger transparent commitment to implementing the general biosecurity duty, given the high-risk pathway created and the potential biosecurity risk increase.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in Section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan (which would be implemented during construction as part of the CEMP) would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

The framework CEMP, included in Appendix F to the EIS, provides the requirements of the proposed management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur in accordance with ARTC's standard operating procedures to meet its obligations under the *Biosecurity Act 2015*.

Planned number of trains per day

Issue

There is conflicting advice on the number of trains between the EIS (i.e. 14 trains per day) and that provided during earlier project consultation (i.e. 25 trains per day). There is significant difference and associated expected level of impact between the two figures.

Response

As stated in section A7.7.1 of the EIS, it is estimated that Inland Rail would be trafficked by an average of 10 trains per day (both directions) in 2027, increasing to about 14 trains per day (both directions) in 2040.

6.7.2 Recommendations

Issue

Recommended conditions of approval were provided (see in Table 6-2).

Response

The proposed conditions are noted and ARTC considers that most of the proposed conditions are consistent with, or already encompassed by, the mitigation measures (see section 11 and responses in Table 6-2 of this report). It is noted that the conditions of approval are a matter for DPE with input from relevant agencies. ARTC will consider in detail any proposed conditions of approval at an appropriate time in the assessment process.

TABLE 6-2: RESPONSES TO RECOMMENDATIONS

Recommendation	Response
1. As a condition of approval, Folios 6/1195493 and 7/1195493 are to be excluded from the rail corridor alignment, requiring ARTC to seek an alternative and more appropriate rail corridor placement immediately north of Narrabri.	ARTC is seeking approval for the amended proposal, as described in section 3.1 of this report and the combined Preferred Infrastructure/Amendment Report.
2. As a condition of approval, ARTC is to consult with North West Local Land Services prior to finalisation of the corridor infrastructure design to ensure appropriate unencumbered access to all relevant TSR is provided including R44590, R941 and R27999.	In accordance with mitigation measure LP12, Local Land Services would continue to be consulted during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made, as required, subject to maintaining rail safety.
3. As a condition of approval, an ARTC representative who manages biosecurity issues is required to be a member of the North West Regional Weed Committee and attend all meetings as required.	ARTC would continue to consult with the North West Regional Weed Committee in accordance with mitigation measure SE1 and as part of developing the biodiversity management plan.
4. As a condition of approval, ARTC are to develop and implement a publicly available biosecurity management plan within 12 months of determination, in consultation with North West Local Land Services, to address all biosecurity matter management including weeds and pest animals.	In accordance with mitigation measures BD8 and LP16, the biodiversity management plan included in the CEMP would include measures to minimise the potential for biosecurity risks during construction in accordance with the <i>Biosecurity Act 2015</i> (NSW).

Recommendation	Response
5. Prior to determination of the project, ARTC clarify with stakeholders and the community the potential maximum number of trains expected to use the infrastructure per day.	The potential maximum number of trains per day is confirmed in section 1 of this report and the combined Preferred Infrastructure/Amendment Report, and in ARTC's consultation material, including the project website.

6.8 North West Protection Advocacy

Proposed route and impacts on the Pilliga Forests

Issue

We object to the currently proposed route alignment that benefits the private good instead of the public good. It is inappropriate for the sensitive environment through which it is proposed it pass.

The original concept of Inland Rail has changed beyond recognition.

The route must not traverse the greenfield Pilliga East State Forest. It should revert back to its original proposed route from 2010 that continued through on the original line, turning eastwards before Gwabegar.

There are few perceived benefits of this route to farmers and many negatives. The route was changed to benefit others.

The threats to the forest through cumulative impact, habitat loss, Aboriginal cultural heritage and non-Aboriginal cultural heritage are too great.

Response

The Inland Rail program has undergone significant refinement over the years since the original 1996 concept. Building on some of the work undertaken in the 1980s, various papers proposing an inland railway emerged during the 1990s. By the early 2000s, there were at least two significant private sector proposals for an inland railway.

Alternative routes for Inland Rail as a whole were considered by the following two studies:

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

The shortlist of route options was subjected to more detailed technical, financial and economic assessment. The option involving use of existing track towards Werris Creek had the lowest capital expenditure while still meeting the performance specification. This option had a length of about 1,880 kilometres (km). The option involving the more direct route between Narromine and Narrabri (via Curban) had the fastest transit time for a reasonable capital expenditure. This option, which had a length of about 1,731 km, became the focus for more detailed route, demand, economic and financial analysis. Further information is provided in the responses in section 6.2 and in the combined Preferred Infrastructure/Amendment Report, which is available separately, as described in section 3.3 of this report.

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of options between Baradine and Narrabri (including through the Pilliga forests) (see section 2.4.5 of the Route Selection Summary Report) and the justification for the preferred option selected.

As described in section A1.5.1 of the EIS, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through refinements during detailed design.

Transparency regarding community consultative committee members and potential conflict of interests

Issue

ARTC claims that the preferred route has the support of landholders and stakeholders but the community consultative committee was not convened until after the preferred route through the Pilliga was chosen.

The committee is stacked with representatives who are pro-gas; some of which could be seen to have a conflict of interest and have not declared pecuniary interest.

North West Protection Advocacy have been unable to ascertain who represents Indigenous/Traditional Owners/native title on the committee.

Response

Although the community consultative committee first met in January 2019, consultation on the project has been underway since 2015. Consultation is still continuing through the committee (see inlandrail.artc.com.au/building-inland-rail/working-with-communities/community-consultative-committees/n2n-ccc/) and in other ways.

The details of the members of the community consultative committees (CCCs) are available on the Inland Rail project website: inlandrail.artc.com.au/building-inland-rail/working-with-communities/community-consultative-committees/n2n-ccc/.

Transparency regarding the Sponsors Group members

There is no transparency on who is in the group and FOI requests have returned heavily redacted documents on this issue. Can the ARTC detail who comprises this group?

Response

This email referred to in the submission is from the Department of Infrastructure, Transport, Regional Development and Communications. The enquiry on the content should be directed to the Department of Infrastructure, Transport, Regional Development and Communications.

6.8.1 Biodiversity

Impacts on biodiversity of route through Pilliga

Issue

There are concerns about forest fragmentation and biodiversity with this route choice. North West Protection Agency are concerned that placing the rail track through habitat will increase the risk to native fauna from foxes, which will be provided with what could be likened to a predator highway.

Response

The potential for increased risk of predation by feral animals as a result of linear clearings is identified in Table B1.6 in the EIS. The biodiversity assessment (as summarised in section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Further information on the potential impacts of weeds and predation on biodiversity is provided in Section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

The framework CEMP in Appendix F of the EIS provides an indication of the proposed management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur, in accordance with ARTC's standard operating procedures, to meet its obligations under the *Biosecurity Act 2015*.

6.8.2 Koalas

Impacts on koalas

Issue

The route goes straight through the area known as 'The Aloes', which has been noted for its koalas on the Visit Narrabri website.

Response

The proposal does not go through the Aloes picnic area—it is located about 500 metres to the east. An assessment of the potential impacts on Etoo Creek and associated vegetation and fauna is provided in Technical Report 1—Biodiversity development assessment report.

Recent surveys within the Pilliga forests have found that there has been a substantial decline in koala numbers. A combined series of surveys for koalas within the Pilliga forests showed a decline of over 80 per cent in both the distribution and activity of koalas within the forests, likely as a result of ongoing disturbance (e.g. a prolonged drought) and a series of adverse events (e.g. a series of heatwaves or large-scale fires) (Lunney et al., 2017).

Surveys for the koala were conducted at Etoo Creek and The Aloes, and potential impacts on habitat and connectivity were addressed. Despite few records of the species during surveys, the koala was assumed to be present and offsets calculated for impacts on important habitat areas (the Pilliga Area of Koala Significance as identified by DPIE (now DPE), as well as other areas along the alignment).

Additional surveys have been completed since the EIS was exhibited to supplement the investigations documented in Technical Report 1 – Biodiversity development assessment report. These comprised a thermal drone survey in July 2021 through the accessible extent of the proposed rail alignment in the Pilliga forests and Bohena Creek area to search for the presence of koalas. An independent expert, recognised by DPIE's (now DPE) Biodiversity, Conservation and Science Directorate and authorised by the Secretary of DPE, was also engaged to prepare an expert report to provide advice on the likely extent of koala habitat along the proposal corridor. The revised mapping from the expert findings has been used to recalculate the species and ecosystem credits for the koala in the updated biodiversity development assessment report.

Other biodiversity mitigation measures are also proposed to minimise the potential impacts of the proposal on koala populations. In accordance with updated mitigation measure BD6, a detailed fauna connectivity strategy would be prepared to guide detailed design based on the preliminary fauna connectivity framework provided in Appendix J of the updated biodiversity development assessment report. It would include investigation and design of:

- ▶ Locations for fauna crossing structures in the Pilliga forests, including bridges and dedicated underpasses for threatened fauna (such as the koala and Pilliga mouse in areas of preferred habitat), canopy bridges at regular intervals and wooden barrier poles at selected bridges
- ▶ The provision of localised fencing to direct fauna to crossing structures
- ▶ Fauna furniture to be included in the design of bridges and dedicated underpasses, where appropriate, to encourage crossings by koalas and other native fauna
- ▶ Landscaping of the rail corridor to encourage movement of fauna across the gap.

The connectivity strategy would include monitoring and reporting requirements in relation to the operational performance of the final measures.

6.8.3 Cumulative impacts

Cumulative impacts of the Narrabri Gas Project

Issue

Now that the Narrabri Gas Project has phased conditional approval, North West Protection Agency believe that fresh environmental studies need to be conducted to assess cumulative impact effectively. What impact will the vibration of the trains have on the Leewood Water Treatment Facility? What interaction will it have with this facility? Is the transportation of Liquefied Natural Gas proposed?

Response

Figure D1.2 in section D1.3 of the EIS shows the potential timing of the projects considered at the time the cumulative assessment was prepared. This demonstrates that, by the time the proposal is expected to start construction, several proposals are likely to be complete, with some proposals overlapping with the timing of the proposal.

The approach to the cumulative impact assessment for the EIS is described in chapter D5. The assessments undertaken by individual specialists considered the information on projects as available at the time the EIS was prepared.

Technical Report 8 assessed the potential for construction vibration impacts on structures and human comfort in accordance with *Assessing Vibration: A Technical Guideline* (DEC, 2006). Specific guideline values for structural damage are based on German Standard *DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures* (German Institute for Standardisation, 2016). The existing and proposed Narrabri Gas Project facilities are located outside of the structural damage vibration buffers for both heritage and standard structures. Proposed pipelines associated with the site would be subject to appropriate vibration limits presented in section 2.3.6 of Technical Report 8.

The proposal and the Narrabri coal seam gas project are independent projects. Neither project relies on the other to justify its need.

There are no current plans to transport gas from the Narrabri coal seam gas project on Inland Rail.

Cumulative biodiversity impacts

Issue

The assessment of cumulative impacts has not considered the Narrabri Underground Coal Mine, Gorman North Coal Mine, Turrawan rail link, Narrabri Gas Project, Queensland Hunter Gas Pipeline (it is not yet proposed how this will link with Narrabri Gas Project). All of these projects are, or will, impact the Pilliga forest. Based on just the risks entailed by cumulative impact, the route through the Pilliga should not go ahead.

Response

Technical Report 1—Biodiversity development assessment report includes an assessment of the potential for cumulative biodiversity impacts (see section 8.6 of the report) and the results are summarised in section D1.4.1 of the EIS. The assessment considered publicly available information on key major projects in the study area (known at the time of preparing the EIS), including the Narrabri Gas Project and Silverleaf Solar Farm. Insufficient information was available on the APA Western Slopes Pipeline at the time the assessment was undertaken. Further information on the potential for cumulative impacts considering this project is provided in the updated biodiversity development assessment report.

The cumulative assessment noted that the cumulative loss and fragmentation of native vegetation and associated habitats would adversely affect native flora and fauna species, including a large number of threatened species. A range of mitigation measures are provided to mitigate the potential impacts identified.

6.8.4 Sacred sites impacted

Risks to culturally significant sites

Issue

We have been informed by a Traditional Owner that the risks to culturally significant sites both known and unknown cannot be quantified.

Response

The assessment of cultural values and sites is summarised in section B6.3.2 of the EIS and detailed in section 5 of Technical Report 6—Aboriginal cultural heritage assessment report. Onsite discussions with Aboriginal knowledge holders identified a variety of cultural heritage values within the study area. These were aligned closely with the three major rivers traversing the study area (the Macquarie, Castlereagh and Namoi rivers). The understanding and perception of the cultural landscape expressed by the knowledge holders is that it is an area traversed by an interconnecting network of physical, social and spiritual places.

ARTC acknowledges that while the assessment has adopted a risk-based approach, intangible impacts are difficult to quantify; however, the assessment has followed best practice and involved consultation with traditional knowledge holders. It has been undertaken in accordance with relevant guidelines, and makes recommendations to manage and mitigate potential impacts on sacred sites as far as practicable. It is recognised that the alignment covers sensitive cultural landscapes, including areas that have not yet been fully accessed. Cultural values associated with these landscapes are yet to be fully identified and assumptions have been made in the assessment regarding these. This has been undertaken in consultation with registered Aboriginal parties.

In accordance with mitigation measure AH3, prior to construction targeted archaeological surveys would be undertaken for areas identified as culturally sensitive requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan in accordance with mitigation measure AH10.

6.8.5 AWC area

Impacts on the Australian Wildlife Conservancy area

Issue

The proposal encroaches on this Australian Wildlife Conservancy area. The development of this area has already had an impact on wildlife in the region because of the need to clear significant areas with hollow-bearing trees to create the enclosure needed to make the area operational.

Response

AWC's project area in the Pilliga includes the Gilgai section of the Pilliga National Park, and the Pilliga State Conservation Area. The proposed alignment does not cross the Pilliga State Conservation Area, Pilliga National Park or the Reintroduction of Locally Extinct Mammals project area. The boundary fence for the Reintroduction of Locally Extinct Mammals project area is located over 7 kilometres from the alignment.

Technical Report 1—Biodiversity development assessment report includes an assessment of the potential for cumulative biodiversity impacts (see section 8.6) and the results are summarised in section D1.4.1 of the EIS. Further information on the potential for cumulative impacts considering this project is provided in the updated biodiversity development assessment report.

The cumulative assessment noted that the cumulative loss and fragmentation of native vegetation and associated habitats would adversely affect native flora and fauna species, including a large number of threatened species. A range of mitigation measures are provided to mitigate the potential impacts identified.

6.8.6 Aboriginal cultural heritage assessment

Cumulative impacts on Aboriginal heritage

Issue

There is no mention of coal seam gas in the assessment report. Coal seam gas mining is referred to as gas seam mining.

NSW Planning must acknowledge that when this project is combined with the impact to the Pilliga of the Narrabri Gas Project that cumulative impact upon cultural heritage becomes too great.

Response

Potential cumulative impacts with the Narrabri Gas Project were considered in section 9.5 of Technical Report 6 and are summarised in chapter D1 of the EIS. The assessment found that cumulative impacts on Aboriginal heritage were considered to be low, as the Narrabri Gas Project was expected to avoid direct impacts on the majority of Aboriginal heritage sites.

6.8.7 Threatened species/ecological communities

Impacts on threatened communities

Issue

ARTC's Environmental Advisor advised that six ecological communities were considered to be significantly impacted.

Response

A detailed assessment of the potential impacts on these communities was undertaken in accordance with the SEARs, the *Biodiversity Assessment Method* (DPIE, 2020b) and relevant legislation and guidelines, as described in section B1.1.1 of the EIS. The results of the assessment are provided in Technical Report 1—Biodiversity development assessment report and are summarised in chapter B1 of the EIS.

A range of mitigation measures are provided in response to the potential impacts identified.

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

6.8.8 Risk assessment

Risk assessment concerns

Issue

The risk assessment document details high risk to several areas of concern including, but not limited to, biodiversity; water/flooding; water/resources (extraction of groundwater); water quality; soils (erosion); non-Aboriginal heritage; Aboriginal heritage; noise and vibration; and visual amenity.

Response

The environmental risk assessment (Appendix E of the EIS) was prepared early in the EIS process to assist with scoping potential issues and impacts in conjunction with those identified by the SEARs (as described in section A9.1 of the EIS). The assessment involved a preliminary desktop-level risk assessment to broadly identify potential environmental impacts and risks associated with constructing and operating the proposal.

Risks were rated according to the methodology used for the risk assessment (which was informed by the principles of the *Australian/New Zealand Standard AS/NZS ISO 31000:2009 Risk management – Principles and guidelines*—see section A9.1 and Appendix E of the EIS). A number of these risks were rated as 'high' without the effect of mitigation. This identified that these risks and impacts required further assessment in the EIS, which was undertaken. As described in section A9.2.4 of the EIS, the residual risk level of the potential impacts identified by the environmental risk assessment was assessed after mitigation and management measures were applied. The pre-mitigated risk level for key potential issues and impacts identified in the environmental risk assessment was compared to the residual risk level to assess the effectiveness of the mitigation and management measures.

A residual risk assessment is provided at the end of each chapter in Part B of the EIS. The mitigation and management measures that would be applied to manage these impacts is identified in the residual impact assessments. The significance of potential residual impacts (after application of these mitigation measures) is rated using the same approach as the original environmental risk assessment. This identified that, after application of mitigation measures, almost all risks would be rated as 'low' or 'medium'.

6.8.9 Indigenous/Traditional Owner/native title representation on the community consultative committee

Representation on the CCC

Issue

Requested that ARTC advise who the Indigenous/Traditional Owner/native title representatives are on the community consultative community.

Response

The details of the members of the community consultative committees (CCCs) are available on the Inland Rail project website: inlandrail.artc.com.au/building-inland-rail/working-with-communities/community-consultative-committees/n2n-ccc/.

Consultation and engagement with representatives of the Aboriginal community, including details of all registered Aboriginal parties (RAPs), are provided in section 4 of Technical Report 6. There are two native title claimant groups that are RAPs as part of the Aboriginal cultural heritage consultation process: The Gomeroi and Ngemba, Ngiyampaa, Wangaaypuwan and Wailwan claimant groups are represented by NTSCORP.

6.8.10 Non-Aboriginal heritage

Impacts on non-Aboriginal heritage

Issue

Several sites are projected to be severely impacted, including the Aloes, which is marked for its potential to be home to a koala colony.

Response

The proposal would not directly impact on 'The Aloes' homestead site, as described in Technical Report 6—Non-Aboriginal heritage assessment and statement of heritage impact, and chapter B7 of the EIS. The homestead site is located around 500 metres from the edge of the construction footprint and the associated graves are located around 20 metres away. Visitors to the picnic area may experience reduced amenity during construction as a result of construction noise.

6.8.11 Construction noise

Construction noise impacts

Issue

The degree of impact from construction noise would depend on the relative exposure of sensitive receivers and the type and duration of construction activities in the area; however, as the proposal is linear, impacts on individual sensitive receivers during the construction phase would be for limited periods. Potential vibration impacts on the proposed Narrabri Gas Project water treatment plant at Bohena Creek would also require careful consideration.

Response

The proposal involves constructing about 306 kilometres of new rail line. While some construction facilities, such as compounds, would remain in a single location for longer periods, the rail line construction work would progress along the proposal site and receivers close to these works would only experience construction noise for a relatively short duration in the context of the overall construction period. To cover the range of potential situations, the construction noise and vibration assessment (Technical Report 8) is conservative in its assumptions.

The assessment considered the potential for construction vibration impacts on structures and human comfort in accordance with *Assessing Vibration: A Technical Guideline* (DEC, 2006). Specific guideline values for structural damage are based on German Standard *DIN 4150-3: 2016-02 Structural Vibration – Part 3: Effects of vibration on structures* (German Institute for Standardisation, 2016). The existing and proposed Narrabri Gas Project facilities are located outside of the structural damage vibration buffers for both heritage and standard structures. Proposed pipelines associated with the site would be subject to appropriate vibration limits presented in the section 2.3.6 of Technical Report 8.

6.9 NTSCORP Limited

NTSCORP Limited (NTSCORP) represents both the Gomeroi Peoples' Applicant and the Ngemba, Ngayampaa, Wangaaypuwan and Wayilwan Peoples' Applicant in their native title determination applications and related matters.

6.9.1 General comments on EIS and process

Concerns regarding EIS processes and Aboriginal heritage assessment

Issue

Concerns are raised with the processes undertaken in preparing an EIS under the EP&A Act and the development of an Aboriginal cultural heritage methodology under the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010c). These processes do not serve to protect Aboriginal cultural heritage or promote meaningful engagement with the Traditional Owners of the land and objects to which they impact. These processes permit non-Aboriginal people and organisations to harm and destroy Aboriginal cultural heritage, with no right of recourse or compensation for Traditional Owners.

Response

The Aboriginal cultural heritage assessment (Technical Report 6) was undertaken in accordance with the SEARs and relevant guidelines, including the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water (DECCW, 2010b) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH), 2011).

Consultation with Aboriginal stakeholders is summarised in section B6.1.2 of the EIS. Consultation, which was undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010c), included identifying key Aboriginal stakeholders, native title claimant groups and local Aboriginal land councils (LALCs). A detailed summary of the consultation process, which included consultation with eight LALCs that fall within the study area, is provided in chapter 4 of Technical Report 6—Aboriginal cultural heritage assessment report.

6.9.2 Relevance of Crown land to native title holders

Impacts on Crown land and native title rights and interests

Issue

Crown lands are of special importance to Traditional Owners. The *Native Title Act 1993* (Cth) (Native Title Act) is premised on the potential for native title rights and interests to be recognised and exercised in Crown land. Where native title rights have been recognised in Crown land, Traditional Owners hold a legal interest in those lands and are entitled to exercise rights. The compulsory acquisition of interests in Crown land impacts the exercise of native title rights by extinguishing those rights or substantially impairing them.

NTSCORP has concerns about the treatment of Traditional Owners in relation to proposed acquisitions of Crown lands. NTSCORP considers that ARTC should provide native title holders the same opportunity to enter into agreements for the acquisition of native title rights as it does for freehold owners. There are processes available for such agreements under the Native Title Act, even where there has been no determination of native title. By impacting Crown land, ARTC will likely be substantially impairing native title rights and interest, if not wholly extinguishing such rights.

Any proposed acquisition or leasing of Crown lands for the purpose of the project must proceed with caution and with full consultation with Traditional Owners in good faith. Effective and genuinely representative involvement in these processes is vital to maintaining and strengthening Traditional Owners' history, beliefs and their traditional laws and customs, and transmitting this knowledge to future generations. NTSCORP strongly encourages the ARTC and Crown Lands to negotiate an outcome that does not result in the extinguishment of Native Title rights and interests.

Response

As described in section B12.3.6 of the EIS, and in accordance with mitigation measure LP8, acquisition of Crown land would be undertaken in consultation with the Department of Planning, Industry and Environment, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). The physically large scale of native title claims, and their undetermined status, makes it difficult to assess the ultimate impact on these claims. In accordance with mitigation measure SE1, Native Title claimants would continue to be consulted about potential impacts to the claim areas to assist ARTC understand and appropriately manage potential social issues that may arise from these activities.

6.9.3 EIS Aboriginal cultural heritage protection

Further site surveys

Issue

According to Table B6.7, further site surveys are to be conducted in areas that will be directly or potentially impacted by construction. This seems to suggest that the full impact of the project on Aboriginal cultural heritage is not fully known.

Following the completion of all site surveys, an amended impact statement should be produced by ARTC to enable a clear understanding of the actual direct and potential impact of the Narramine to Narrabri Project on Aboriginal cultural heritage. The amended impact statement should be produced in partnership with the native title applicants.

Response

As described in section B6.1.2 of the EIS, archaeological surveys were completed in a large number of areas identified as culturally sensitive; however, eight areas of moderate-to-high sensitivity were not able to be surveyed in the proposal site due to property access restrictions. These access constraints have been addressed in discussion with registered Aboriginal parties during field surveys. Some culturally sensitive areas (at Wallaby, Ewenmar, Marthaguy, Gulargambone, Tenandra and Baradine creeks, and the Castlereagh and Namoi rivers) would require physical examination prior to construction commencing. Mitigation measure AH5 provides for a targeted archaeological survey of these areas. For the purposes of the Aboriginal cultural heritage assessment, these areas were conservatively assumed to contain moderate-to-high archaeological potential.

In this way, the assessment considered the most conservative approach, and the assumptions would be confirmed through the additional surveys and investigations that are required by the mitigation measures.

Site removal and relocation

Issue

In the event of a site being discovered and required to be moved, ARTC should engage the native title applicants to determine a culturally appropriate process for relocating any Aboriginal objects. The native title applicants, or their nominated representatives, should be present, involved and consulted at each stage of this process.

Further, any future proposed management strategy engaged by ARTC in relation to Aboriginal cultural heritage must first be approved or supported by the native title applicants. It is crucial that Aboriginal communities are empowered to make decisions when discussing the ownership, care and management of Aboriginal objects, sites, and intellectual property.

Response

In accordance with mitigation measure AH2, a detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties, which includes representatives of NTSCORP. The methodology would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10) to ensure that any artefacts salvaged are managed in accordance with the requirements of the *National Parks and Wildlife Act 1974* (NSW). The methodology would include the process for consultation with the Heritage NSW (in the Department of Premier and Cabinet) and registered Aboriginal Parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010b), the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010c), and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects.

Registered Aboriginal parties would be engaged to assist in salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process. Detailed analysis and reporting of cultural material collected would be provided to Heritage NSW.

As required by mitigation measure AH3, prior to construction a targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties, in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey.

Aboriginal historical context

Issue

Section B6.2.1 of the EIS should be redrafted in collaboration with the native title applicants. This section does not provide an accurate or appropriate summation of the Aboriginal historical context.

NTSCORP requests that ARTC amends references to 'Wailwan' to 'Wayilwan' (as per the Register of Native Title Claims) or use both spellings.

Response

Section B6 of the EIS presents a summary of the Aboriginal historical context and impact assessment. The full description of Aboriginal historical context, including native title claims, is detailed in Technical Report 6—Aboriginal Cultural Heritage Assessment Report.

The spelling of 'Wayilwan' is acknowledged.

6.9.4 Obligation to prepare Narromine to Narrabri project in accordance with Closing the Gap Agreement

Commitments under the Closing the Gap Agreement

Issue

Through the Closing the Gap Agreement, the NSW Government has committed to designing its policies and supporting projects that commit to achieving the outcome of a 15 per cent increase in Aboriginal and Torres Strait Islander people's legal interests in Australia's land and sea. The NSW Government has committed to achieving this outcome through positive native title determinations.

It is incumbent on the NSW Government to contribute to outcome 15 by committing to negotiating outcomes of Crown land acquisition and use. The NSW Government should be exploring all possible and creative alternatives to enable development in a way that does not extinguish or permanently impair Native Title.

The ARTC and NSW Government have an obligation to enable Aboriginal and Torres Strait Islander people to maintain a distinctive culture. This can be achieved through the proper engagement with Traditional Owners in decision making and planning processes that concern Aboriginal cultural heritage and Crown lands.

Response

As described in section B12.3.6 of the EIS, and in accordance with mitigation measure LP8, acquisition of Crown land would be undertaken in consultation with the Department of Planning, Industry and Environment, and in accordance with the requirements of the *Crown Land Management Act 2016* (NSW) and the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). The physically large scale of native title claims, and their undetermined status, makes it difficult to assess the ultimate impact on these claims. Any acquisition of non-alienated Crown lands would be subject to the 'future acts' provisions of the *Native Title Act 1993* (Cth).

ARTC would continue to consult with registered Aboriginal parties to minimise impacts on Aboriginal heritage as the proposal progresses into the detailed design and construction planning phases, in accordance with the mitigation measures and the conditions of approval.

6.10 Regional Quarries Australia Pty Ltd

Regional Quarries Australia Pty Ltd operates regional quarries, including West Wyalong Quarry, Dubbo Quarry and Forbes Quarry, and is associated with three quarries adjacent to the proposal.

6.10.1 Noise, vibration and air quality

Exceedances at the borrow pits

Issue

Chapter C3 of the EIS identifies exceedances of noise, vibration and air quality criteria for the operation of the borrow pits, which would not ordinarily be acceptable for an extractive industry.

The EIS has not considered whether dust from the resource at the borrow pits could result in a human health risk for respirable crystalline silica.

The borrow pits for the proposal should be held to the same assessment criteria and operational obligations as a commercial quarry operation.

Response

Borrow pit noise and vibration modelling

The criteria used in the construction noise and vibration assessment (Technical Report 8) is in accordance with the relevant assessment guidelines (required by the SEARs), including:

- ▶ Interim Construction Noise Guideline (DECC, 2009).
- ▶ Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZEC, 1990).

An assessment of potential impacts of the borrow pits is provided in section 5 of Technical Report 8 and is summarised in chapter C3 of the EIS.

The assessment identified that there would be some exceedances of the more stringent adopted 35 dB(A) noise criteria at residential receivers during establishment and use of the borrow pits. As described in section A8.8.2 of the EIS, to minimise potential impacts, louder and more intrusive activities, such as rock breaking and crushing, would only occur during standard construction hours. In accordance with mitigation measures CNV3, CNV4 and CNV5, a construction noise and vibration management plan would be prepared and implemented as part of the CEMP in accordance with the *Inland Rail NSW Construction Noise and Vibration Management Framework*. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration and minimise the potential for impacts during construction. All feasible and reasonable noise and vibration measures would be implemented.

The assessment of potential exceedances of airblast overpressure and ground vibration criteria from blasting (if required) at borrow pits C and D, identified that there was potential to exceed the maximum airblast overpressure criteria of 120 dB, depending on the blast charge size. In accordance with mitigation measures CNV-C11 a blast management strategy would be prepared in accordance with relevant guidelines and in consultation with the NSW EPA. The strategy would form part of the construction noise and vibration management plan and would include:

- ▶ Sequencing and review of trial blasting to inform blasting
- ▶ Regularity of blasting
- ▶ Intensity of blasting
- ▶ Periods of relief
- ▶ Blasting program.

Mitigation measure CNV-C12 also commits ARTC to only undertaking blasting (if required) during recommended standard construction hours (as per the *Interim Construction Noise Guideline*) and in accordance with a blast management strategy.

The proposed borrow pits would be temporary in nature and would only supply material to the proposal for the duration of construction. Following completion, borrow pit sites would be rehabilitated. As such, the potential impacts would only occur for a relatively short time compared with a long-term commercial quarry operation.

Borrow pit air quality modelling

The criteria used in the air quality assessment is based on the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2016), which was applied in accordance with the SEARs. The air quality assessment (see chapter C3 of the EIS) identified that one sensitive receiver was marginally within the 550-metre buffer distance at borrow pit C and would be potentially impacted by PM₁₀ emissions. Potential impacts at this location would be managed in accordance with mitigation measures AQ1 and AQ2.

Respirable crystalline silica

In response to this submission, additional modelling was undertaken as follows:

- ▶ Emissions of respirable crystalline silica were assumed to be equivalent to 100 per cent of the total PM_{2.5} emission, as described in chapter C3 of the EIS.
- ▶ Site-representative meteorological data files were developed for Narrabri and Dubbo to allow calculation of the annual average crystalline silica concentration.
- ▶ The results were compared to the adopted criteria of 3 µg/m³ on an annual average basis as outlined in the Protocol for Environmental Management State Environment Protection Policy (Air Quality Management) Mining and Extractive Industries (EPA Victoria, 2007).

The results of the dispersion modelling found that, for the worst-case meteorological condition, the annual average concentration of respirable crystalline silica would be within the criteria level at all locations outside of the borrow pits. As such, the risk of human health impacts at sensitive receivers associated with respirable crystalline silica emissions from the borrow pits is considered negligible.

6.10.2 Traffic and transport assessment

Assessment of most likely haulage routes

Issue

The EIS has not considered the most likely haulage routes for quarry materials from existing quarries in Dubbo. It should be revised to include an assessment of impacts of construction traffic on the Mitchell Highway, Tantitha Road, Webbs Siding Road, Wallaby Road and Bootles Road and associated intersections.

The existing level crossing at Tantitha Road was not assessed and is likely to be impacted by construction traffic.

Heavy vehicles from borrow pits A and B are likely to use additional local roads to deliver material.

Response

Potential impacts on the road network due to construction traffic are described in section 6.1.1 of Technical Report 10—Traffic and transport assessment and are summarised in section B11.3.1 of the EIS. The assessment considered estimated construction traffic movements due to workforce traffic, and the movement of traffic associated with material deliveries (borrow pits, capping and ballast, and precast concrete). While it was noted that traffic volumes would vary depending on the activities undertaken, a worst-case scenario for each construction area was assessed based on estimated total traffic volumes generated during site establishment/finishing and rehabilitation, and main construction activities (as shown in Table 5.5 in Technical Report 4). Therefore, the assessment did not differentiate between construction traffic produced by workforce movements and material deliveries.

The potential construction access routes within the four construction areas, as listed in Table 5.6 of Technical Report 4, include the Mitchell Highway, Tantitha Road and Webbs Siding Road. Table 6.1 in Technical Report 10 detailed the anticipated changes on key local roads during construction for those roads analysed as part of the construction traffic assessment. Of the roads noted by Regional Quarries, only the Mitchell Highway was assessed. This is because, as noted in the technical report, roads that have very low traffic volumes were not considered, as these roads are anticipated to operate at level of service A. The assessment found that the Mitchell Highway would continue to operate at level of service B. The operation of the remainder of the surrounding road network, which includes the roads noted by Regional Quarries, is not expected to be significantly impacted by construction traffic. This is because the roads have sufficient capacity to absorb the increased traffic, and delays at intersections would have a localised impact only, due to low traffic volumes on affected roads.

While impacts on the surrounding local road network due to construction traffic are expected to be minimal, it is acknowledged that there may be some changes to the construction access routes considered by the assessment once the construction contractor is confirmed. Commitments to minimise the impacts of construction traffic on the road network are defined by a number of mitigation measures, including TT1, TT6, TT7, TT8, TT10 and TT-C11. In particular, in accordance with amended mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

The traffic, transport and access management plan would include, as appropriate, additional reasonable and feasible measures identified as an outcome of consultation. In accordance with amended mitigation measure TT7, consultation with relevant stakeholders would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. Stakeholders would include the relevant local council/s, bus operators, Transport for NSW, emergency services, the Forestry Corporation of NSW (in relation to access within State forests), Crown land, Local Land Services and other affected property owners/occupants.

Additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities, and construction access arrangements to address traffic flow and access issues identified by key stakeholders.

6.10.3 Cumulative impact assessment

Consideration of quarries in the cumulative impact assessment

Issue

The EIS has not considered the approved Macquarie Manor Quarry and the proposed Redden Quarry as part of the cumulative impact assessment. These quarries are adjacent to the proposal site and should be considered.

Response

The cumulative impact assessment was undertaken in accordance with the SEARs and included key known projects at the time of preparation of the EIS. Potential cumulative impacts for the proposal would be managed in accordance with the CEMP and the mitigation measures compiled in section D5.3 of the EIS.

6.10.4 Groundwater impacts

Impacts of borrow pit A

Issue

A specialist groundwater impact assessment should be provided for borrow pit A as impacts on groundwater have been identified.

Response

Potential groundwater impacts due to the construction of borrow pit A are assessed in Technical Report 4—Groundwater assessment, which was prepared by a specialist hydrogeologist, and summarised in section C3.3.3 of the EIS.

The groundwater assessment made the following conclusions in relation to borrow pit A:

- ▶ There is potential for minor groundwater inflow at borrow pit A (in the order of about 0.22 kilolitres per day after one year).
- ▶ The maximum groundwater level change at borrow pit A would be about 3 metres.
- ▶ The potential to impact groundwater dependent ecosystems due to groundwater inflow at borrow pit A is low.
- ▶ No impacts on existing bores are anticipated due to groundwater interception at borrow pit A.
- ▶ No baseflow reductions are expected due to the potential drawdown at borrow pit A.

The groundwater assessment was undertaken in accordance with the SEARs, the *NSW Aquifer Interference Policy* (Department of Primary Industries, 2012) and relevant legislation and guidelines, as described in section B2.1.1 of the EIS. No further groundwater assessment is required.

In accordance with amended mitigation measure WR-CI4, if the groundwater inflow rate at borrow pit A is higher than 1 mega litre per year, the inflow rate and implications would be assessed by a hydrogeologist and additional management measures implemented, as required.

If the groundwater inflow rate at borrow pit A has the potential to exceed 3 mega litres per year, the appropriate approvals would be obtained in accordance with the requirements of the *Water Management Act 2000* (NSW)/*Water Act 1912* (NSW) prior to any extraction or interception.

6.10.5 Proposal plans

Detail provided in borrow pit development plans

Issue

The borrow pit development plans are not sufficiently detailed and do not provide the same level of detail required for extractive industry.

Response

The EIS has been prepared in accordance with the requirements for an application for approval of State significant infrastructure. The level of information provided in the documentation is consistent with the requirements under Part 5, Division 5.2 of the EP&A Act, Schedule 2 of the EP&A Regulation and the SEARs.

6.10.6 Biodiversity impacts of the access roads for the borrow pits

Impacts of clearing for borrow pit access roads

Issue

It is not clear if the biodiversity assessment has considered vegetation clearing for the access roads for the borrow pits.

Response

Where practicable, the access roads have been located either using existing tracks or cleared areas, to minimise the requirements for vegetation clearing. All access roads to borrow pits are included in the proposal site, and any vegetation present has been mapped and included in credit calculations and impact assessments. Figures are provided in Appendix G of Technical Report 1—Biodiversity development assessment report and the potential impacts are described in section 8.3.1 of the technical report.

6.11 Singleton Shire Healthy Environment Group

Assessment does not consider a sufficiently broad landscape and historical context

Issue

The submission detailed concerns with the approach to the non-Aboriginal heritage assessment and provided information about an alternative approach to identifying and understanding historic context and cultural landscapes.

Response

The non-Aboriginal heritage assessment was undertaken in accordance with the SEARs and with reference to the requirements of relevant legislation, policies and/or assessment guidelines, as summarised in section B7.1.1 of the EIS.

As described in section B7.1.2 of the EIS, the desktop assessment included archival research of early maps, plans and land records, and identification of themes relevant to the study area. The desktop assessment was undertaken to identify the types of potential heritage items that could be found in the study area. The approach taken is the standard professional approach supported by the guidelines prepared by Heritage NSW and is in accordance with the SEARs.

The historical context of the study area, which is described in Technical Report 7—Non-Aboriginal heritage assessment and statement of heritage impact, was based on the Australian Historic Thematic Framework. The context includes details of the history of exploration, pastoralism, travelling stock reserves, and the development of towns and villages. The historical context provides the appropriate level of historical context required to meet the SEARs and other relevant guidelines. The use of the historical context and historical themes is applied in the assessment of the significance of identified heritage items using the significance criteria established under the *Heritage Act 1977* (NSW) and as required by the *Assessing Heritage Significance Guidelines* (NSW Heritage Office, 2001). In particular, the assessment of a heritage item's significance against Criterion A is directly applicable to the approach suggested by the submitter.

Issue

The submission provides additional information that may inform the assessment of Convict Road in Baradine and suggests the approaches that should be taken to assess its origin and details.

Response

The potential impacts on this item were assessed by the non-Aboriginal heritage assessment.

In accordance with mitigation measure NAH1, detailed design and construction planning would avoid direct impacts on identified items/sites of non-Aboriginal heritage significance, as far as reasonably practicable. This would include the small sections of the Convict Road, Baradine site that overlaps with the proposal site. Mitigation measure NAH3 provides that, if impacts on the site cannot be avoided, an archaeological assessment, research design and methodology would be prepared. Test excavation would be undertaken by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria.

6.12 Tomingley Gold Operations Pty Ltd

Water supply impacts and consultation

Issue

Central to production at Tomingley Gold Operations is a reliable and secure water supply. Water is currently sourced from a licensed bore on the property 'Woodlands' and pumped to the site via an underground pipeline located in the road reserve of various local roads to the south and east of Narromine, as shown on figures attached to the submission.

The study area for the proposed route has the potential to impact the water supply infrastructure near Pinedean Road and Wallaby Road. Tomingley Gold Operations requests that consultation be undertaken with them to ensure their assets are not affected.

Tomingley Gold Operations has not been contacted directly by anyone associated with the project, which raises concerns that ARTC are not aware of infrastructure such as this within the proposed route.

Response

Following receipt of this submission, ARTC has consulted with Tomingley Gold Operations in relation to their water supply infrastructure. After further investigations, it was confirmed that the proposal does not cross the water supply infrastructure. There is potential for the infrastructure to be impacted by construction of a private level crossing. If this occurs, ARTC would consult further with Tomingley Gold Operations to manage any impacts to the water supply infrastructure during both construction and operation.

In accordance with mitigation measure LP13, the location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, would be confirmed prior to construction.

6.13 Wando Conservation and Cultural Centre Inc

Comparison with original proposal

Issue

The project does not compare to the original proposal, which fails to join Melbourne and Brisbane or to use 'a mixture of existing rail, road and power corridors, plus some new connecting corridors'. For example, the Narromine to Narrabri section traverses farmland and substantial areas of untouched public forest.

Response

The Inland Rail program has undergone significant refinement since the original 1996 proposal. Building on some of the work undertaken in the 1980s, various papers proposing an inland railway emerged during the 1990s. By the early 2000s, there were at least two significant private sector proposals for an inland railway.

As described in section A6.1.1 of the EIS, alternative freight transport solutions with the potential to address Australia's current and future freight challenges were considered as part of a strategic options assessment set out in the *Inland Rail Programme Business Case* (ARTC, 2015), and examined in the *Melbourne–Brisbane Inland Rail Report* (Inland Rail Implementation Group, 2015).

Three options were assessed by the *Inland Rail Programme Business Case* (ARTC, 2015):

- ▶ Progressive road upgrades
- ▶ Upgrading the existing east coast railway
- ▶ An inland railway.

These options were subjected to a rigorous assessment consistent with Infrastructure Australia's *Reform and Investment Framework* (Infrastructure Australia, 2014). Overall, constructing an inland railway ranked highest, with an average high likelihood of improving outcomes across all criteria.

Alternative routes for Inland Rail as a whole were considered by the following two studies:

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

The shortlist of route options was subjected to more detailed technical, financial and economic assessment. The option involving use of existing track towards Werris Creek had the lowest capital expenditure while still meeting the performance specification. This option had a length of about 1,880 kilometres (km). The option involving the more direct route between Narromine and Narrabri (via Curban) had the fastest transit time for a reasonable capital expenditure. This option, which had a length of about 1,731 km, became the focus for more detailed route, demand, economic and financial analysis.

Refining the proposed alignment involved an iterative process, with evaluation of the following:

- ▶ Environmental and land issues
- ▶ Railway operations considerations
- ▶ Engineering assessments
- ▶ Capital cost estimates.

The final preferred alignment, between South Dynon in Melbourne and Acacia Ridge in Brisbane, incorporated:

- ▶ Melbourne to Parkes—670 km of existing track and 37 km of new track on a greenfield alignment from Illabo to Stockinbingal, bypassing Cootamundra and the Bethungra spiral
- ▶ Parkes to North Star—307 km of upgraded track, and 291 km of new track on a greenfield alignment from Narromine to Narrabri
- ▶ North Star to Acacia Ridge—271 km of new track on a greenfield alignment, 119 km of existing track upgraded from narrow gauge to dual gauge, and 36 km of the existing coastal route.

Further information on the route history and selection process is provided in the combined Preferred Infrastructure/Amendment Report (see section 3.3.1 of this report) and supporting Route Selection Summary Report.

Regional benefits

Issue

The region can expect to gain little if any economic advantage from the proposal. There is no funding or planning for the regional hubs required to access the line and any local use would be dependent on 'working around' the through-trains.

Response

ARTC recognises its responsibility to deliver and operate Inland Rail with the least social impacts practicable, while enhancing the benefits Inland Rail will deliver at the local, regional and national scale.

ARTC would continue to work with local councils to identify and realise local economic and social benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narromine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the project.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in February 2020 (which can be accessed at: inlandrail.artc.com.au/moving-ahead-with-inland-rail/).

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value for money criteria can also be demonstrated.

ARTC has undertaken consultation with Transport for NSW, and other relevant stakeholders, about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

Train movements on existing rail lines are not expected to be impacted by Inland Rail. Any regional trains seeking to use Inland Rail would need to be scheduled.

Route options considered and impacts on the Pilliga

Issue

The suggestion in the EIS that an alternative considered for the Dubbo/Narromine and Narrabri section of the route (through Gwabegar and private land) was rejected because there was less potential for conflict with landholders if it went through the forest, is unconscionable in its dismissal of the significance of the Pilliga and the environmental damage that will be caused.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. In response to this direction, further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of options for the section of the route between Baradine and Narrabri (via Gwabegar to the north of the Pilliga forests or through the Pilliga forests), and the justification for the preferred option selected (see section 2.4.5 of the Route Selection Summary Report).

As described in section A1.5.1 of the EIS, ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through detailed design.

Cumulative impacts and offsets

Issue

The Pilliga Forest is already facing ‘death by a thousand cuts’ from coal mining and coal seam gas—further fragmentation is to be avoided at all costs. No account is taken of the cumulative impacts of projects such as the Narrabri Gas Project, the exploration on expired (‘zombie’) petroleum exploration licences, which was stimulated by the approval of the Narrabri Gas Project, the APA Western Slopes Pipeline, the Silverleaf Solar Farm and the fencing of the Australian Wildlife Conservancy Saving Our Species.

There is no possibility of mitigating the impacts on the natural environment and like-for-like ‘offsets’ do not exist; each fragmentation increases the inroads made by feral animals and weeds.

Response

Cumulative impacts

Technical Report 1—Biodiversity development assessment report includes an assessment of the potential for cumulative biodiversity impacts (see section 8.6), and the results are summarised in section D1.4.1 of the EIS. The assessment considered publicly available information on key major projects in the study area (known at the time the EIS was prepared), including the Narrabri Gas Project and Silverleaf Solar Farm. Insufficient information was available on the APA Western Slopes Pipeline at the time the assessment was undertaken. Fencing of the Australian Wildlife Conservancy site was not considered as it was not a major project; however, its presence and contribution to fragmentation were considered more generally by the cumulative assessment. Further information on the potential for cumulative impacts considering this project is provided in the updated biodiversity development assessment report.

The cumulative assessment noted that the cumulative loss and fragmentation of native vegetation and associated habitats would adversely affect native flora and fauna species, including a large number of threatened species. A range of mitigation measures are provided to mitigate the potential impacts identified.

Biodiversity offsets

Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with DPE (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program. ARTC has invited landowners within 100 kilometres of the route in NSW to express interest in establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate biodiversity credits.

In accordance with the *Biodiversity Assessment Method* (DPIE, 2020b), Biodiversity Conservation Regulation 2017 and EPBC Act, ARTC will seek credits, and establish offsets for, similar vegetation affected by the construction of Inland Rail in NSW and generally within the same areas. This limits where stewardship sites can be located, what vegetation and habitats will be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors.

The requirement to obtain like-for-like offsets refers to the specific number and types of ecosystem and species credits required to offset the impacts of the proposal, in accordance with the Biodiversity Conservation Regulation 2017. Biodiversity offsets are not required to exactly replicate the area of impact. However, offsets are required to take into account the landscape attributes of ecosystem and species credits (and dual species credits) within each subregion, including connectivity, patch size and areas of retained native vegetation before and after the impacts of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced in accordance with the legislated offset trading rules set out in the Biodiversity Conservation Regulation 2017.

Where ARTC is unable to source suitable offsets for the proposal, they may seek to apply the variation rules for retirement of some ecosystem and species credits, particularly those credits associated with native grasslands, which may be difficult to source. Where credits are not available for purchase or cannot be obtained in other ways (such as generation from an ARTC site), another option would be for ARTC to make a payment into the Biodiversity Conservation Fund. The Biodiversity Conservation Trust, which manages the fund, must secure offsets in line with legislated offset rules set out in the Biodiversity Conservation Regulation. The Biodiversity Conservation Trust is required to meet any biodiversity offset credit requirement in a like-for-like manner. This is by retiring like-for-like credits, by funding conservation actions that are listed in the *Ancillary rules: Biodiversity conservation actions* (OEH, 2017) and benefit the threatened entity impacted, or by funding other conservation measures approved by the NSW Minister for Energy and Environment that directly benefit the entity impacted.

Further information on the biodiversity offset credit process for Inland Rail is provided at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

Feral animals

The potential for increased risk of predation by feral animals as a result of linear clearings is identified in Table B1.6 in the EIS. The biodiversity assessment (summarised in section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Relevant mitigation measures include the finalisation of the fauna connectivity strategy (mitigation measure BD6) in the next phase of the project, and monitoring during operation (mitigation measure BD15), including the use of crossing structures by feral predators.

Biosecurity

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk, and ought reasonably to know it, must ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction, as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*.

A framework CEMP was provided as Appendix F to the EIS. This provides the requirements for the required management plans and measures to be implemented during construction, including soil erosion and biosecurity measures.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur, in accordance with ARTC's standard operating procedures, to meet its obligations under the *Biosecurity Act 2015*.

Aboriginal heritage impacts

Issue

The treatment of matters associated with Aboriginal heritage and culture has been inadequate—site-by-site observations fail to do justice to the holistic view of the significance of landscape.

Response

The potential impacts on Aboriginal heritage were assessed in accordance with the SEARs and with reference to the requirements of relevant legislation, policies and/or assessment guidelines, including the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* (DECCW, 2010a) and *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011). The study area for the Aboriginal cultural heritage assessment included the proposal site and the immediate vicinity of the proposal site (for any indirect impacts that could occur as a result of the proposal); however, a review of a much wider area was considered in the early phases of the proposal. This included a review of available Aboriginal Heritage Information Management System (AHIMS) site data, Aboriginal Sites Decision Support Tool issued by Heritage NSW, available archaeological reporting, ethnographic literature and site data from local Aboriginal land councils. Although the impact assessment focused on the proposal site and immediate vicinity of the proposal site, the information collected in the early phases were used to inform the Aboriginal cultural heritage assessment, which is summarised as section B6 of the EIS (Technical Report 6).

As described in section B6.3.2 of the EIS, in addition to archaeological features, Aboriginal cultural heritage values identified within the study area include those associated with permanent water sources, traditional thoroughfares, burial sites and those associated with Aboriginal culture and dreaming. Consultation with registered Aboriginal parties identified that all Aboriginal cultural heritage values are considered to be of high cultural (social) significance. An assessment of potential impacts on places of cultural value identified in the proposal site is summarised in

Table B6.6 of the EIS. The management of impacts on items of cultural significance would be considered with input from the registered Aboriginal parties (see section B6.5.2 of the EIS).

In accordance with mitigation measure AH3, prior to construction targeted archaeological surveys would be undertaken for areas identified as culturally sensitive requiring further investigation. The additional investigation would be undertaken with registered Aboriginal parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10).

As more surveys are undertaken, it will be possible to develop a more detailed understanding of the connectivity of the wider cultural landscape.

ARTC recognises that Aboriginal cultural values are not solely connected with archaeological features. Aboriginal communities have the right to identify what values are important to them and how they would like such values to be managed and protected. New mitigation measure SE3 provides for the preparation and implementation of a detailed Aboriginal community and stakeholder engagement strategy and action plan to establish relationships between ARTC and Aboriginal stakeholders and communities, and to identify opportunities for Aboriginal cultural and community values to be identified and incorporated into the proposal outcomes.

7. Response to community submissions—the project

7.1 Overview

This section, together with sections 8 to 10 of this report, provides responses to issues raised by the community, including members of the public and property owners. Sections 7.2 to 7.8 below responds to issues raised regarding the project's design features and how it would be constructed and operated.

Responses to issues raised regarding the assessment and approval process, adequacy of assessments and stakeholder engagement are provided in section 8. Responses to issues raised regarding the impacts of the project on the environment and community are provided in section 9. Responses to issues related to project evaluation, such as project need and justification, benefits, costs and funding, are provided in section 10.

Appendix A contains a table identifying community submissions using the submitter and submission identification numbers provided to submitters by DPIE (now DPE). The table presents, for each submission, a cross reference to where the issues raised in the community submissions have been addressed in sections 7 to 10. The responses to issues raised include a number of references to the mitigation measures that would be implemented to avoid or minimise the potential impacts of the project. Further information about the mitigation measures (as updated) is provided in section 11.2 and Appendix B of this report.

7.2 Design features

7.2.1 Level crossings

Design of level crossings

Issue

Concerns were raised about the safety and design of level crossings, including:

- ▶ That they should only be located on minor local roads
- ▶ That some crossings do not have appropriate visibility
- ▶ Level crossings needed to be large enough for large farming machinery.

Response

The approach to considering treatment options for the interaction of public roads and the rail corridor is described in section 5.1.1 of Technical Report 10—Traffic and transport assessment and is summarised in section A6.3.3 of the EIS. This approach has taken into account relevant NSW and Australian level crossing policies, which emphasise the need to minimise the number of level crossings, as far as reasonably practicable.

The Office of the National Rail Safety Regulator's (ONRSR) level crossing policy (*ONRSR Policy Level Crossings* (ONRSR, 2019)) sets out the approach and broader expectations for improving the safety of railway operations with regard to existing level crossings and the early design of future road and rail intersections. In terms of managing risks to safety, ONRSR's level crossing policy upholds that no new level crossings should be constructed. The policy notes that, where a new crossing is necessary, safety risks must be eliminated or minimised by designing new infrastructure consistent with requirements of the Rail Safety National Law.

Given this, a methodical process of review was undertaken to determine the appropriate treatment at public road and rail interfaces. Considerations in this review included:

- ▶ Determining the interface location and type: i.e. public roads, private access roads, farm tracks, pedestrian interfaces and travelling stock routes
- ▶ Assessing the need for the interface, including access requirements, potential traffic levels, land use, nearby interfaces, adjoining properties, vertical geometry of the rail alignment (in the context of the property and access for other local connectivity)
- ▶ Determining feasible options for public road interfaces.

This process informed whether each proposed interface location would be provided with a bridge (grade separation) or level crossing, or whether the road at the interface location would be closed or realigned. The locations of the proposed level crossings provided in the EIS are an outcome of this process.

In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, which included a number of the level crossing interfaces on the proposal. The audit recognised that a consistent, systematic and comprehensive process for the assessment of level crossings was applied to determine adequate treatments. It noted that the approach ensures that level crossing safety risks are eliminated or minimised, so far as reasonably practicable, in accordance with Australian rail safety legislation. There were no findings or recommendations identified by the audit requiring action by ARTC; therefore, the locations of the level crossings that have been identified through this process are considered appropriate.

As described in section 3.1 of this report, however, a number of amendments are proposed to minimise the potential impacts of the proposal and respond to issues raised. These amendments include changes to the number and type of new public level crossings, taking into account:

- ▶ Further design development, including a review of sighting distances and updated traffic data from traffic surveys undertaken in November 2020
- ▶ Consultation with affected landholders and other relevant stakeholders
- ▶ Changes to crossing loop locations.

The proposed level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types that need to be catered for at level crossings. In accordance with mitigation measure TT2, input would be sought from relevant stakeholders prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders.

Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices* (Standards Australia, 2016), *Part 7: Railway crossings* and *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.

ARTC acknowledges the issue of access for large agricultural/farming machinery, which would continue to be addressed as the design and construction planning progresses. The level crossings have been designed to suit the current road arrangements. Further refinements undertaken during detailed design would consider the vehicle types and widths that need to be catered for at level crossings, including the maximum vehicle dimensions gazetted in National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice 2020 (No.1) for Zone 5, where relevant.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

7.2.2 Crossing loops

Length of crossing loops

Issue

Submitters recommended that crossing loops should be at least 2,700 metres long.

Response

As described in section A7.3.3 of the EIS, the crossing loops would be up to 2.2 kilometres long. This is sufficient to fit the design length of the trains (1,800 metres) and is the crossing route length proposed across the Inland Rail program.

Location of Curban crossing loop

Issue

A submitter raised concern about the location of the Curban crossing loop within their property boundary, which was inconsistent with the original advice provided by ARTC.

Response

Following exhibition of the EIS, and as described in section 3.1 of this report, the locations of all crossing loops have been amended to minimise potential property impacts. The Curban crossing loop has been moved to a new locality (Armatree/Tonderburine) and would not affect the submitter's property (Trelawney Park). Further information about the amendments to the proposal are provided in the combined Preferred Infrastructure/Amendment Report.

7.2.3 Culverts and bridges

Design of culverts

Issue

A number of submitters raised concerns that culverts would not be adequate, in terms of their location, number and size, for managing floodwater.

Some submitters asked if landholders would be consulted about culvert installation, including placement, type, use and number of culverts. They also asked to be informed about how these decisions are made, and what changes would occur to ground levels and flow paths.

Response

The reference design has been developed based on the flood modelling undertaken (see Technical Report 3—Flooding and hydrology assessment and the updated flooding and hydrology assessment report) to ensure that the culverts and bridges are adequate to manage flood flows in terms of their location, number and size.

The amended proposal includes about 650 banks of culverts and 75 bridges to assist with the management of floodwater. Culverts and bridges are generally located around existing drainage lines, watercourses and within floodplains and associated overflow areas, to minimise changes to natural flow patterns and cater for the predicted flood flows.

The assessment identified a range of potential impacts that would be further investigated and managed during detailed design and construction. In accordance with mitigation measure FH1, during the detailed design process the design would continue to be refined, where practicable, to not worsen existing flooding characteristics.

Further refinement and additional flood modelling would be undertaken during detailed design to review and confirm the final arrangements in terms of the placement and number of culverts. In accordance with mitigation measure FH2, this would include further detailed hydraulic modelling and site-specific assessments to confirm the locations downstream of culverts and within drainage control areas that require erosion protection and the extent and type of protection required. This would confirm the final extent of any earthworks that may alter ground levels. Landholders with the potential to be affected by flow paths on their properties would be consulted. All culverts would be designed and constructed in accordance with ARTC design standards.

Stock crossing via culverts

Issue

A submitter asked if stock will be able to cross underneath the train line through culverts.

Response

Provisions for stock crossing will be discussed with landowners/landholders. Culverts and bridges can be used as stock underpasses. Where there is no structure available, ARTC is proposing a 'Call Train Control Process' that would allow landowners/landholders to use level crossings as stock crossings. Landowners/landholders and ARTC would sign an agreement that allows landowners/landholders to call train control and get a time window to safely cross the track. It is important to note that stock would not get priority over train operations.

Bridge design

Issue

Submitters recommended that the Castlereagh River bridge at Curban should be larger to accommodate the predicted flooding from the 2010 Inland Rail Alignment Study report. Concern was also raised about the capability of other bridges to manage flow.

Response

The flooding and hydrology assessment is based on detailed investigations and modelling that has been undertaken since the *Melbourne–Brisbane Inland Rail Alignment Study* (ARTC, 2010) was prepared. Within the Castlereagh River floodplain, the proposal includes two bridges and numerous culverts to provide for the passage of floodwaters. Similarly, all bridges and culverts proposed have been, and would continue to be, designed with the capability to manage the flow of floodwaters at each location.

Mitigation measure FH1 provides that detailed flood modelling, undertaken during detailed design, would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

The additional flood modelling, and mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

7.2.4 Rail design

Design of the rail line

Issue

A number of submissions raised concerns relating to the design of the rail line and provided recommendations including:

- ▶ That the line be built to North American Class I railroad standards with attention to axle loads, speeds, clearances and length of crossing loops
- ▶ Reverse curves should be eliminated
- ▶ Curves tighter than 1,200 metres should be eased
- ▶ A minimum curve radius of 1,200 metres should be provided
- ▶ That the rail line would deteriorate over time and design speeds wouldn't be maintained.

Response

The proposal has been designed to achieve the Inland Rail specifications, ARTC design standards and other relevant standards and design requirements, as listed in section A7.2.2 of the EIS. These include minimum design standards for design speed, maximum grade, curve radius, corridor width, rail, concrete sleepers, sleeper spacing, turnouts, crossing loops and future proofing for 3,600-metre long trains.

Where curves are required, they have been designed to have a minimum 1,200 metre radius.

As described in section A7.7.2 of the EIS, maintenance activities would be undertaken during operation in accordance with ARTC standard operating procedures, to ensure the quality and performance of the track, including the potential for design speeds, is maintained.

7.2.5 Fencing

Fencing design

Issue

A number of submitters raised concerns about the fencing that would be provided and how it would be designed. Issues raised included:

- ▶ Questions about the adequacy of fencing to protect stock and native fauna from trains
- ▶ Concerns around fence stability around culverts and in unstable soils
- ▶ Need to agree the appropriate fencing standard with landholders, as suitable for their livestock, to limit spread of disease and weeds
- ▶ Fencing should be provided along mustering routes to protect crops and people from stock breakthroughs
- ▶ Fencing should include concrete posts and netting wire, constructed to a professional standard
- ▶ An error was noted in the fencing type shown in an Inland Rail fact sheet.

Response

ARTC has an Inland Rail Program-wide fencing strategy that would guide the detailed design of fencing for the proposal. This strategy assists with consistency of fencing across the Inland Rail Program. Fencing requirements would be confirmed during the detailed design phase, in consultation with adjacent landholders, the relevant council, and other infrastructure owners.

As described in section 1.2.8 of the proposal description (as amended—see the combined Preferred Infrastructure/Amendment Report), fencing would be constructed along the rail corridor where it adjoins private land. Fencing (for stock) is not required in State forest areas. Where the rail corridor abuts an existing public road with stock movements, fencing would be provided on both sides of the proposed rail corridor. The type of fencing would be discussed with landholders and refined during detailed design. In general, unless otherwise agreed, fencing would consist of a standard stock fence (1.2 metres high), with gates provided in locations aligning with access roads and other key access points to the rail corridor from public and private roads.

In accordance with mitigation measure LP10, livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock-train collisions.

The requirement for fauna exclusion fencing to minimise the potential for wildlife strike was also considered during design development. In general, fauna exclusion fencing is not considered to be desirable as it could affect broader fauna movement and connectivity, particularly in key parts of the Pilliga East State Forest.

The error in the fact sheet has been rectified. The caption under the photograph now states 'Image for reference purposes only. Subject to detailed design.'

Fencing maintenance

Issue

A number of submitters raised concerns about the maintenance of fencing, including:

- ▶ Concerns that fencing costs and maintenance would be transferred to landholders
- ▶ How fencing would be managed in the long term, including the need for a clear and agreed maintenance policy
- ▶ The protocol to report damage to shared fence boundaries
- ▶ Information on fence repairs and timeframes for repairs
- ▶ Whether trees would be cleared to protect fences from damage
- ▶ Whether ARTC would check fences after major weather events and if cameras or weather stations would be installed to monitor fence conditions.

Response

ARTC would be responsible for maintenance of the rail corridor, including fencing. In accordance with mitigation measure LP11, maintenance agreements would be established for fencing along the rail corridor where it adjoins private properties. The agreements would include protocols for reporting damage and arranging repairs of shared boundary fencing.

ARTC would not undertake clearing of trees on private property to protect fences. Rail corridor fencing would be subject to routine inspection and maintenance in accordance with ARTC's standard operating procedures. No cameras or weather stations are proposed to be installed.

Fencing safety

Issue

Some submitters raised concerns about the safety of fencing, including security fencing around construction areas.

Response

Fencing would meet relevant safety standards and guidelines.

As described in section A8.13 of the EIS, NSW workplace safety laws require construction sites to have adequate site security, which includes appropriate fencing. All construction work would be isolated from the general public. The construction contractor(s) would need to ensure that construction sites are secure at all times, and they would need to take all practicable actions to prevent entry by unauthorised persons.

7.2.6 Other project design issues

Access track design and suitability

Issue

A number of submissions raised issues relating to the design of access for properties where access is affected by the proposal. Issues included:

- ▶ Access to farms, underpasses and crossings would need to be of an appropriate size for machinery and stock
- ▶ Properties need all-weather access routes
- ▶ Routes through neighbouring properties would be challenging to use
- ▶ Alternate property access should be provided so that a level crossing can be avoided
- ▶ The maps in the EIS do not show proposed access roads and entry/egress points for individual properties that are impacted by the rail line, and/or required replacement access, such as internal access roads to paddocks and infrastructure that will be cut off by the train line

Response

Property-specific access arrangements would be confirmed during detailed design in consultation with individual landowners/landholders. ARTC would continue to work with all potentially affected landowners/landholders to minimise potential impacts in accordance with the mitigation measures and the conditions of approval. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

ARTC has already undertaken extensive consultation with landowners/landholders and, where feasible, considered access requirements for agricultural machinery, upgraded access, or provided new access and alternative routes, noting that in some instances access has not been provided in the landowner's preferred location due to safety and design requirements.

Further information in response to issues raised about impacts on property access, and how access impacts are proposed to be mitigated and managed, is provided in sections 9.11.4 and 9.11.5.

7.3 Key construction infrastructure

7.3.1 Temporary workforce accommodation

Use of the temporary workforce accommodation facilities

Issue

Submitters queried the following in relation to the use of the temporary workforce accommodation facilities:

- ▶ Would accommodation facilities operate at night with lighting?
- ▶ If construction commences at 6am, would construction workers leave accommodation camps at 5am?

Response

Lighting would be provided at temporary workforce accommodation facilities in accordance with the temporary workforce accommodation plan (mitigation measure SE-C12). The plan would be developed in consultation with relevant key stakeholders, including the relevant local council, and would define (amongst other matters) the arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy).

It is expected that most of the workforce would enter and exit temporary workforce accommodation facilities to suit the primary proposal construction hours. As such, there would be traffic movements typically up to an hour either side of the proposed working hours (see section A8.8.2 of the EIS).

As described in section C2.3.9 of the EIS, buses would generally be used to transport construction workers from the temporary workforce accommodation facilities to the construction work areas. This would assist in minimising impacts that could be associated with multiple private vehicle movements.

Future use of land

Issue

A submitter requested information on what council planned to do with the land used for the temporary workforce accommodation after construction had concluded.

Response

The land required for the proposed temporary workforce accommodation facilities would be leased from the relevant landowners for the duration that it is required to support construction activities. At the end of construction, all disturbed areas not required for the proposal's operational footprint would be rehabilitated.

In accordance with mitigation measure SE-C12, a temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would (amongst other matters), define how the sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal (see section A8.7 of the EIS).

7.3.2 Borrow pits

Borrow pit use

Issue

Concerns were raised that contractors would not abide by the conditions negotiated between local landholders and ARTC.

Response

Any conditions agreed between local landholders and ARTC in relation to the construction phase would be included in contract documents between ARTC and the construction contractor(s). The construction contractor(s) would need to comply with any agreed conditions as part of relevant agreements with the landholders.

Borrow pit encroaching on property

Issue

A submitter raised concerns that the map in the EIS (borrow pit C indicative planting plan) shows the borrow pit C work site encroaching on their property (Wahroonga). The submitter requested more information about the encroachment on their property.

Response

The indicative planting plans for borrow pits in the borrow pit rehabilitation strategy (see Appendix K of the EIS) are provided for illustrative purposes only. Borrow pits and associated facilities/infrastructure would not be located within a property without a written agreement with the landowner/landholder.

In relation to borrow pit C, the identified encroachment within the submitters property was a buffer area surrounding the area of proposed disturbance. There are no proposed works within the property in question.

7.3.3 Other construction infrastructure issues

Remediation/rehabilitation

Issue

Details were requested about how the construction footprint would be remediated.

Response

The construction footprint is the area that would be directly affected by construction works. It includes the location of proposal infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of the storage areas/compounds sites, etc. that would be used to construct that infrastructure.

As construction is completed, land required for construction only would be rehabilitated and returned as close as practicable to the pre-construction condition, or as agreed with landowners.

As described in section A8.7 of the EIS, at the end of construction all disturbed areas not required for ongoing operation would be rehabilitated in accordance with the rehabilitation strategy (mitigation measures BD12 and SC9). The strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas. It would be prepared by a suitably qualified consultant, in consultation with relevant stakeholders (including councils and the community) and with consideration of:

- ▶ ARTC's Inland Rail Landscape and Rehabilitation Strategy and ARTC's Inland Rail Landscape and Rehabilitation Framework
- ▶ The borrow pit rehabilitation strategy (provided in Appendix K of the EIS)
- ▶ Rehabilitation requirements described in Technical Report 1—Biodiversity development assessment report
- ▶ The conditions of approval for the proposal.

This would include consideration of pre-existing land use and matters such as soil compaction and rehabilitation.

In accordance with mitigation measure LP19, rehabilitation of disturbed areas would be undertaken progressively, consistent with the rehabilitation strategy and property-level design requirements (where relevant).

Construction footprint

Issue

A submitter requested that the construction footprint be moved due to potential soil compaction impacts within the property and impacts on agricultural operations.

Response

The construction footprint within the property in question has been identified as a proposed location for general compound and topsoil storage. ARTC and its construction contractor(s) would undertake further consultation with the landholder during detailed design and construction planning to confirm the location of, and arrangements for, the construction infrastructure. This would consider potential impacts on agricultural operations.

7.4 Construction methodology

7.4.1 Work hours and lighting

Construction work hours

Issue

Submitters queried whether night work would be required.

Response

As described in section A8.8.2 of the EIS, to shorten the length of construction as far as practicable and minimise associated disruptions to the community, the primary proposal construction hours are Monday to Sunday (6am to 6pm) with no work on public holidays. Respite periods would be provided as described in section A8.8.2 of the EIS.

Discrete construction activities would also be undertaken outside the primary proposal construction hours. These would include work where there are no sensitive receivers and work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line) (which typically occur over 72 hours, four times a year). Other discrete construction activities, such as large concrete pours, and girder and deck installations at some bridges, would also occur outside the primary proposal construction hours; however, these would be limited to 48 hours at any one location.

Use of lighting

Issue

Submitters queried if lights would be used for night work.

Response

For safety reasons, lighting would be required at work sites during periods of darkness or low natural light. In accordance with mitigation measure LV4, lighting would be designed and sited in accordance with *AS/NZS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* (Standards Australia, 2016) and *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (Department of Planning and Environment, 2016), and in consultation with the Siding Spring Observatory Dark Sky Planning Committee. In accordance with mitigation measure LV8, lighting of work areas, compounds, and work sites would be designed and sited in accordance with mitigation measure LV4, and oriented to minimise glare and light spill impact on adjacent receivers.

7.4.2 Access

Haul roads

Issue

The detailed designs for haul roads were requested. It was noted that suitable roads would need to be built for trucks driving over soft or loose soils.

Response

Designs for construction haul roads and access roads would be developed during the detailed design and construction planning phase. These roads would be designed to the appropriate standard and to suit the existing ground conditions, such as soft or loose soils. As construction is completed, land required for construction only would be rehabilitated and returned as close as practicable to the pre-construction condition, or as agreed with landowners (refer to section 7.3.3 for further information).

Borrow pit C haul road

Issue

An alternative route for the borrow pit C haul road was recommended in an east–west direction across the Wahroonga property.

Response

Indicative access routes to each construction work area and borrow pit are shown in the maps in Part E of the EIS. The access routes shown in the EIS were selected based on a range of considerations, such as following existing tracks, where practicable, and minimising impacts on properties. In particular, the indicative routes were selected to avoid having to cross neighbouring properties that could have resulted in additional impacts.

During construction planning, ARTC and the construction contractor(s) would confirm the borrow pits that would be used for construction. As part of this process all features of the borrow pits, including access routes, would be confirmed in consultation with the landholders as required. In the event that borrow pit C is used, this would include consideration of the alternative route suggested by the submitter.

Access to temporary accommodation facility

Issue

A submitter asked if the accommodation construction crew would access the Gilgandra temporary workforce accommodation facility via Federation Street and if workers' private vehicles would use the same route. The submitter asked if this access route would involve an extension of Stockings Crescent to join Federation Street.

It was also asked what the delivery route for materials would be. Details on how many buses are expected to enter and exit temporary accommodation per day were requested. It was suggested that an alternative route to Federation Street, such as Marshal Street, should be used to access the facility to ease congestion.

Response

As described in section C2.3.9 of the EIS access to the Gilgandra temporary workforce accommodation facility is proposed via Federation Street. Subject to detailed design and further consultation with Gilgandra Shire Council and other relevant stakeholders, it is not currently proposed to provide another access via or to modify Stockings Crescent. All workforce movements and materials deliveries would be via the access off Federation Street.

As described in section C2.3.9 of the EIS it is estimated that there would be up to 16 bus movements per day (two-way) to and from the temporary workforce accommodation. Marshal Street was not identified as the preferred route as it is a local road.

Private roads used during construction

Issue

Private roads used by the proposal during construction need to be maintained and be upgraded for all-weather, heavy vehicle access.

Response

As described in section A8.11 of the EIS, the general strategy for construction access to the proposal site is as follows:

- ▶ Rail—existing rail lines would be used to deliver bulk materials where practicable. This would include delivery of rail and sleepers commencing during the pre-construction phase.
- ▶ Road—the existing public road network would be used for external delivery of all materials from commercial suppliers and borrow pits, and for the movement of the workforce (e.g. to and from temporary workforce accommodation).
- ▶ Proposal haul roads—these would be established within the construction footprint and used for the movement of bulk earthworks between cuts and fills, and the movement of other materials and the workforce along the proposal site.

The above strategy would minimise the use of private roads as far as practicable. ARTC would undertake further consultation with the relevant road owners/managers during detailed design in relation to any arrangements for use and maintenance of roads.

7.5 Operation and future planning

7.5.1 Operational arrangements

Shunting

Issue

A submitter noted that all shunting and train adjustments need to be located away from towns.

Response

Where the proposal connects with existing rail lines, there would be movements of trains between existing lines and the proposal. Existing shunting arrangements on rail lines and sidings, including those located near towns, would continue to occur. No changes to these arrangements are proposed as part of the proposal.

Transit times and passenger capability

Issue

A submitter suggested that the proposed 24-hour transit time for freight trains between Melbourne and Brisbane should be reduced to under 22 hours and that the rail line should be capable of conveying passengers.

Response

Inland Rail as a whole (i.e. between Melbourne and Brisbane) is targeting an average transit time of less than 24 hours to provide a competitive and cost-effective transport option.

ARTC has been tasked by the Australian Government to provide a freight rail service. Use of Inland Rail by passenger services (other than existing services on the existing rail lines that would form part of the Inland Rail route) is not proposed.

7.5.2 Maintenance

Use of private access roads for maintenance

Issue

Submitters asked if maintenance staff would use private access roads to access the rail corridor.

Response

During operation, access to the rail corridor would be required for crew changes, maintenance or emergency response. This would typically be via the operational access roads described in section A7.3.8 of the EIS. Access to the rail corridor would generally be directly off the public road network and/or via the operational access roads. Where access across a private property is required (including any use of private access roads), this would be via a written access agreement with the landholder.

Maintenance of culverts

Issue

Concerns were raised that culverts would become blocked with debris. A submitter requested a guarantee that culverts would be maintained.

Response

The updated flooding and hydrology assessment includes a blockage risk assessment in accordance with *Australian Rainfall and Runoff* (Ball et al., 2019). Based on this, the proposed culverts include an appropriate blockage factor. The blockage factor has been taken into account in the design of the culverts. As a result, the design allows for some accumulation of debris without impeding on the performance of the culvert system.

Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's existing operational procedures relating to structure inspections. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

ARTC undertakes regular track patrols to ensure the safe and efficient operation of the network. The frequency of these inspections varies between corridors and depends on the volume of traffic, weather and condition/type of assets on the section of track.

Environmental site inspections are another component of ARTC's inspection regime. An annual schedule is developed in consultation with the relevant corridor managers and includes triggers for non-scheduled inspections. Environmental site inspections are undertaken by ARTC's Environment Advisors and focus on areas of risk such as waterways, known heritage items, sensitive flora or fauna, and works in proximity to sensitive receivers.

Residents or other stakeholders can contact ARTC regarding asset or environmental issues (including vegetation management or culvert blockages) via the Enviroline service (via: **Contact Us — ARTC**, 1300 550 402 or enviroline@artc.com.au), which is available 24 hours/seven days a week.

7.5.3 Future planning

Future rail use planning

Issue

A submitter suggested that the design should incorporate extra space along the line to allow for installation of a second line in the future.

Response

Modelling undertaken to determine the viability and operational reliability for Inland Rail has identified that a single track (with crossing loops) would meet the forecast freight volumes. It would not be cost effective to purchase additional land at this point in time.

7.6 Alternatives to the project as a whole

Super highway

Issue

A submitter suggested that building a super highway for trucks would help grow regional Australia more than a railway. This was due to the increased flexibility and value for money.

Response

Inland Rail has been tasked by the Australian Government to provide a freight rail service. Consideration of other alternatives and options are described in chapters A5 and A6 of the EIS, and in the following responses.

Rail options other than Inland Rail

Issue

Comments on rail options other than Inland Rail were provided:

- ▶ The rail line should terminate at Newcastle to reduce impacts on regional NSW and south-east Queensland
- ▶ The rail line go through Newcastle from Melbourne, Adelaide, Perth or Brisbane as this may be better value for money
- ▶ The rail line needs to connect to ports in Melbourne or Brisbane
- ▶ Without a connection to a port the line will not be good value for money.

Response

As described in section A6.1.1 of the EIS, alternative freight transport solutions with the potential to address Australia's current and future freight challenges were considered as part of a strategic options assessment set out in the *Inland Rail Programme Business Case* (ARTC, 2015), and examined in the *Melbourne–Brisbane Inland Rail Report* (Inland Rail Implementation Group, 2015). Three options were assessed by the *Inland Rail Programme Business Case*:

- ▶ Progressive road upgrades
- ▶ Upgrading the existing east coast railway

- ▶ An inland railway.

These options were subjected to a rigorous assessment consistent with Infrastructure Australia's *Reform and Investment Framework* (Infrastructure Australia, 2014). Overall, constructing an inland railway ranked highest, with an average high likelihood of improving outcomes across all criteria.

Alternative routes for Inland Rail as a whole were considered by the following two studies:

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

The shortlist of route options was subjected to more detailed technical, financial and economic assessment. The option involving use of existing track towards Werris Creek had the lowest capital expenditure while still meeting the performance specification. This option had a length of about 1,880 km. The option involving the more direct route between Narromine and Narrabri (via Curban) had the fastest transit time for a reasonable capital expenditure. This option, which had a length of about 1,731 km, became the focus for more detailed route, demand, economic and financial analysis.

Refining the proposed alignment involved an iterative process, with evaluation of the following:

- ▶ Environmental and land issues
- ▶ Railway operations considerations
- ▶ Engineering assessments
- ▶ Capital cost estimates.

The final preferred alignment, between South Dynon in Melbourne and Acacia Ridge in Brisbane, incorporated:

- ▶ Melbourne to Parkes—670 km of existing track and 37 km of new track on a greenfield alignment from Illabo to Stockinbingal, bypassing Cootamundra and the Bethungra spiral.
- ▶ Parkes to North Star—307 km of upgraded track, and 291 km of new track on a greenfield alignment from Narromine to Narrabri.
- ▶ North Star to Acacia Ridge—271 km of new track on a greenfield alignment, 119 km of existing track upgraded from narrow gauge to dual gauge, and 36 km of the existing coastal route.

Further information on the route history and option selection process is available in the *Melbourne to Brisbane Inland Rail Route History 2006 – 2021* (ARTC, 2022) at: **Route history of Inland Rail 2006-2021 - Inland Rail (artc.com.au)**.

7.7 Project development/route selection

7.7.1 Route selection process

Concerns about the route selection process

Issue

Some submissions requested information about how the preferred route was selected. Concerns were raised that the route selection process was biased, poorly managed, lacked transparency, routes were inadequately assessed, and the process did not incorporate local preferences or knowledge. Submitters expressed concerns that not all route options received full consideration. Comments made included:

- ▶ the desktop analysis was insufficient and community impacts were not considered
- ▶ despite a senate enquiry, and persistent pressure from NSW Farmers, there is no clear justification as to why the greenfield route was chosen
- ▶ consultation with council and recent flood modelling was only undertaken after the route had been selected
- ▶ route changes late in project cycle without proper consultation were inappropriate and have led to inaccurate cost-benefit analysis.

Response

As described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) 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. Further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of the use of existing rail lines and a new greenfield alignment (see sections 2.2, 2.3 and 2.4 of the Route Selection Summary Report) and the justification for the preferred option selected.

The Route Selection Summary Report also provides further information about the investigations and consultation (see sections 4.2 and 4.3 of the Route Selection Summary Report) undertaken throughout the process. A range of specialist assessments were undertaken to assist with comparing options, including flooding, geotechnical, biodiversity and heritage assessments. Consultation activities included discussing proposal design developments and options at council meetings, face-to-face meetings with affected landowners, town hall meetings, community drop-in sessions, and regular updates via eNews, project newsletters, regional print advertisements, and updates to the Inland Rail website. Further information on the consultation undertaken is provided in the response in section 7.7.2 of this report.

Multi-criteria analysis

Issue

Concerns were raised about the multi-criteria analysis and how it was used as part of the route selection process. Issues raised included:

- ▶ The outcomes of the multi-criteria analysis did not reflect the costs and benefits of routes or community preferences.
- ▶ The workshops were poorly conducted and documented, and contained inaccuracies in the analysis and resulting reports.
- ▶ Landholders were not properly informed of meetings and were not given information required to engage with them.
- ▶ The multi-criteria analysis process was done without data on hydrology, EIS, land use and soil types.
- ▶ Study areas were added to the multi-criteria analysis throughout the workshops without informing affected communities, impacting the fairness of the results.
- ▶ ARTC did not disclose the expansion of the multi-criteria analysis and options report study areas, resulting in the omission of data necessary to make a fair decision.
- ▶ The multi-criteria analysis document makes no reference to the size and significance of the Backwater Cowal catchment area.
- ▶ No hydrological studies were carried out by ARTC prior to directing the alignment into the Backwater Cowal area to the south east of Narromine.
- ▶ There is a clear failure to inform the multi-criteria analysis workshops of the existence of the Webbs Siding overflow.

Response

The outcome of any multi-criteria analysis workshop is just one factor in choosing between route options and is not a determining factor in its own right. A multi-criteria analysis indicates whether a route option warrants further consideration. The option is then assessed for its ability to enhance the Inland Rail service offering and whether its estimated construction and operating costs are appropriate for the identified benefits.

The route selection process considered a range of inputs, including environmental and community impacts and benefits. The option selection and design process took into account the issues raised during consultation with relevant stakeholders, and the findings of environmental and engineering investigations. Further information on the consultation undertaken is provided in the response in section 7.7.2 of this report.

Further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of alternative alignments near Narromine (including those through/near the Backwater Cowal / Webbs Siding areas) (see sections 2.4.1 and 3.2.1 of the Route Selection Summary Report) and the justification for the preferred option selected.

Further information on the multi-criteria analysis (including consultation and specialist assessments undertaken to inform the process) and its role in the overall route selection process is provided in section 4 of the Route Selection Summary Report.

Independent review and re-evaluation

Issue

Some submitters suggested that the route selection process needs to be independently reviewed and reevaluated. It was suggested that updated information be applied to the multi-criteria analysis to test its validity. It was suggested that the route be reassessed, with the final selection chosen to balance being cost effective, environmentally conscious, community preferences and working with farming operations.

Response

As described in the responses above, and in the combined Preferred Infrastructure/Amendment Report, the route selection process has given due consideration to environmental, social, technical and economic factors. The preferred route was selected as it was considered to perform best across all assessment factors considered collectively.

As noted in the response in section 7.7.2, community and stakeholder consultation formed part of the route option selection and assessment process.

An independent review of the process is not considered necessary.

7.7.2 Community engagement during route selection

Issue

Concerns were raised that community engagement during the route selection process was insufficient, unclear, and disadvantaged residents who were informed of the change late in the project planning lifecycle. There was a request for extra consultation with landholders on route selection.

A concern was also raised that landholders were not notified of the route change from west to east around Narromine.

Response

Consultation with the community and key stakeholders commenced in 2015. As described in section A4.2 of the EIS, engagement with the community and key stakeholders was carried out during three periods, which included route option assessment between February 2018 and July 2019.

During the route option assessment processes this consultation included (see Table A4.1 of the EIS for further details on individual activities):

- ▶ Establishing and operating communication and information tools, including the Inland Rail website, email address, project information phone line, fact sheets, proposal information packs, mail outs, e-newsletters, briefing papers, local media and social media updates, releases and contacts
- ▶ Meetings of the community consultative committee and sub-committees (Narromine, Gilgandra and Narrabri)
- ▶ Over 400 meetings with landholders, local councils, government agencies and other key stakeholders
- ▶ Eight town hall meetings and community information sessions in Narrabri, Baradine, Gilgandra, Curban and Narromine in 2018.

The study area with the route east of Narromine was announced on 30 November 2017 by the (then) Australian Minister for Infrastructure and Transport. Following this announcement, ARTC ran a print and radio campaign and attempted to contact all landowners in the study area via either phone, email or letter. Community information sessions were held in mid-December 2017, which included a session in Narromine where 185 people attended. While all attempts were made, ARTC acknowledges that not all landowners within the study area or the previous concept alignment to the west of Narromine may have been contacted directly before the community information

sessions in mid-December 2017. ARTC has since met with, or offered to meet, with all landowners within the study area as part of the route option assessment, with face-to-face meetings occurring between February 2018 and July 2019.

This consultation enabled local knowledge to be collected and considered in the options development and route selection processes. As described in section 7.7.1 of this report, the option selection and design process took into account the issues raised during consultation with relevant stakeholders, and the findings of environmental and engineering investigations.

7.7.3 Consideration of other routes as part of the process

Consideration of using the existing Dubbo to Coonamble line

Issue

A submission suggested that route selection should involve a thorough environmental (including hydrology) and economic benefit (including rural towns) assessment of the existing Dubbo to Coonamble line, and this should be provided to stakeholders prior to choosing study corridors. This would enable stakeholders to provide feedback.

Response

As described in the responses in section 7.7.1, a comprehensive review and assessment of potential options between Narromine and Narrabri was undertaken. The option selection and design process took into account the issues raised during consultation with relevant stakeholders, and the findings of environmental and engineering investigations.

Route options that followed existing rail lines, both before and after confirmation of the study area, were considered. This included a route via Coonamble. Further information is provided in section 2.4.3 of the Route Selection Summary Report.

7.8 Options considered

Narromine eastern alignment

Issue

Concerns were raised about the alignment to the east of Narromine. These included concerns about how this alignment was selected and the impacts of the eastern alignment compared with the western alignment. It was suggested that the eastern alignment will add extra costs, be slower, have higher flood risk and community impacts, and will create access issues. Another submitter noted that the eastern Narromine alignment has three acute angle turns between Narromine and Cobboco Road, and that the western alignment is shorter and straighter.

A submitter requested an explanation of the evidence that was used to select the eastern route alignment through the floodplain instead of the western alignment.

Response

As noted in the response in section 7.7.1, and described in section 3.3.1 of this report, the Planning Secretary directed ARTC to provide a preferred infrastructure report to include (amongst other matters) information on the 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.

Further information about why the study area to the east of Narromine was selected is provided in section 2.4.1 of the Route Selection Summary Report.

Concerns regarding proximity of proposed route to Narrabri

Issue

Concerns were raised about the proximity of the proposed route to Narrabri. It was suggested that alternative routes be considered as a result of the potential impacts of the route. It was suggested that an alternative route west of Narrabri would impact fewer people, facilitate regional development, reduce overall impacts, be cheaper, require less infrastructure and avoid Knight's Hill. The Narrabri Shire Council's preferred route should also be considered.

Further information as to why the route needs to go through Narrabri was requested, particularly as there is no planned stop in Narrabri.

Response

The *Melbourne–Brisbane Inland Rail Alignment Study* (ARTC, 2010) considered numerous route options. The study concluded that a more direct greenfield route between Narromine and Narrabri was preferred (see section 2.2.2 of the Route Selection Summary Report). In November 2017, the Australian Government confirmed the preferred study area for the proposal. The study area was located on the western outskirts of Narrabri (about 1.5 km from the Narrabri town centre) and encompassed an area about 1.5 km wide.

As described in section 6.2.4 of the EIS, five options within the study area were considered, with the preferred option being located further to the west from Narrabri relative to the other options considered. Further information on the route history and option selection process is provided in the combined Preferred Infrastructure/Amendment Report and supporting Route Selection Summary Report. This includes consideration of an alternative alignments near Narrabri (see sections 2.4.6 and 3.2.2 of the Route Selection Summary Report) and the justification for the preferred option selected.

Using existing rail lines

Issue

Submitters suggested that the railway use or align with more existing lines. Rail lines that were noted include the Coonamble/Gilgandra/Dubbo line, rail lines to the west and north of the Pilliga, and the east coast railway. It was suggested that using the Coonamble line would facilitate development of a freight intermodal terminal to connect the large grain growing areas to the north west to Inland Rail.

Response

As described in section A6.1.1 of the EIS and section 7.6 of this report, a number of alternative freight solutions (including upgrading the east coast railway) were considered during development of the Inland Rail program. The process for confirming the study area for the proposal, and refining and selecting the preferred corridor/alignment, is described in the responses in section 7.7.

The three key considerations in selecting any route option and preferred route are the ability to enhance the Inland Rail service offering, construction and operating costs, and the outcomes of a multi-criteria analysis. Route options that followed existing rail lines (including the Coonamble/Gilgandra/Dubbo line, rail lines to the west and north of the Pilliga, and the east coast railway), both before and after confirmation of the study area, were considered. The route selection process considered environmental, social, technical and economic factors. Section A6.2 of the EIS outlines the reasons why existing rail lines were not selected as part of the preferred option. Further information is available in the combined Preferred Infrastructure/Amendment Report and sections 2 and 3 of the Route Selection Summary Report.

As described in section A7.3.6 of the EIS, the proposal includes a connection with the existing Dubbo to Coonamble Line at Curban and four other connections with existing rail lines at Narromine and Narrabri, which would provide connectivity between Inland Rail and the existing rail network.

Inclusion of regional towns

Issue

Submitters requested that the proposal be required to provide a regional stop to provide benefits to inland communities. A submitter requested that Gilgandra be included on the line and that the existing track be used as loops for future development. Similarly, it was requested that stops be provided in Coonamble and at the Inland Port to enable business to utilise Inland Rail. It was suggested that a fee could be imposed to enable the proposal to recover the extra investment this would require.

Response

Sections A6.1.3 and A6.2 of the EIS describes the alternative route options that were considered for Inland Rail. This included consideration of routes that went through Coonamble, Gilgandra and Dubbo. The outcomes of the analysis undertaken concluded that a more direct route between Narromine and Narrabri was preferred. Further information is available in the combined Preferred Infrastructure/Amendment Report and sections 2 and 3 of the Route Selection Summary Report.

As described in section A7.3.6 of the EIS, the proposal includes a connection at Curban with the existing Dubbo to Coonamble Line and four other connections with existing rail lines at Narromine and Narrabri, which would provide connectivity between Inland Rail and the existing rail network.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, which may provide future opportunities for regional communities along the alignment to connect to Inland Rail.

How the route could be altered

Issue

Recommendations on how the route could be altered to decrease impacts and costs were provided, including:

- ▶ Using existing major roads
- ▶ Avoiding the Gilmours Road alignment
- ▶ Using Crown roads to save costs and reduce impact to farming land
- ▶ Reconsider the 2016 Concept Alignment Option A
- ▶ Consider an alternative Coonamble route travelling from west of Narromine, along Eumungerie Road to Eumungerie, then joining the existing line to Coonamble and continuing to follow the Coonamble to Baradine road to the Gwabegar line, then Gwabegar to Narrabri
- ▶ Reconsider option 101 with a possible variation running along the western side of the Newell Highway
- ▶ Travel near Bohena Creek for a short distance longer before heading up towards Yarrie Lake Road
- ▶ Avoid the Great Artesian Basin recharge zone.

Response

The process for confirming the study area for the proposal and refining and selecting the preferred corridor/alignment is described in the responses in section 7.7.

The three key considerations in selecting any route are ability to enhance the Inland Rail service offering, construction and operating costs, and the outcomes of a multi-criteria analysis. The process for identifying potential routes included following roads, property boundaries and Crown road reserves, where practicable. The route selection process considered environmental, social, technical and economic factors. The preferred route was selected as that which performed best across all factors when considered collectively.

Section A6.2.3 of the EIS outlines the reasons why the preferred route (as presented in the EIS) was selected, including why specific routes noted in the submissions were not selected.

Further information on the route history and selection process is provided in the combined Preferred Infrastructure/Amendment Report and sections 2 and 3 of the supporting Route Selection Summary Report. This includes information on why the study area and the preferred route are located within the Great Artesian Basin. Potential impacts on the Great Artesian Basin recharge zone were assessed by Technical Report 4—Groundwater assessment. The report concluded that no impacts are predicted.

8. Response to community submissions—procedural matters

8.1 Assessment and approval—process

Reliability and review of project documents

Issue

A submitter queried if the proposal's methodology, consultation and reports could be relied on, and if the project team had a commitment to honesty and integrity. It was recommended that project documents be independently reviewed for inconsistencies and inaccuracies.

Response

The EIS and supporting technical reports were prepared in accordance with the requirements of the EP&A Act, Schedule 2 of the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS.

The EIS and technical reports were reviewed by the (then) Department of Planning, Industry and Environment (DPIE) (now DPE), and other relevant NSW Government agencies, to confirm that they adequately addressed the SEARs prior to being finalised and placed on public exhibition. NSW Government agencies were also invited to provide submissions during the public exhibition period. Responses to the issues raised in these submissions are provided in section 5 of this report. DPIE also sought input from independent peer reviewers, and this input—and responses from ARTC—would be considered by the assessment officers prior to determination by the NSW Minister for Planning.

Project should not be approved

Issue

Some submitters noted that the proposal should not be approved. The reasons for this included that the proposal is not in the public interest; the impacts are unacceptable; the assessment was inadequate and not independent; a full cost-benefit analysis was not provided; detailed design and mitigation plans were not provided; and there was inadequate consultation. It was noted by some submitters that the proposal could not be approved until detailed assessment and design were completed.

Response

The need for, and strategic context to, the development of Inland Rail is described in chapter A5 of the EIS. The Australian Government has a clear commitment to developing Inland Rail, which has been identified as one of 15 major infrastructure projects to be prioritised for approval under a bilateral arrangement between the Australian, State and Territory governments.

Responses to issues raised about the adequacy of the EIS, the specialist assessments, and consultation undertaken are provided in the following sections.

The approval or otherwise of the proposal is a matter for the Minister for Planning.

8.2 Assessment and approval—adequacy of the EIS

Concern regarding the adequacy of and detail provided in the EIS

Issue

Submitters raised concerns that the EIS was inadequate, had insufficient detail, omitted certain topics and was not based on the detailed design. Concern was raised that negative impacts were not properly investigated. Some submitters felt this prevented the community from understanding how and why decisions were made. It was questioned why the EIS contained uncertainty in relation to future impacts.

Response

As noted in the response in section 8.1 of this report, the EIS and supporting technical reports were prepared in accordance with relevant statutory requirements, assessment guidelines and policies. The EIS was deemed to be adequate by DPIE (now DPE) prior to being finalised and placed on public exhibition.

The assessment presented in the EIS is based on a reference design and indicative construction methodology, and is considered sufficient to assess the environmental impacts, and inform the risks and issues potentially associated with the proposal. The further development of measures and design responses to respond to the identified issues and risks is a matter for detailed design and construction planning, which would be undertaken in accordance with the mitigation measures (provided in Appendix B of this report) and the conditions of approval. This is consistent with current practice for major project assessments in NSW and elsewhere.

The main EIS report must address the SEARs, statutory requirements and relevant guidelines. In doing so, it needs to address a wide range of technical assessment requirements, while also providing information to explain a project, its potential impacts, and management of these impacts on the community and other stakeholders. To make this information accessible to the general public, chapters in the main EIS provide a summary of the main findings of the technical assessments. It is not the purpose of the main EIS chapters to fully replicate the detail provided in technical reports. The technical reports that support the EIS provide the detailed results of the assessments undertaken.

The potential environmental impacts of the proposal have been assessed to enable the Minister for Planning to make a determination in accordance with Division 5.2 of the EP&A Act. As described in section 1.5.3 of this report, ARTC is proposing a number of design amendments to the proposal to address issues raised during consultation and in submissions, and to minimise the potential impacts of the proposal. A summary of the proposed amendments is provided in section 3.1 of this report. Further information is provided in the combined Preferred Infrastructure/Amendment Report and the Route Selection Summary Report, which are available separately.

The proposal would be designed, constructed and operated in accordance with the conditions of approval and all other relevant legislative requirements and approvals. The assessments undertaken to support the EIS, and the detail provided, are consistent with the requirements of the SEARs and relevant guidelines, as noted above. Measures to address property-specific issues would be developed as part of the detailed design process, in accordance with the mitigation measures and conditions of approval.

ARTC's approach to environmental management during construction and operation is described in section D5.2 of the EIS, including its commitment to manage its environmental responsibilities and environmental performance. DPE has clear guidelines on the process for post-approval matters such as development of the CEMP and associated management plans. Much of the detail cannot be finalised until a construction contractor is appointed, as they will be responsible for the day-to-day activities onsite. Further information on the post-approval process in NSW can be found at planningportal.nsw.gov.au/major-projects/assessment/post-approval.

The proposed post-approval plans would be prepared in accordance with the mitigation measures, conditions of approval, discipline-specific guidelines, consultation with key stakeholders, and the guidance presented in the technical reports that support the EIS.

Validity of the assessment

Issue

It was suggested that the EIS could not be accurate or valid. Some submitters noted this was due to it being based primarily on desktop assessment with minimal consultation undertaken.

Response

As noted in the above responses, the EIS and supporting technical reports were prepared in accordance with the requirements of the EP&A Act, the EP&A Regulation and the SEARs, as well as relevant issue-specific assessment guidelines and policies. Details of how these requirements have been met are provided in Appendices A and B of the EIS. In accordance with the requirements of the SEARs and issue-specific assessment guidelines and policies, individual assessments involved field investigations, surveying and sampling, modelling, and detailed analysis, as appropriate to each investigation. Further information about the methodology for each specialist assessment is provided in Technical Reports 1 to 14.

As described in chapter A4 of the EIS, the proposal design and EIS have been informed by the results of extensive consultation and engagement with the community and other stakeholders. As noted in the above responses, the specialist technical assessments have also been informed by consultation with, and the input of, relevant statutory agencies. Responses to issues raised about the adequacy of the specialist assessments and the consultation process are provided in sections 8.3 and 8.4, respectively.

EIS disclaimer

Issue

Concern was also raised about the EIS's disclaimer, which removes the authors' liability for the report, and that accuracy could not be assured as a result.

Response

The purpose of the legal disclaimer provided in consultants' reports is to confirm the limitations that apply to the contractual relationship between the client and consultant, including in relation to data supplied. Liability does not extend to anything outside the scope of work as contracted.

In accordance with clause 6(f) of Schedule 2 of the EP&A Regulation, the person/s preparing an EIS are required to make a declaration to the effect that:

- (i) the statement has been prepared in accordance with this Schedule, and*
- (ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and*
- (iii) that the information contained in the statement is neither false nor misleading.*

This declaration has been duly made for the EIS and is provided after the contents page in the main EIS document.

Independence of EIS

Issue

A submitter raised concern that the EIS was not independent as it was commissioned by ARTC.

Response

Applications for approval of projects in NSW, including local and regional development, State significant infrastructure and State significant development, are made in accordance with the requirements of the EP&A Act. In NSW, proponents of projects are responsible for preparing and lodging the EIS.

The proposal is declared State significant infrastructure and critical State significant infrastructure under Division 5.2 of the EP&A Act. As State significant infrastructure, the proposal is permissible without development consent and is subject to assessment and approval by the Minister for Planning.

In accordance with Division 5.2, section 5.16(1) of the EP&A Act, when an application is made for the Minister's approval for State significant infrastructure, the Planning Secretary is to prepare environmental assessment requirements in respect of the infrastructure. The environmental assessment requirements (the SEARs) must, in accordance with section 5.16(2), require an EIS to be prepared by or on behalf of the proponent in the form prescribed by the regulations. Section 5.17(1) provides that the proponent must submit an EIS as part of the application for approval of State significant infrastructure.

Study area and scope

Issue

A submitter suggested that the EIS needed to consider the Narromine to Narrabri area as a consolidated whole to understand links and connections. Another submitter noted that issues with the line east of Narromine has forced the proposed location for the railway further south than originally intended, and that several kilometres of the track is not included in the EIS study area.

Response

The EIS has considered all aspects of the proposal for which approval is sought, as described in chapters A7 and A8 of the EIS.

Residual assessment findings

Issue

A submitter noted that the residual impact assessment in Table B4.5 of the EIS provided no detail to support the conclusion that the residual impacts would be low during construction and operation.

Response

The environmental risk assessment (Appendix E of the EIS) was prepared early in the EIS process to assist with scoping potential issues and impacts in conjunction with those identified by the SEARs (as described in section A9.1 of the EIS). The assessment involved a preliminary desktop-level risk assessment to broadly identify potential environmental impacts and risks associated with constructing and operating the proposal.

Risks were rated according to the methodology used for the risk assessment, which was informed by the principles of the *Australian/New Zealand Standard AS/NZS ISO 31000:2009 Risk management – Principles and guidelines*. A number of these risks were rated as ‘high’ without the effect of mitigation. This identified that these risks and impacts required further assessment in the EIS, which was undertaken.

As described in section A9.2.4 of the EIS, the residual risk level of the potential impacts identified by the environmental risk assessment was assessed after mitigation and management measures were applied. The pre-mitigated risk level for key potential issues and impacts identified in the environmental risk assessment was compared to the residual risk level to assess the effectiveness of the mitigation and management measures.

A residual risk assessment is provided at the end of each chapter in Part B of the EIS. The mitigation and management measures that would be applied to manage these impacts are identified in the residual impact assessments. The significance of potential residual impacts (after application of these mitigation measures) is rated using the same approach as the original environmental risk assessment. This identified that, after application of mitigation measures, almost all risks would be rated as ‘low’ or ‘medium’.

8.3 Assessment and approval—adequacy and content of the specialist assessments

Responses to concerns raised regarding the adequacy of the specialist technical assessments that formed part of the EIS, including the adequacy of the assessment methodologies and concerns regarding omissions, are provided in this section. Responses to specific issues and concerns regarding the potential impacts of the proposal on the environment and community, and how these would be mitigated and managed, are provided in section 9 of this report.

8.3.1 Biodiversity assessment

Biodiversity assessment adequacy

Issue

Some submitters suggested that the biodiversity assessment inadequately addressed key topics, such as the Mitchell mouse (*Notomys mitchellii*), holy cross frog (*Notaden bennetti*), koala populations and their ability to move through culverts, groundwater dependent vegetation and ecosystems, and severance of the connection between the Warrumbungle Mountains and Macquarie Marshes.

Response

The biodiversity assessment is provided in Technical Report 1—Biodiversity development assessment report and summarised in section B1 of the EIS. The biodiversity assessment was undertaken in accordance with the SEARs, the *Biodiversity Assessment Method* (DPIE, 2020b), and relevant legislation and guidelines, as described in section B1.1.1 of the EIS. The biodiversity assessment has been updated as described in section 3.2.1 of this report.

The Biodiversity Assessment Method calculator specifies the type and extent of surveys required for a biodiversity assessment. The Mitchell’s hopping mouse (*Notomys mitchellii*) is presumed extinct in NSW and is not considered a species that requires targeted survey under the *Biodiversity Assessment Method*.

Surveys for frog species were conducted at river, creeks and dams, where conditions were appropriate. The survey results are provided in Appendix F to Technical Report 1. The holy cross frog is not listed as a threatened species under the *Biodiversity Conservation Act 2016* (NSW) and does not require targeted survey in accordance with the *Biodiversity Assessment Method*.

Surveys were conducted for the koala in the Pilliga forests and other sections in the study area, and included scat searches, spotlighting and call playback. Despite few records of the species during surveys, the koala was assumed to be present and offsets were calculated for impacts on important habitat areas (the Pilliga Area of Koala Significance as identified by DPIE (now DPE), as well as other areas along the alignment). In accordance with mitigation measure BD9, further surveys for the koala would be undertaken prior to construction commencing. Other mitigation measures are also proposed to minimise the potential impacts of the proposal on threatened fauna species, including the koala. These include measures to promote fauna connectivity. Further information is provided in the responses in section 9.1.3 of this report.

Gaps in description of the existing environment

Issue

Concern was raised that the biodiversity assessment did not mention the presence of weeds of national significance, such as the Hudson pear, within the study area.

Concern was also raised that the assessment did not mention the high-priority groundwater dependent vegetation and ecosystems of Quanda Quanda Creek.

Response

The presence of weeds, and potential impacts associated with weeds, are considered in various locations in Technical Report 1 and the updated biodiversity development assessment report. Section 5.5 of the reports specifically addresses weeds and section 5.5.2 discusses weeds of national significance, including two related prickly pear species recorded during surveys. Hudson pear (*Cylindropuntia rosea*) was not recorded during field surveys for the proposal; however, it is acknowledged that it is a declared weed in the LGAs in the study area.

The groundwater dependent ecosystem associated with Quanda Quanda Creek is described in section 5.7.4 of the updated biodiversity development assessment report and is mapped in Figure 5.2 of the report.

Validity of biodiversity assessment

Issue

Concerns were raised about the validity of the biodiversity assessment methodology, including representativeness of data collected during drought conditions, the extent of data and the study area considered, and evidence and accuracy of species and community identification.

Response

A detailed assessment of the potential impacts on biodiversity was undertaken in accordance with the SEARs, the Biodiversity Assessment Method and relevant legislation and guidelines.

Technical Report 1 describes the survey limitations due to access restrictions and drought. The assessment approach was also discussed with DPIE (now DPE). As noted in section 3.6.3 of Technical Report 1, the impact assessment and conclusions were based on threatened species recorded during the field surveys as well as species considered likely to occur or be impacted. The likelihood of occurrence assessment of threatened species was based on known distributional ranges of species, previous records, and habitat and resource availability in the proposal site.

Surveys were conducted in suitable habitat where practicable, taking into account access, time, and seasonal constraints. In most cases, some assumption of presence was required, based on known records, results of surveys, and habitat values. Where the likelihood of observing a particular threatened species was diminished due to the extent of survey effort, seasonal or climatic factors, this was indicated. Further surveys were conducted in spring 2020 and autumn 2021 to make the most of improved conditions.

As described in section 8.1.1 of Technical Report 1, investigations included an initial broader study area to identify key constraints early in the design process and assist with avoiding and minimising impacts, where practicable. ARTC has, where practicable, altered the proposal route to avoid and minimise ecological impacts during the proposal planning stage.

At the end of phase 1 of the route selection process, while a preferred option had been selected in some parts, a wider study area was defined to allow for a further phase of investigations to occur prior to confirming a preferred route. The phase 2 study area varied in width, from about 5-km wide south and east of Narromine to about 500 m in other sections. The results of early biodiversity surveys (e.g. the September and November 2018 surveys) and reviews of regional vegetation mapping assisting with refining the investigation corridor.

Once the construction footprint was confirmed, direct impacts were assessed within this area in accordance with sections 9.1.1.2 to 9.1.4.2 of the *Biodiversity Assessment Method*. Indirect impacts were assessed within 50 m of the footprint boundary in accordance with section 9.1.4.3 of the *Biodiversity Assessment Method*.

As described in section 3.2.1 of this report, the biodiversity development assessment report has been updated in consultation with DPIE's Biodiversity, Conservation and Science Directorate, taking into account the comments provided in their submission (see section 5.3 of this report) and discussions with Biodiversity, Conservation and Science Directorate representatives to confirm the approach to various matters raised. A key focus of the updated assessment has been revising the vegetation mapping, which included incorporating the results of the spring 2020 and autumn 2021 surveys.

Assumptions of the biodiversity assessment in relation to koalas

Issue

The assumption that koalas only travel up to 10 kilometres was questioned.

Response

The biodiversity assessment did not assume that koalas only travel up to 10 km. The area defined as the species polygon for the koala in the updated biodiversity development assessment report has been mapped based on results of fine-scale vegetation mapping, habitat assessment, targeted surveys, existing records and mapping of the Pilliga Area of Regional Koala Significance, and the findings of an independent expert report. The species polygon map has been prepared in consultation with DPIE's Biodiversity, Conservation and Science Directorate (see Appendix I of the updated biodiversity development assessment report).

In accordance with mitigation measure BD9, further surveys for the koala would be undertaken prior to construction commencing.

8.3.2 Noise and vibration assessment

Adequacy of the noise and vibration assessment

Issue

Some submitters raised concerns about the adequacy and validity of the noise and vibration assessment and the proposed mitigation measures. It was suggested that the noise assessment did not account for the worst-case scenario by using averages instead of maximum noise levels, and it did not assess differences between wet and dry periods.

Response

The construction and operation noise and vibration assessments (Technical Reports 8 and 9) were prepared by teams of qualified and experienced noise and vibration assessment specialists in accordance with the SEARs and relevant guidelines, including the *Interim Construction Noise Guideline* (DECC, 2009) and the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). These guidelines provide direction on the establishment of criteria with reference to background noise levels, and the impact assessment and mitigation processes. Maximum noise levels are considered in both the operational noise assessment and construction noise assessment (for sleep disturbance).

The construction noise assessment is based on representative 'realistic worst-case' scenarios based on the assumption that the loudest two items of plant and equipment for each activity are operating continuously at the outer edge of the construction footprint. As a result, the predictions identify worst-case construction noise levels, which may not be reached or only reached infrequently.

The modelling assumes weather conditions that are favourable for the carriage of noise and, as a result, represents a conservative scenario.

A range of mitigation and management measures would be implemented to manage the potential construction and operational noise and vibration impacts. Responses to specific issues about the potential noise and vibration impacts of the proposal are provided in sections 9.7 and 9.8 of this report.

Concern regarding the monitoring locations

Issue

Some submitters expressed concerns that monitoring stations were too far from their properties or did not include their residence. A submitter noted that the closest noise monitoring station to their property (M03) is on Eumungerie Road, over 10 kilometres from their property (Rosewood and Roslyn properties), and challenged the validity of the noise data.

Response

As described in section 4 of Technical Report 8, noise monitoring was undertaken at 21 locations and in accordance with relevant guidelines, including the *Industrial Noise Policy* (NSW EPA, 2001) and *Noise Policy for Industry* (NSW EPA, 2017). These locations were selected to provide a good representation of the existing noise environment. Locations were identified with reference to topography, distance from the proposal site and contribution from other noise activities, such as industry, road or rail noise. As a result, the monitoring data is considered to be valid and representative of the existing noise levels in the study area.

Residence included in the noise assessment

Issue

A submitter raised concern that their residence, located at 19721 Kamilaroi Highway Narrabri, was not included in noise assessment because their area is classified as industrial.

Response

This residential receiver was not included in the operational noise assessment (Technical Report 9) by error. The residence has now been considered as part of the updated operational noise and vibration assessment (see section 9.8.2 of the report for specific information regarding predicted operational noise levels at this property).

Lack of assessment of vehicle movements

Issue

A submission raised concerns that there had been no assessment of the additional noise caused by large farm machinery travelling along Seven Mile Road at Tonderburine.

Response

The proposal would only involve a minor realignment of Seven Mile Road to suit the proposed level crossing. As such, there would be no overall changes to traffic movements as a result of the proposal. The minor realignment was considered as part of the assessment of traffic noise undertaken by the construction noise assessment, with the results provided in Technical Report 8. Due to the low traffic numbers on this road, and distances to the nearest sensitive receiver, the road traffic noise criteria are not predicted to be exceeded.

Questions on the vibration assessment methodology

Issue

A submitter requested more information about how vibration impacts for properties were determined, and how they could be estimated without direct monitoring or consultation with landowners.

Response

The methodology for predicting vibration impacts is described in section 3.3.3 of Technical Report 8—Noise and vibration assessment—construction and other operations and in section 3 of Technical Report 9—Noise and vibration assessment—operational rail. In accordance with the relevant guidelines, the assessments are based on predicted vibration levels generated by construction equipment and operating trains.

8.3.3 Flooding assessment

Adequacy of flooding assessment

Issue

Submitters raised a number of concerns about the adequacy and accuracy of the flooding assessment, including:

- ▶ Modelling uncertainty was too high and the results in some locations were either over or underestimated
- ▶ Limited use of previous flood studies and local knowledge
- ▶ Inadequate current and future water flow and rainfall estimates
- ▶ Accuracy of inputs including data, which was collected in drought conditions and was not representative of wet conditions
- ▶ There was no assessment of climate change impacts on flooding
- ▶ Inconsistent catchment areas and waterway counts
- ▶ Concerns with the accuracy of the modelled inundation time, particularly around the Backwater Cowal, which can be inundated for extended periods due to heavy or regular rain
- ▶ Validity of assumptions being incorrect (e.g. bridge pylons do not collect debris).

Response

Modelling methodology and use of local knowledge

The flooding and hydrology assessment was undertaken, and Technical Report 3—Flooding and hydrology assessment prepared, by a team of qualified and experienced hydrological professionals in accordance with the SEARs and relevant guidelines and requirements. In particular, the assessment was undertaken in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019).

The hydrological models (RORB) and hydraulic models (TUFLOW) were independently reviewed by BMT (as noted in the updated flooding and hydrology assessment report) and were updated to address comments. In addition, as described in section 4 of Technical Report 3 (and in the updated flooding and hydrology assessment report described in section 3.2 of this report), ARTC has consulted with local landholders and other stakeholders to confirm that the flood modelling is representative of observed conditions and based on local knowledge. As such, any model uncertainty is within acceptable ranges for assessments of this nature.

Rainfall totals used in the flood modelling were obtained from the Bureau of Meteorology. These are based on records over an extended period of time and, as a result, they are not limited by short-term climate variability such as the recent drought.

The flood model calibration report, which forms Appendix J of the updated flooding and hydrology assessment report, provides further information about the hydrology and hydraulic models, including model selection, development, calibration and validation.

Mapping of potential impacts following construction of the proposal is provided in Appendix G of Technical Report 3 and in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results are provided for a range of flood events, from the 20% AEP event to the probable maximum flood (PMF) event. ARTC has undertaken meetings with landowners directly affected by the proposal, including discussion of flood modelling results to date.

In accordance with mitigation measure FH1, during the detailed design process, the design would continue to be refined, where practicable, to not worsen existing flooding characteristics. This would include detailed flood modelling. The additional flood modelling, and any mitigation identified as an outcome of modelling, would be undertaken and determined in consultation with impacted landholders. During this process, ARTC would provide more detailed information to landowners/landholders regarding the effects of the proposal at their properties and proposed mitigation and management measures.

Consideration of previous flood studies

A range of previous flood studies were considered as part of the assessment, as described in section 3.3.5 of Technical Report 3. The updated flooding and hydrology assessment considers additional flood studies, including the *Narromine Town Levee Concept Design* (SMEC, 2019) and the *Macquarie River (Narromine to Oxley) Floodplain Management Plan 2008*.

Climate change assessment

The climate change assessment involved modelling the 1% AEP event with a 22.8 per cent increase in rainfall depth, in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). This is based on the upper range projection for greenhouse gas concentrations for the year 2090.

Catchment areas and watercourses

Catchment areas of watercourses that flow across the study area were defined using LiDAR survey within 2 km of the proposal site and topographical data obtained from NSW Spatial Services at greater distances. Some inconsistency between catchment areas described in Technical Report 3 is noted and this has been addressed in the updated flooding and hydrology assessment report.

Descriptions of the regional catchments and watercourses that cross the proposal site are provided in section 5.1 of Technical Report 3 and in the updated flooding and hydrology assessment report. Due to the scale of the proposal, the assessment report does not include detailed descriptions of all individual watercourses that cross the proposal site.

Accuracy of modelled inundation time

It is noted that some areas, such as the Backwater Cowal, are slow draining after heavy or regular rainfall events, resulting in local ponding of water for periods of time. The proposal is not expected to change these characteristics. It is not practical to model local water ponding after rainfall events using the flood models. To reflect the nature of the models and the local water retention retained by natural topographic features, flood duration times referred to by the flooding and hydrology assessment relate to depths above 0.5 metres.

Assessment of debris on bridge pylons

In accordance with *Australian Rainfall and Runoff*, it is not required to apply a blockage factor due to floating debris to bridges. The minimum and maximum spans between bridge piers for all proposed bridges are 14 m and 33 m, respectively. This is a large opening and it is considered unlikely to be blocked by floating debris that would significantly impede flood flows. An appropriate bridge loss coefficient was included in the models to account for the bridge piers impeding flood flows, and this already adequately allows for any blockage by debris. No additional blockage due to debris is required in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). However, noting the sensitivity of the town of Narrabri to flooding, a sensitivity analysis was undertaken to assess potential afflux impacts due to flood debris collecting on the Narrabri bridge piers. The analysis, presented in the updated flooding and hydrology assessment report, predicts that there would be negligible afflux impacts and as such, this has not been included in the flood models.

Consideration of site-specific flooding conditions and impacts

Issue

Concerns were raised about the level of assessment and the perception that there was limited consideration of site-specific flooding conditions. Issues raised included:

- ▶ No consideration of hydrologic conditions of specific locations, such as catchment springs and seeps, the impermeable nature of the Sappa Bulga Range, and flood risk (such as fast-flowing flash floods) caused by the Warrumbungle Mountains.
- ▶ Embankments would result in re-routing of flood flows and increased erosion risks near culverts within the Narromine area.
- ▶ There are data limitations for some areas, such as the Gulargambone area east of the Castlereagh River.
- ▶ High rainfall data in the Sappa Bulga area was not factored into the flooding model as no weather stations are found in the area.
- ▶ Concern about the model used for the Webbs Siding and Wallaby Creek area, as the overland flow in this location, combined with Macquarie River outflow, is underestimated.
- ▶ Inappropriate assumptions regarding the flood immunity of the Dubbo to Narromine rail line, which could result in a major failure of the proposal embankment and significant impacts on farms and Narromine.
- ▶ ARTC has not undertaken accurate and robust flooding modelling nor demonstrated that the impact of the proposal on overland flows will not affect 'Trelawney Park' near Curban.
- ▶ The assessment of existing flood hazard conditions at the property 'Kamira' is incorrect as any increase in flood levels would impact the house and access.

Response

The modelling undertaken for the flooding and hydrology assessment considered flows in all catchments in accordance with the methodology in *Australian Rainfall and Runoff* (Ball, et al., 2019). The modelling included a comprehensive calibration and validation process to determine appropriate model parameters. The existing and operational flood hazard condition mapping and reporting is therefore considered to be accurate. The flood model calibration report (Appendix J of the updated flooding and hydrology assessment report) provides further information about modelling undertaken.

The modelling included specific locations and properties noted in submissions, such as the Sappa Bulga Range, the Warrumbungles, within the Castlereagh River catchment, and the Webbs Siding and Wallaby Creek area, including the interaction of flows with the Macquarie River.

It is acknowledged that there would be localised changes to flood flows due to the proposed embankments and culverts along the proposal site, including in the Narromine area. Culverts and bridges are generally located around existing drainage lines, watercourses and within floodplains and associated overflow areas to minimise changes to natural flow patterns.

In accordance with mitigation measure FH1, during the detailed design process the design would continue to be refined, where practicable, to not worsen existing flooding characteristics. This would include further detailed flood modelling, which would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

In accordance with mitigation measure FH2, further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection, and to confirm the extent and type of protection required. This would include consultation with landowners/landholders.

Rainfall totals used in the flood modelling were obtained from the Bureau of Meteorology. These are based on records over an extended period of time. In addition, design infiltration losses from *Australian Rainfall and Runoff* and *Review of ARR Design Inputs for NSW* (WMA Water, 2019) were used. As a result, infiltration losses used in the models are based on the underlying geology and landforms for the Sappa Bulga Range. Additionally, they are not limited by any site-specific data limitations, such as the absence of a weather station in the Sappa Bulga Range. It is acknowledged that the existing hydrological conditions are influenced by catchment springs and seeps from the Sappa Bulga Range. The proposal would not directly impact these and it has been designed to cater for the predicted flows.

Descriptions of the regional catchments and watercourses that cross the proposal site are provided in section 5.1 of Technical Report 3 and in the updated flooding and hydrology assessment report. The significance of all catchments that the proposal crosses is acknowledged and accounted for in the flood models. In particular, the large size of some of the catchments and their complex floodplain interactions, including the Macquarie River (and the Webbs Siding and Backwater Cowal overflow), Castlereagh River, and Namoi River/Narrabri Creek (including Bohena Creek), were analysed and used to estimate runoff from a catchment and predict peak flows.

In relation to the Dubbo to Narromine rail line flood immunity, a submitter identified that, following the 1955 flood event that resulted in partial failure of the railway embankment, a portion of the rail line was actually built lower between High Park Road and Tantitha Road as described in Technical Report 3. The flood modelling assumed that the existing railway embankment would not be washed away in a repeat of the 1955 event, which was about a 1% AEP event. The LIDAR data used for the assessment has confirmed the level for the existing rail line. As a result, it has been appropriately represented in the flood models. Further assessment of flooding in this area, including a dam break analysis, is provided in the updated flooding and hydrology assessment report.

Flood modelling information

Issue

Detailed information was requested on the flood model, including property-specific mapping and the size of flood modelling area.

Concern was raised that the results of the flood modelling completed by Narrabri Shire Council for the Narrabri Flood Management Plan does not align with the proposal's flood model. Similarly, it was suggested that the Castlereagh floodplain modelling is inconsistent with that shown in the *Melbourne–Brisbane Inland Rail Alignment Study* (ARTC, 2010).

A submitter requested a detailed hydrological study of the Webbs Siding and Wallaby Creek area with future-proofed data incorporating the future effects for the town of Narromine.

Response

The flood model areas are shown on Figure 3.4 of Technical Report 3 and in the updated flooding and hydrology assessment report. Presentation of maps for all areas, modelled events and potential parameters (including at a property-specific level) within an EIS is challenging. In some cases, this is a matter for detailed design. As noted above, ARTC has met with landowners/landholders directly affected by the proposal. This included discussion of the flood modelling (including flow routing) results to date. Web based mapping of existing flood extents and afflux for the 1% AEP event is also available on ARTC's Inland Rail web site at <https://inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri/consultation/>

Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal (as updated). Mapping of potential impacts following construction of the proposal is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results are provided for a range of flood events, from the 20% AEP event to the PMF event. Potential impacts on buildings, roads, existing rail lines and land use are assessed. Detailed flood mapping provides an indication of the potential impacts on properties.

Further detailed flood modelling would be undertaken as an integral part of the detailed design process. The additional flood modelling, and any mitigation and management measures identified as an outcome of modelling, would be undertaken in consultation with affected landowners/landholders. In conjunction with the modelling, ARTC would provide more detailed information to landowners/landholders regarding the effects of the proposal at their properties, and proposed mitigation and management measures.

A range of previous flood studies were considered as described in section 3.3.5 of Technical Report 3 and the updated flooding and hydrology assessment report. The *Gulargambone Flood Study Report* (Jacobs, 2016) defines flood behaviour for the towns of Gulargambone as a result of flooding in the Castlereagh floodplain from the Castlereagh River and Gulargambone Creek. The extents of this study are not within the study area for the proposal. With reference to the Castlereagh River floodplain areas shown in the *Melbourne–Brisbane Inland Rail Alignment Study* (ARTC, 2010), Technical Report 3 and the updated flooding and hydrology assessment are based on detailed investigations and modelling undertaken since the 2010 report was prepared.

Buildings considered by the flooding and hydrology assessment (as described in Technical Report 3 and the updated flooding and hydrology assessment report) include all residences, educational facilities, health facilities, community facilities, commercial/industrial premises, and other structures such as garages. The floor levels of buildings were adopted from survey where available or were estimated as 0.3 metres above ground level. ARTC believes there is a sound basis for its flood modelling processes. There could be a range of reasons why the estimated number of buildings differ between the flood model for the proposal and Narrabri Shire Council's *Narrabri Floodplain Risk Management Study and Plan, Volume I: Supplementary Flood Study—Namoi River, Mulgate Creek and Long Gully* (WRM, 2019), including differences in the study area and buildings included in the assessments, and different assumptions regarding floor levels.

The updated flooding and hydrology assessment considers additional flood studies, including the *Narrabri Floodplain Risk Management Study and Plan*.

Detailed flood modelling of the Webbs Siding and Wallaby Creek area is provided in the updated flooding and hydrology assessment report. Potential impacts on Narromine are also considered.

Questions on flood assessment

Issue

A submitter requested further detail on the flooding and hydrology assessment, including:

- ▶ Definitions of watercourses
- ▶ Clarification of the meaning of poorly managed watercourses and which watercourses are considered to be poorly managed
- ▶ How flooding predictions were made for the Warrumbungle Mountain area and the data that was used, given that the catchment areas are much larger than the modelled extents
- ▶ What hydraulic modelling has been done for the Yarrandale Road and Box Bridge Road areas
- ▶ The proportion of the proposal site that has been subject to flood modelling
- ▶ How the flood model accounts for the removal of water from the landscape given that the afflux mapping shows areas as 'was wet–now dry'; however, there is no corresponding 'was dry–now wet' in the local area
- ▶ Clarification as to how the proposal would result in a reduction of impacts on land uses
- ▶ Request to view the flood modelling results.

Response

Descriptions of the regional catchments and watercourses that cross the proposal site are provided in section 5.1 of Technical Report 3 and in the updated flooding and hydrology assessment report. In terms of the definition of watercourses, in accordance with WaterNSW's definitions of water terms, the EIS considers a watercourse to be the path of the main flow of surface water along its extent, variously referred to as streams or rivers (as relevant). These include creeks mapped by the NSW Office of Water (2012).

The geomorphological assessment (section 5.3 of Technical Report 3) considered the existing condition of watercourses in accordance with the rapid condition assessment methodology of Outhet and Cook (2004). The geomorphic condition of watercourses in the context of natural and human-induced variability is classified into three broad categories: good (e.g. natural and intact), moderate (e.g. noticeably impacted by human disturbances) and poor (e.g. degraded). The category of 'poor' would be relevant to 'poorly managed watercourses' noted in the submission. Table 5.24 of Technical Report 3 identifies the geomorphic condition of watercourses crossed by the proposal. As described in section 3.2 of this report, the flooding and hydrology assessment has been updated since exhibition of the EIS. The updated assessment includes revised quantitative design limits, additional assessment regarding velocities at culverts, additional assessment of geomorphological impacts, and further information on proposed scour protection.

Detailed flood modelling was undertaken for the proposal as described in Technical Report 3 and summarised in section B3 of the EIS. The assessment is based on detailed hydrologic and hydraulic modelling performed for the full proposal site extent. The modelling methodology, and all inputs and parameters, including those for the Warrumbungles, Yarrandale Road and Box Ridge Road areas, are described in section 3 of Technical Report 3 and in the updated flooding and hydrology assessment report. The entire catchments for areas like the Warrumbungles were used for the RORB hydrology models. These models provide an estimation of runoff from a catchment and prediction of peak flows. The TUFLOW hydraulics model (shown on Figure 3.4 of Technical Report 3) are then used to model and map existing and predicted flooding within the area of affectation of the proposal, which is a smaller area than the larger catchment. Specific results for the Warrumbungles catchments (including those between Yarrandale Road and Box Bridge Road) are provided against TUFLOW models N2N8, N2N9 and N2N10.

The flood model calibration report (Appendix J of the updated flooding and hydrology assessment report) provides further information about the flooding modelling.

The afflux mapping in Technical Report 3 provides an indication of changes in flooded areas towards the edges of the flood extents. Due to the scale of the mapping and GIS line work used it overemphasised the changes in some areas, while in others, it was underemphasised. Additionally, some changes can be explained in terms of areas that are no longer flooded, as a result of increased depth of flooding immediately near a culvert for example. The mapping has been refined in the updated flooding and hydrology assessment report.

Technical Report 3 and the updated flooding and hydrology assessment report provide a summary of impacts on land uses that represent the dominant land uses in the study area, being forestry, grazing, cropping and horticultural uses. Changes in areas impacted vary along the proposal site and can be explained as either conversion of the pre-existing land use to a rail corridor, or localised changes in flood extents, similar to that explained above in relation to dry and wet areas.

In terms of the request to view the flood modelling results, all modelling results are presented in Technical Paper 3 and in the updated flooding and hydrology assessment report. Mapping of potential impacts following construction of the proposal is provided in the updated report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results are provided for a range of flood events, from the 20% AEP event to the PMF event. Potential impacts on buildings, roads, existing rail lines and land use are assessed.

8.3.4 Traffic and transport assessment

Adequacy of traffic and transport assessment

Issue

Some submitters indicated that the traffic and transport assessment was inadequate. A concern was raised that the assessment did not include a traffic and access management plan.

Response

The traffic and transport assessment was undertaken, and Technical Report 10—Traffic and transport assessment prepared, in accordance with the SEARs and relevant assessment guidelines listed in section B11.1.1 of the EIS. The assessment identified potential impacts associated with the proposal and mitigation measures to be implemented to address these impacts.

As noted in section 8.2 of this report, DPE has clear guidelines on the process for post-approval matters such as development of the CEMP and associated management plans. Much of the detail cannot be finalised until a construction contractor is appointed, as they will be responsible for the day-to-day activities onsite. In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Assessment of farm traffic and counts during harvest time

Issue

A concern was raised that the traffic assessment did not include assessment of farm traffic crossing over tracks or private level crossings. A submitter raised concern that traffic counts were not undertaken during harvest time.

Response

The movement of farm traffic across the proposal site was considered in section 6.2.2 of Technical Report 10—Traffic and transport assessment.

Existing traffic data and additional traffic counts were undertaken as described in section 4.2.1 of Technical Report 10. As described in section 3.3. of Technical Report 10, the traffic and transport assessment methodology included using traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing. However, the prevailing drought conditions at the time the traffic surveys were undertaken affected the harvest period and it was noted that those traffic surveys may not be representative of the levels and types of vehicles during a typical harvest period. As a result, additional traffic counts were undertaken in November 2020 during a harvest period that produced a higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. These results have been used to review the proposed level crossing treatments, which has led to changes as described in the combined Preferred Infrastructure/Amendment Report.

To understand the potential impacts of higher level of traffic activity, the traffic analysis at the Castlereagh Highway level crossing has been updated using harvest period traffic volumes (see section 3.2 of this report). The assessment found that there would still be a maximum delay of 96 seconds associated with the level crossing in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 kilometre per hour train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS—at 66 and 74 metres, respectively.

Questions on crash statistics

Issue

A submitter requested further information on the five-year crash history data presented in Table B11.5 of the EIS, including whether the reporting period included 2018 and the location on the Newell Highway where the 17 crashes occurred. Clarification on the number of fatalities in total, and how many fatalities involved articulated trucks, was also requested.

Response

As outlined in section B11.2.2 of the EIS, and detailed in section 4.2.3 of Technical Report 10—Traffic and transport assessment, five-year crash history data was obtained for the period between July 2013 and June 2018 for key roads in the study area.

A breakdown of the locations of crashes was also provided, with not more than five fatal incidents occurring within one section of Newell Highway. The study area of Newell Highway included Parkes to Moree. From the data, 18 per cent of the reported incidents involved heavy vehicles.

Further review of the ratio of casualties per 100 million vehicle km travelled was also undertaken. This demonstrated that the crash profile of the study area is similar to the NSW average.

8.3.5 Non-Aboriginal heritage assessment

Adequacy of methodology

Issue

Concerns were raised about the assessment methodology for the non-Aboriginal heritage assessment, including the validity of desktop heritage assessments and whether ground truthing was undertaken.

Response

The non-Aboriginal heritage assessment was undertaken, and Technical Report 7—Non-Aboriginal heritage assessment and statement of heritage impact prepared, by experienced cultural heritage assessment professionals in accordance with the SEARs, and relevant legislation, policies and assessment guidelines, as summarised in section B7.1.1 of the EIS.

As described in section B7.1.2 of the EIS, site surveys were undertaken for heritage and potential heritage items where public access was available. Where access through private property was not available, items were viewed from public areas and roadside locations. Seven potential heritage items identified during the survey could not be thoroughly inspected due to access restrictions (see section 5.1 of Technical Report 7). Descriptions of heritage items considered during the site survey are provided in section 5.3 of Technical Report 7.

Previous heritage assessments and studies reviewed for the desktop assessment are listed in section 4.5 of Technical Report 7. These included local heritage studies undertaken by Coonabarabran and Coonamble Shire Councils, and reports prepared as part of the Regional Forestry Agreement assessments. As noted in section 4.3.2 of Technical Report 7, consultation with local historical societies was undertaken to identify and source further information on potential heritage items.

8.3.6 Agriculture and land use assessment

Adequacy of agricultural assessment

Issue

Concerns were raised that the agricultural assessment omitted or underassessed issues of importance, including:

- ▶ Farm productivity loss caused by land segregation and land loss
- ▶ Agricultural impacts, such as loss of production, increased costs and liabilities, management of stock and machinery movement across the railway line
- ▶ Loss of income to farms during construction and operation
- ▶ Compensation mechanisms.

Response

Issues and potential impacts in relation to property severance, operations and access to and within properties are considered in chapter B12 of the EIS, with further detail provided in Technical Report 11—Agriculture and land use assessment and Technical Report 13—Social assessment. The agriculture and land use assessment was undertaken in accordance with the SEARs and the requirements of relevant policies and assessment guidelines, as summarised in section B12.1 of the EIS.

The assessment identified that property severance could affect a property's efficiency, productivity and viability, e.g. as a result of changes to access arrangements for the movement of farm machinery or stock to different areas of a property. The EIS acknowledges that some severed portions of properties may become unviable due to the size of the remaining area, configuration or access. These impacts would differ for each property. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

A range of mitigation measures has been developed as an outcome of the assessment to mitigate the potential impacts identified. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Property-specific measures to respond to the impacts of the proposal would be determined in consultation with individual landholders/landowners as part of the detailed design and construction planning process:

- ▶ In accordance with mitigation measure LP3, during the property-acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties.
- ▶ Amended mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable.

ARTC acknowledges the issues raised regarding individual properties. Detailed and specific measures for private properties would need to be determined in consultation with individual affected property owners/operators. The land use and property mitigation measures have been updated to provide more clarity about ARTC's commitments in relation to property access. Further information, including information about compensation, is provided in the responses in section 9.11 of this report.

Assessment of biosecurity and weed management

Issue

Some submitters expressed concern that the agricultural assessment did not consider biosecurity and weed management.

Response

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and included in Appendix A of Technical Report 11. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs. Further information about the approach to managing biosecurity risks is provided in the response in section 9.11.6 of this report.

8.3.7 Landscape and visual assessment

Adequacy of landscape and visual impact assessment

Issue

Concerns were raised about the adequacy of the landscape and visual assessment, including:

- ▶ The assessment underestimated the visual and landscape effects of the proposal
- ▶ Impacts on individual properties are not assessed
- ▶ The assessment does not demonstrate that the proposal would not result in adverse visual impacts
- ▶ Views towards local mountains, such as the Warrumbungle Mountains, are not considered
- ▶ The assessment for landscape character zone 3 (Warrumbungle Slopes and Uplands) is misleading, with the photographs used not reflective of the character of the natural environment.

Response

The landscape and visual assessment was undertaken, and Technical Report 12—Landscape and visual impact assessment prepared, by a team of qualified and experienced landscape architects with experience in visual impact assessment of transport infrastructure projects. The assessment was undertaken in accordance with the SEARs and guidelines for visual impact assessment in NSW.

The assessment methodology is summarised in section B13.1.2 of the EIS and is described in more detail in Technical Report 12. The assessment considers potential impacts on representative sensitive viewpoints and provides a more general assessment of the potential impacts on sensitive receivers. It does not provide an individual property-specific assessment or assessments for all sensitive views as this is not required by the SEARs or the assessment guidelines. As described in section B13.2.2 of the EIS, sensitive visual receivers within the study area include:

- ▶ Residents of rural properties and residential areas on the outer edges of Narromine and Narrabri that have views to the proposal site
- ▶ Road users
- ▶ Rural and industrial workers
- ▶ Visitors to recreational areas/lookouts with views to the proposal site.

A total of 32 viewpoints were selected as representative locations to assess the potential visual impacts of the proposal. The locations of the viewpoints are representative of the range of views to the proposal site.

Although viewpoint photos were not taken from private properties, photos were taken on publicly accessible land adjacent to private properties where properties would have views towards the proposal. The viewpoint photos are representative of views from these properties. This is in accordance with *Environmental Impact Assessment Practice Note—Guideline for landscape character and visual impact assessment* (Roads and Maritime Services, 2018), which notes that representative viewpoints can be used as part of the assessment when a viewpoint on private property cannot be physically accessed.

Of the 32 selected viewpoints, 10 viewpoints are representative of views from residents of private properties (viewpoints VP01, VP03, VP04, VP09, VP19, VP20, VP21, VP22, VP30 and VP32).

Viewpoint 12 was identified as having views toward Table Top Mountain (located within the Warrumbungle slopes and uplands landscape character zone). The viewpoint was assessed as having a negligible visual impact during operation as the rail line would not be visible.

8.3.8 Socio-economic assessment

Adequacy of socio-economic assessment

Issue

A number of submitters raised concern about the adequacy of the socio-economic assessment.

Response

The social and economic assessments were undertaken and the reports (Technical Report 13—Social assessment and Technical Report 14—Economic assessment) were prepared by teams of qualified and experienced social and economic professionals in accordance with the SEARs, and relevant issue-specific assessment guidelines and policies, including *Social impact assessment guideline for State significant mining, petroleum production and extractive industry development* ('the social impact assessment guideline') (Department of Planning and Environment, 2017) and *Environmental Impact Assessment Practice Note: Socio-economic assessment* (Roads and Maritime Services, 2013a).

The reports also present factual, balanced assessments in accordance with the SEARs and other relevant policies and guidelines (listed in section B14.1 of the EIS). These guidelines provide a framework for assessing social and economic impacts to ensure assessments are carried out consistently, to a high standard, and are properly integrated with other environmental assessments, design development and management processes.

The EIS (including Technical Report 13 and Technical Report 14) was reviewed by DPIE (now DPE) to confirm that it was adequate, and addressed the SEARs prior to it being finalised and placed on public exhibition.

As described in section 3.2 of this report, an addendum social assessment has been prepared to provide additional information on the social assessment and its findings.

Issues not considered

Issue

Submitters raised concern that the EIS lacks detailed assessment of a range of social and economic issues including:

- ▶ Effect on health and mental health
- ▶ Community cohesion character and culture
- ▶ Personal and property rights
- ▶ Benefits and costs for rural areas, particularly where there are no planned rail stops
- ▶ Economic costs of transit times and accidents

Response

Potential socio-economic impacts are summarised in chapter B14 of the EIS and detailed in Technical Report 13 and Technical Report 14. The assessments considered a range of socio-economic issues in accordance with the SEARs, and other relevant legislation and guidelines (listed in section B14.1 of the EIS).

The social assessment provided in Technical Report 13 considers potential health (including mental health) impacts (section 7.5.4) and impacts on community cohesion (section 8.5).

Due to the nature of the incremental assessment approach adopted for the EIS, the economic assessment (Technical Report 14) did not include a proposal-specific cost-benefit analysis as the results would not capture the full benefits that are expected to be delivered upon completion of Inland Rail.

Transit times were derived from the demand modelling that was undertaken for the *Inland Rail Programme Business Case* (ARTC, 2015). As described in section 4.4.3 of Technical Report 14, the economic analysis uses the relevant origin destination pairs for each link. The EIS included an economic assessment, undertaken by KPMG (Technical Report 14). This assessment, which was undertaken in accordance with the SEARs, identifies potential economic benefits and impacts on affected local and regional communities and businesses (including consideration of transit times and crash cost savings), and assesses the projected economic benefits of the proposal.

Accident costs were derived from the reduction in heavy vehicle traffic (vehicle kilometres travelled) on the road network as a result a shift of freight from road to rail. Accident cost parameters were derived from standard economic guidance using the frequency and severity of incident by mode and a cost by incident type, as described in section 4.4 of Technical Paper 14.

8.3.9 Air quality assessment

Adequacy of the air quality assessment and pollutants considered

Issue

Some submitters were concerned that the air quality assessment was insufficient and did not account for local impacts, provide adequate mitigation measures, justify air quality impacts, or provide maps displaying air quality effects.

A submitter questioned why the impacts of some pollutants on nearby residents were excluded from the air quality assessment, including the impacts of PM₁₀ and PM_{2.5} and other carcinogenic substances.

A concern was also raised that the air quality assessment was not a full technical report and was qualitative.

Response

The air quality impact assessment for the proposal is provided in chapter B10 of the EIS. The assessment was undertaken by air quality assessment specialists with experience conducting assessments of rail projects. It was undertaken in accordance with the SEARs and other relevant legislation and guidelines (listed in section B10.1.1 of the EIS). The assessment was reviewed by relevant government agencies and deemed to be adequate.

The operational air quality assessment included consideration of key pollutants relevant to train emissions, such as nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM₁₀ and PM_{2.5}) and benzene, in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2016) (the Approved Methods). The criteria in the Approved Methods provide for the protection of human health and the environment.

The operational air quality assessment was undertaken based on a review of the proposal, the background air quality, and location of sensitive receptors in relation to the proposal. As described in section B10.4 of the EIS, the majority of the proposal traverses a rural area with few sensitive receivers and low background emission levels compared to other transport corridors in NSW.

A quantitative air quality assessment was undertaken for locomotives idling at crossing loops. It used estimated locomotive emission rates and dispersion modelling to determine the distance from crossing loops at which compliance with the most critical air pollutant criteria would be achieved. The conservative dispersion modelling assessment found that compliance with the criteria was achieved within 25 m of crossing loops. No receptors were found to be within 25 m of the proposed crossing loop locations. As a result, the assessment concluded that there would be no regional or localised impacts from locomotives idling at crossing loops.

A qualitative air quality assessment was undertaken for train movements along the proposed rail line. The assessment involved reviewing emissions from a rail line with higher volumes of trains and emissions than the proposal, in an area with higher existing background levels of particulate matter and maximum measured nitrogen dioxide concentrations. The assessment referenced the *Northern Sydney Freight Corridor Strathfield Rail Underpass Air Quality Assessment* (Parsons Brinckerhoff, 2012) when considering potential worst-case emissions from locomotives for the proposal, including emissions of nitrogen dioxide, sulfur dioxide, carbon monoxide, PM₁₀, PM_{2.5} and benzene. The 2012 assessment was a quantitative assessment undertaken in accordance with the Approved Methods. It predicted compliance with the criteria for all modelled pollutants within 50 m of the track. Operational train movements for the proposal would be substantially lower than those considered by the 2012 reference study and the background pollutant concentrations are lower for the proposal. As a result, the operational emissions are expected to be much lower for the proposal than the reference study.

Data used

Issue

A submitter queried whether the air quality assessment adequately used data and why the highest 30 per cent of polluted days were excluded.

Response

As described in section B10.2.1 of the EIS, the 70th percentile 24-hour concentration was adopted for background values for PM₁₀ and PM_{2.5} to assess the potential construction impacts. Based on industry best practice this method is considered appropriate for assessing potential impacts during construction given the intermittent and changing location of the likely air emissions.

The incremental impact (not including background) of a project is determined by assuming that worst-case meteorological conditions occur simultaneously with worst-case emission rates. The cumulative impact is then determined by adding the incremental impact to the background values. The 100th percentile background values are adopted for operational air quality assessments for projects that have long operational lifespans. Adoption of the 100th percentile background values for the construction phase of the proposal would result in an unreasonably conservative approach.

8.3.10 Geotechnical assessment

Geotechnical sampling data

Issue

It was questioned why geotechnical sampling data was not included in the EIS and suggested that a geotechnical assessment needs to be completed prior to the commencement of the proposal.

Response

Geotechnical investigations were undertaken to inform the route selection process, proposal design and preparation of the EIS. These included 90 boreholes and 250 test pits. Samples were collected and subjected to laboratory analysis. The results of the geotechnical analysis were used to inform the soils and contamination assessment for the EIS, as described in section B4.1.2 of the EIS. Further geotechnical investigations would be undertaken to inform detailed design and construction of the proposal.

8.4 Stakeholder engagement

8.4.1 Adequacy and information provided

Adequacy of the consultation process and the information provided

Issue

Some submitters expressed concerns that they did not receive adequate information about the proposal or enough consultation throughout the planning stage. Issues raised included:

- ▶ Inadequate responses provided by project teams or at Community Consultative Committee meetings
- ▶ Information was confusing and was not presented in simple terms
- ▶ Concerns were not addressed and people were not treated respectfully
- ▶ Calls to the 1800 consultation hotline were not answered
- ▶ Consultation staff had a high turnover and may not relay community concerns correctly
- ▶ The EIS and consultation report do not represent an accurate account of the consultation processes undertaken.

Response

Consultation with the community and key stakeholders commenced in 2015. As described in section A4.2 of the EIS, supported by the consultation report provided in Appendix C of the EIS, engagement with the community and key stakeholders was carried out during the following three periods of consultation prior to exhibiting the EIS:

- ▶ Inland Rail announcement and preliminary consultation—2015 to end 2017
- ▶ Route option assessment—February 2018 to July 2019
- ▶ Preliminary design development and environmental assessment—July 2019 to October 2020.

During this period, the following consultation activities were undertaken:

- ▶ Establishing and operating communication and information tools, including the Inland Rail website, email address, project information phone line, fact sheets, proposal information packs, mail outs, e-newsletter, briefing papers, local media and social media updates, releases and contacts
- ▶ Meetings of the community consultative committee and sub-committees (Narromine, Gilgandra and Narrabri)

- ▶ Eight town hall meetings and community information sessions in Narrabri, Baradine, Gilgandra, Curban and Narromine in 2018
- ▶ Community information sessions in Narromine in August 2019
- ▶ Community information sessions in Narromine, Gilgandra, Baradine, Curban and Narrabri in March 2020
- ▶ Community information sessions at Narromine, Gilgandra, Curban, Coonamble, Baradine and Narrabri in October 2020
- ▶ About 200 face-to-face meetings with landholders in February 2018
- ▶ Meetings with about 100 landholders between July 2019 and February 2020
- ▶ Meetings with about 92 landholders between July and October 2020
- ▶ Distribution of project newsletters
- ▶ Meetings with local and NSW government agencies, community and business groups, and other key stakeholders between July 2019 and February 2020
- ▶ Online EIS briefings during August 2020 with the Community Consultative Committee; Australian, NSW and local government agencies; and the general public.

The purpose of consultation was to raise awareness about Inland Rail and the proposal, understand community and stakeholder issues, and obtain important feedback to help shape the proposal's route, design and environmental assessment. Further information is provided in chapter A4 of the EIS.

The consultation contributed to the project team's understanding of the potential impacts, and has enabled the design to respond to, and minimise, potential impacts as far as practicable. Measures to minimise and manage impacts that cannot be avoided have been developed as an outcome of the environmental assessment process, as described in the chapters in Parts B and C of the EIS. Impacts would continue to be minimised through the detailed design and construction planning phases, taking into account the input of stakeholders and the local community, and in accordance with the mitigation measures and conditions of approval (if approved).

The SEARs require that the proposal must be informed by consultation, including with relevant State and local government agencies, infrastructure and service providers, special interest and industry groups (including agriculture businesses), affected landowners, businesses and the community. Based on the consultation undertaken as described above, in chapter A4 of the EIS, and in section 3.4 of this report, this requirement is considered to have been met.

Since November 2018, ARTC's engagement has been guided by the requirements of the SEARs. ARTC has worked hard to engage in an open and ongoing manner with interested community members, industry groups and affected landowners. This has included over 1,000 meetings with landowners/landholders and other stakeholders, and over 25 information sessions.

While ARTC endeavours to regularly review practices, ARTC acknowledges that there may be instances where consultation may not have met the expectations of stakeholders. On these occasions, ARTC seeks to rectify any issues as promptly as possible, ensuring that consultation practices adhere to values of building trust, credibility and visibility.

ARTC acknowledges the need for ongoing consultation. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders (including landowners/landholders and community members) with opportunities for input to design and construction planning, in accordance with the communication management plan for the proposal.

As noted above, in accordance with mitigation measure SE1, ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy. Information on the proposal's impacts

Issue

Some submitters raised concerns that they were not consulted or provided information about the proposal and its impacts.

Response

ARTC has committed to continue to liaise with property owners and landholders on relevant aspects of the proposal, including potential property impacts and measures to address these impacts. A range of mitigation measures confirm this commitment, which has been strengthened by amendments to a number of the measures

originally provided in the EIS. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to design and construction planning in accordance with the communication management plan for the proposal.

In accordance with mitigation measure SE1, ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy. The mitigation measure provides for the development and implementation of a proposal-specific communication management plan prior to and during construction, to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquires and complaints received via email, phone or in-person are managed and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

Other mitigation measures commit to ongoing consultation in relation to specific issues, detailed design, construction planning, and the development of the proposed management plans, including (but not limited to) measures FH1, AH2, AH3, AH5, AH6, AH8, AH9, NAH7, CNV-CI1, ONV2, ONV3, TT4, LP1, LP2, LP5, LP6-LP10, LP13, LP14, LP15, SE-CI2, WM2, WR9, WR13, FH4 and FH5 (see Appendix B for a full list of mitigation measures).

In particular, in accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Mitigation measure LP4 provides that property owners and occupants would be consulted in accordance with the communication management plan, to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

In accordance with new mitigation measure LP5, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented in consultation with landholders to address identified issues, where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

Further information in response to issues raised and additional information requested about the impacts of the proposal is provided in the responses in section 9 of this report.

Lack of consultation about proposed use of property for construction infrastructure

Issue

Submitters raised concerns that the EIS suggests that construction infrastructure would be located on their property without consultation. Submitters noted that compensation for the impact of construction activities on their property had not been discussed or agreed with ARTC, and that consent was not given for their land to be used for construction.

Response

The location of construction infrastructure shown in the EIS is subject to further refinement during detailed design and construction planning, and further consultation with the landowners. No construction infrastructure would be located on properties without agreement and compensation.

Initial consultation with all directly affected landholders commenced in mid 2020 and ARTC formally commenced the acquisition process in 2021. ARTC will hold direct discussions with each landholder as part of the process. This will include consideration of temporary use of land during the construction phase.

Detailed consultation in relation to those properties with the potential to be directly affected by construction and/or operation would be undertaken in accordance with mitigation measure LP3. Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable.

In accordance with mitigation measure LP3, during the property-acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. Agreements may include (for example):

- ▶ Measures to minimise property impacts, including impacts on agricultural operations
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible
- ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (such as new or adjusted accesses to the public road network or internal access networks), divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of, affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

In accordance with mitigation measure LP2, all property acquisitions would be undertaken in consultation with landowners/landholders and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). As described in section A8.10.5 of the EIS, lease agreements would be established with the relevant landowners for temporary land requirements (including for construction infrastructure) that are in addition to the permanent land requirements. Further information in response to issues raised about the acquisition process is provided in section 9.11.1 of this report.

8.4.2 Consultation process

Queries about the consultation process

Issue

Some submitters queried the consultation process and requested further information/clarification such as:

- ▶ Clarification on accountability if attendees' names are not released after workshop decisions are made
- ▶ Further consultation with the construction team to deal with and prevent problems associated with works on the property
- ▶ Directly affected properties should be directly contacted and advised what is planned in detail
- ▶ Information on ARTC's engagement obligations
- ▶ Whether the Department of Planning and the Minister would meet with landowners and the community.

Response

ARTC's values and obligations commit the organisation to active engagement with stakeholders and the community. ARTC's approach to communication and engagement is to:

- ▶ Ensure engagement activities meet the needs of the community and stakeholders
- ▶ Ensure project team members, stakeholders and the community understand their roles and responsibilities to deliver the Inland Rail Program
- ▶ Support the overall program objectives through active engagement.

The ARTC Inland Rail Communications and Engagement Strategy provides the overarching communications and engagement framework for the Inland Rail program. Effective communication and stakeholder engagement are fundamental to reducing risk, optimising route alignment, minimising social and environmental impacts, securing statutory approvals, and gaining and maintaining the social licence to operate.

As described in chapter A4 and Appendix C of the EIS, and section 3.4 of this report, a variety of consultation activities have been undertaken prior to and following finalisation of the EIS and during public exhibition. ARTC acknowledges the need for ongoing consultation. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders (including landowners/landholders and community members) with opportunities for input to design and construction planning, in accordance with the communication management plan for the proposal.

As noted above, in accordance with mitigation measure SE1, ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy.

Measures to address property-specific issues would be developed as part of the detailed design process, in accordance with the mitigation measures and conditions of approval. For example:

- ▶ Mitigation measure LP1 provides that the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.
- ▶ Mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements, property-specific measures would be identified and implemented in consultation with landholders to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practises; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements. This would assist ARTC manage and minimise (as far as practicable) the potential impacts associated with works on individual properties.

Directly affected landowners/landholders have been, and would continue to be, consulted in accordance with the commitments made in the EIS. For properties subject to acquisition, in accordance with mitigation measure LP3, ARTC would seek to secure agreement with affected landholders during the property acquisition process, to guide property-level design requirements and the management of construction on or immediately adjacent to private properties.

In accordance with mitigation measure LP4, property owners and occupants would be consulted to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

Requests to meet with the Minister and/or representatives of DPE should be directed to DPE.

Community Consultative Committee

Issue

A number of concerns were raised about the Community Consultative Committee. Issues raised included:

- ▶ Community members should have the right to speak at committee meetings and they should not need to submit questions before viewing project presentations
- ▶ Attempts to discuss some topics, such as route selection, were rebuffed
- ▶ The meetings were run inequitably, did not reflect community concerns, did not meet their objectives and failed to meet DPIE's requirements
- ▶ Suggestions had not been considered or implemented.

Response

ARTC recognises the important role that community consultative committees play in fostering forums for informative and constructive discussions for the development of key infrastructure projects.

The design and EIS development process for a major transport infrastructure project such as the proposal is a complex task. Under the guidance of an independent chair, the Community Consultative Committee for the proposal provides community representatives and interested parties an opportunity to understand and engage with the ARTC team in accordance with the *Community Consultative Committee Guideline—State Significant Projects* (NSW Government, 2019).

Community Consultative Committees are facilitated by an independent chairperson appointed by DPE's Planning Secretary. They are not run by ARTC and therefore ARTC cannot address concerns about the Community Consultative Committee process or outcomes.

Non-committee members, including members of the public, can attend Community Consultative Committees following an invitation from the independent chairperson. In line with the *Community Consultative Committee Guideline*, non-committee members cannot participate in the business of the meeting unless they are invited to do so by the independent chairperson.

Presentations have been delivered on a regular basis across three sub-committees—Narromine, Gilgandra/Coonamble and Narrabri/Baradine. These included face-to-face presentations by the ARTC team and its consultants on key matters, such as proposal design and updates, the flooding and hydrology assessment, property discussions and the draft EIS.

Due to Covid-19 restrictions, the committee also held an online session. While this session proved challenging due to telecommunication issues, it served to demonstrate the Chair's flexibility and ARTC's commitment to sharing information in an open and accessible manner. All presentations and final minutes were published on the proposal website.

ARTC strongly believes that the Community Consultative Committee serves as a critical forum to deliver key proposal developments and seek direct feedback from community representatives. For example, a key focus of the 7–9 December 2020 committee sessions was to provide meaningful and effective information on property matters. ARTC's presentation included detailed responses to questions raised by affected landowners/landholders during face-to-face meetings. This approach was well received by the committee and its members.

9. Response to community submissions—impacts of the project

9.1 Biodiversity

9.1.1 Construction impacts

Impacts on native species and habitats

Issue

A number of concerns were raised about the impacts on native species and habitats, including impacts associated with:

- ▶ Vegetation clearing and loss of native vegetation and habitats
- ▶ Vegetation clearing for establishing borrow pits when there are established quarries nearby
- ▶ Severing of tree corridors that connect the Warrumbungle Mountains to the Marshes
- ▶ Impacts on Webbs Reserve
- ▶ Removal of hollow bearing trees, such as bumble boxes (*Eucalyptus populnea*), which host native fauna, including wedge tailed eagles
- ▶ Effects on threatened species, including the regent honeyeater (*Anthochaera phrygia*), swift parrot (*Lathamus discolor*), black-striped wallaby (*Macropus dorsalis*), the spotted-tail quoll (*Dasyurus maculatus*) and Pilliga mouse (*Pseudomys pilligaensis*)
- ▶ Impacts on critically endangered vegetation communities, including White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland; Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; and Weeping Myall Woodlands and Fuzzy Box Woodland on Alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions.

Response

ARTC is committed to minimising the potential impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. The area that would be directly impacted by construction activities would depend on factors such as the presence of significant vegetation; constructability; construction management and safety considerations; landform; slopes and anticipated sub-soil structures. Direct impacts would be reduced as far as practicable through refinements during detailed design.

Potential impacts on biodiversity are described in Technical Report 1—Biodiversity development assessment report and the updated biodiversity development assessment report (see section 3.2.1 of this report), and summarised in sections B1.3 and B1.4 of the EIS.

Section A6.3.4 of the EIS describes the options assessment process for the supply of construction materials for the proposal. The supply options considered were material excavated from cuttings along the proposal site, existing commercial quarries and establishment of borrow pits. The options assessment included a review of currently approved commercial quarries in the region. The assessment determined that, while proposal cuttings and borrow pits could supply general and structural fill material, it would be more feasible to obtain capping and ballast from commercial quarries.

Construction of the proposal would require a range of materials, as described in section A8.10.2 of the EIS. The volumes of materials estimated are preliminary and would be further refined during detailed design. The final materials supply strategy would be confirmed by the construction contractor(s) during construction planning. Subject to any approvals required, this may include commercial quarries or borrow pits not identified in the EIS.

Potential impacts on Webbs Siding Reserve include removal of native vegetation, which is discussed in section 8.3.1 of Technical Report 1.

Hollow-bearing trees occur scattered across the proposal site. Potential impacts on hollow-bearing trees, including bumble box (within plant community types 56 and 244) and associated habitats, are addressed in section 8.3.1 and Table 8.2 of Technical Report 1. Impacts to connectivity, including the scattered tree corridors from the Warrumbungle Mountains to the Macquarie Marshes, are addressed in section 9.2 of Technical Report 1.

Impacts on native vegetation and changes to fauna connectivity, including impacts on the regent honeyeater, swift parrot, black-striped wallaby, spotted-tail quoll and Pilliga mouse are addressed in sections 8, 9 and 10 of Technical Report 1. EPBC Act significance assessments were completed for the Pilliga mouse, regent honeyeater and swift parrot (see Appendix M of Technical Report 1).

Impacts on threatened ecological communities, including White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland; Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; and Weeping Myall Woodlands and Fuzzy Box Woodland on Alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions, are addressed in section 8, 9 and 10 of Technical Report 1.

The above impacts are also considered in the updated biodiversity development assessment report.

Although the proposal would impact on biodiversity values, including those noted in submissions, a range of mitigation measures have been proposed to minimise such impacts as far as practicable. In particular, and in accordance with mitigation measures BD1 and BD2, the potential impacts on biodiversity would continue to be minimised during detailed design and construction planning. In accordance with mitigation measure BD1, vegetation clearing would be limited to the minimum necessary to construct the proposal and allow for its effective operation. Mitigation measure BD2 provides that where appropriate, facilities within the multi-function compounds and temporary workforce accommodation would be located to further minimise or avoid impacts on native vegetation, where practicable.

In accordance with mitigation measure BD3, additional threatened flora surveys would be undertaken (where suitable climatic conditions occur), prior to clearing, for the threatened species likely to be impacted by the proposal. Surveys would include seed collection where possible. The need for translocation options would be discussed with DPE (Biodiversity, Conservation and Science Directorate), should these be required.

The proposed approach to identifying and managing offsets to mitigate the impact of vegetation clearing is described in section B1.5.1 of the EIS. Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with the Biodiversity, Conservation and Science Directorate. Further information on the Biodiversity Offset Credit process can be found at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

A range of mitigation measures have been identified to mitigate impacts that cannot be avoided. The proposal includes structures that would promote fauna connectivity measures. Further information about measures to promote fauna connectivity is provided in section 9.1.3 of this report.

In accordance with mitigation measure BD8 and LP16, a biodiversity management plan would be implemented during construction as part of the CEMP. The biodiversity management plan would include measures to protect biodiversity and minimise the potential for impacts during construction. The plan would be prepared in accordance with relevant legislation, guidelines and standards, and in consultation with relevant stakeholders.

The plan would include, but not be limited to:

- ▶ Locations and requirements for pre-clearing surveys
- ▶ Establishing protocols for the staged clearing of vegetation, and safe tree felling and log removal to reduce the risk of fauna mortality
- ▶ Measures to avoid and minimise clearing of hollow-bearing trees, where practicable
- ▶ Measures relating to the provision and management of nest boxes, including reuse of hollows and monitoring protocols
- ▶ An unexpected finds protocol
- ▶ Measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015* (Cth)
- ▶ Measures to reduce the risk of aquatic fauna mortality/injury.

Increased weed and invasive species

Issue

Some submitters raised concerns about the introduction and spread of weed and invasive species from construction activities. A submitter also raised concern that weeds and feral animals in the Pilliga forests may increase due to fragmentation and decreased water availability, impacting local species. Transport of noxious weeds via vehicles was noted as a risk.

Response

Sections B1.3.5 and B12.3.3 of the EIS, and section 8.4 of Technical Report 1—Biodiversity development assessment report, consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

The biodiversity assessment acknowledges that there are large numbers of priority weeds, high-threat weeds and weeds of national significance present across the proposal site, and there is a risk of introducing or transferring pests to adjacent sites during construction. The assessment concludes that, with implementation of proposed mitigation measures, no significant indirect impacts on biodiversity are predicted from the spread of pest species.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015* (Cth). The framework CEMP, included as Appendix F to the EIS, provides an indication of the proposed management plans and measures to be implemented during construction, including biosecurity measures. These measures would establish controls for management of transport of weeds via vehicles and personnel.

Further information about how biosecurity risks would be managed is provided in section 9.11.6 of this report.

9.1.2 Operation impacts

Impacts on species and habitats

Issue

Concerns were raised about the impacts of operating the proposal on species and habitats. Issues raised included:

- ▶ Ongoing fragmentation of the Pilliga forests and the resulting effect on fauna
- ▶ Increased roadkill caused by an unfenced railway and increased traffic
- ▶ Impacts on river red gums caused by changing water speeds around the Macquarie River bridge.

Response

A range of mitigation measures would be implemented to minimise impacts on biodiversity values. Section B1.5.1 of the EIS notes that measures to enhance connectivity would assist in minimising the potential for train strike impacts. The proposal includes structures that would promote fauna connectivity. These include drainage structures that would also be used by fauna, such as bridges and culverts, in addition to dedicated fauna underpasses and canopy bridges. Indicative locations for fauna connectivity measures have been identified, based on habitat and topographical features, in the fauna connectivity preliminary fauna connectivity strategy provided in Appendix J of the updated biodiversity development assessment report. The location and design of the final structures to enhance connectivity would be confirmed during detailed design in accordance with mitigation measure BD6. Further information about measures to promote fauna connectivity, and minimise and manage potential impacts on connectivity, is provided in section 9.1.3 of this report.

As noted in section B2.1.4 of the EIS, bridges and culverts have been designed to have a minimal impact on existing surface flow paths. Furthermore, as described in section B2.4.2 of the EIS and the updated flooding and hydrology assessment, scour protection and drainage control areas would be provided at locations where increased flow velocities are predicted. In accordance with mitigation measure FH2, further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection, and to confirm the extent and type of protection required. Impacts on riparian vegetation (including river red gums) from increased flows are expected to be appropriately mitigated.

Fencing requirements have been considered in the fauna connectivity strategy provided in Appendix J of the updated biodiversity development assessment report. The strategy notes that while fencing is useful in minimising mortality of fauna as a result of vehicle strike, it can also increase barrier effects. Consequently, an approach has been proposed which provides fencing in the vicinity of fauna connectivity structures and stock fencing in private properties. The final locations and extents of fencing would be determined during detailed design in consultation with the relevant stakeholders.

Impacts on koalas

Issue

Some submitters expressed concerns that the proposal would impact koala populations in the Pilliga forests and Warrumbungle National Park, and would increase the threat of extinction. Vegetation clearing, water drawdown and habitat fragmentation were listed as key threats. Concern was raised that no proper studies were undertaken to identify koala populations that have survived the drought.

Response

As described in section 3.5.3 of Technical Report 1, targeted surveys for the koala were conducted. Despite few records of the species during surveys, the koala was assumed to be present across a larger area than recorded, due to the presence of suitable habitat in accordance with the Biodiversity Assessment Method Guidelines (DPIE, 2020b). An assessment of habitat value for the koala was also provided in section 7.2.1 of Technical Report 1.

Recent surveys within the Pilliga forests have found that there has been a substantial decline in koala numbers. A combined series of surveys for koalas within the Pilliga forests showed a decline of over 80 per cent in both the distribution and activity of koalas within the forests, likely as a result of ongoing disturbance (e.g. a prolonged drought), and a series of adverse events (e.g. a series of heatwaves or large-scale fires) (Lunney et al. 2017).

Since the exhibition of the EIS, additional surveys have been completed to supplement the investigations documented in the biodiversity development assessment report. A thermal drone survey was conducted in July 2021 through the accessible extent of the proposed rail alignment through the Pilliga forests and Bohena Creek area to search for the presence of koalas. An independent expert, authorised by the Secretary of DPIE (now DPE), was also engaged to prepare an expert report to provide advice on the likely extent of koala habitat along the proposal corridor. The revised mapping from the expert findings has been used to recalculate the species and ecosystem credits for the koala in the updated BDAR. The revised mapping takes into account additional surveys and areas of generational persistence identified through research.

The proposal does not impact on Warrumbungle National Park.

The updated biodiversity development assessment report includes a detailed assessment of koala habitat suitability in the proposal site undertaken in consultation with DPIE (Biodiversity, Conservation and Science Directorate) and calculation of appropriate offsets identified in consultation with the Biodiversity, Conservation and Science Directorate. Biodiversity offsets have been calculated for impacts on important habitat areas, including the Pilliga Area of Koala Significance, as well as other areas along the alignment. Other biodiversity mitigation measures are also proposed to minimise the potential impacts of the proposal on koala populations (see section 11 of this report).

A preliminary fauna connectivity strategy has been prepared (see Appendix J of the updated biodiversity development assessment report). The strategy establishes the goals and principles for fauna connectivity for the proposal and proposed locations for both dedicated and shared fauna crossings. Dedicated underpasses for the koala mapped against their known habitat have been provided through the Pilliga. The goal of the connectivity strategy is to maintain viable fauna populations in the study area (including koala populations), particularly in the Pilliga forests.

In accordance with amended mitigation measure BD6, a detailed fauna connectivity strategy would be prepared to guide detailed design based on the preliminary connectivity strategy. Further information about the fauna connectivity strategy is provided in section 9.1.3 of this report.

Fencing impacts

Issue

Submitters raised concerns that fences along the train line would prevent animal migration, deprive them of water and food, and trap them during fires. Further detail on how fencing would facilitate native animal movement while containing stock was requested.

Response

Fencing would be constructed along the rail corridor where it adjoins private land. Fencing would be provided to minimise the risk of stock-train collisions. As noted in Table 11.1 of Technical Report 1—Biodiversity development assessment report, fencing would minimise the entry of fauna into the rail corridor but not prevent it entirely.

Fencing requirements have been considered in the fauna connectivity strategy provided in Appendix J of the updated biodiversity development assessment report. The strategy notes that while fencing is useful in minimising mortality of fauna as a result of vehicle strike, it can also increase barrier effects. Consequently, an approach has been proposed which provides fencing in the vicinity of fauna connectivity structures and stock fencing in private properties. The final locations and extents of fencing would be determined during detailed design in consultation with the relevant stakeholders.

Monitoring of fauna connectivity structures (such as dedicated fauna underpasses and canopy bridges) and relevant threatened species would assist in confirming the value of the proposed structures in minimising the potential impacts of habitat fragmentation. In accordance with mitigation measure BD15, the operational performance of fauna connectivity measures, including impacts on fauna as a result of train operations and maintenance activities, would be monitored in accordance with the fauna connectivity strategy. This would include recording of wildlife collisions with trains. ARTC would also monitor the use of crossing structures by target species (including the Pilliga mouse, squirrel glider, koala, rufous bettong and eastern pygmy-possum) and feral predators.

9.1.3 Mitigation

Rehabilitation plans

Issue

Some submitters queried how cleared vegetation, culturally significant plants and green corridors would be restored/rehabilitated. A submitter also queried how rare and endangered animals would be repopulated.

Another submitter questioned how much time would be spent surveying for plants before construction commences, including how much time would be spent collecting seed and whether all species would be collected.

Response

Mitigation measure BD12 commits to preparing a rehabilitation strategy to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprints that are not required as of the operational footprint. As described in section A8.7 of the EIS, the strategy would:

- ▶ Identify rehabilitation objectives and criteria
- ▶ Establish roles and responsibilities
- ▶ Define rehabilitation actions and requirements
- ▶ Define monitoring and maintenance requirements.

In general, rehabilitation would be undertaken in two stages. The first stage would involve stabilisation immediately following disturbance, such as at the completion of construction work in a particular area. The second stage would involve longer-term rehabilitation. This would be carried out on disturbed areas not required as part of the proposal's operational footprint.

No repopulation is proposed. The *Biodiversity Assessment Method* (DPIE, 2020b) sets out the rules for establishing species credits where potential habitat has been identified as likely to be impacted. The details of these are described in section 12.1.3 of Technical Report 1.

In accordance with mitigation measure AH10, an Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage. The mitigation measure has been amended to include a requirement for the plan to include measures to minimise and mitigate potential impacts on plant species that hold medicinal and food value (guided by a cultural plant survey). The approach to the survey (including timing, survey extent, seed collection process (if required)) and reporting would be determined by a specialist ecologist in consultation with the registered Aboriginal parties.

In accordance with mitigation measure BD3, additional threatened flora surveys would be undertaken (where suitable climatic conditions occur) prior to clearing for the threatened species likely to be impacted by the proposal. The mitigation measure has been updated to confirmed that surveys would include seed collection where possible. The details of the surveys, including timing and extent of seed collection, would be determined by the specialist ecologist in consultation with the Biodiversity, Conservation and Science Directorate.

Enhancing connectivity

Issue

Concerns were raised about how potential impacts on fauna connectivity would be managed, including the impacts of the new rail corridor through habitat areas (including the Pilliga forests) and the impacts of trains hitting fauna crossing the tracks.

Response

A preliminary fauna connectivity strategy has been prepared in accordance with mitigation measure BD6 in the EIS. The preliminary strategy is provided in Appendix J of the updated biodiversity development assessment report.

The goal of the preliminary strategy is to maintain viable fauna populations in the study area (including koala populations), particularly in the Pilliga forests. The strategy includes a range of measures to minimise mortality as a result of train strike, encourage the safe movement of fauna across the rail line, and minimise impacts on connectivity.

In accordance with updated mitigation measure BD6, a detailed fauna connectivity strategy would be prepared to guide detailed design based on the preliminary strategy. The detailed strategy would confirm the locations and design of all fauna connectivity structures and features, and identify monitoring and reporting requirements for the operational performance of the final fauna connectivity measures.

The detailed fauna connectivity strategy would include investigation and design of:

- ▶ Locations for fauna crossing structures in the Pilliga forests, including bridges and dedicated underpasses for threatened fauna (such as the koala and Pilliga mouse in areas of preferred habitat), canopy bridges at regular intervals, and wooden barrier poles at selected bridges
- ▶ The provision of localised fencing to direct fauna to crossing structures
- ▶ Fauna furniture to be included in the design of bridges and dedicated underpasses, where appropriate, to encourage crossings by koalas and other native fauna
- ▶ Landscaping of the rail corridor to encourage movement of fauna across the gap.

Mitigation measure BD15 provides the commitment to monitor the operational performance of fauna connectivity measures, including impacts on fauna as a result of train operations and maintenance activities, in accordance with the fauna connectivity strategy. This would include recording of wildlife collisions with trains. ARTC would also monitor the use of crossing structures by target species (including the Pilliga mouse, squirrel glider, koala, rufous bettong and eastern pygmy-possum) and feral predators.

Monitoring of fauna connectivity structures and relevant threatened species would assist in confirming the value of the proposed structures in terms of minimising the potential impacts of habitat fragmentation. Monitoring would also potentially allow for improvements to be identified for this proposal and other rail proposals in Australia (as appropriate).

Protecting threatened species habitat enhancements

Issue

A submitter asked how Local Land Services' threatened species habitat enhancement areas close to the proposed corridor would be protected.

Response

As described in section B1.3 of the EIS, the proposal would not affect any biobank sites, private conservation lands or other offset lands.

In accordance with mitigation measure BD8 and LP16, a biodiversity management plan would be implemented during construction, as part of the CEMP. The plan would include measures to protect biodiversity and minimise the potential for impacts during construction. The plan would be prepared in accordance with relevant legislation, guidelines and standards. Consultation with relevant stakeholders would be undertaken during preparation of the biodiversity management plan. The plan would define the measures to protect Local Land Services' threatened species habitat enhancement areas.

Biodiversity offsets

Issue

A submitter noted that money paid to the Biodiversity Conservation Fund would not be an adequate offset for biodiversity and habitat loss.

Response

The offsets required to compensate for the residual biodiversity impacts under the *Biodiversity Conservation Act 2016* (NSW) are summarised in section B1.5.1 of the EIS and described in section 12 of the updated biodiversity development assessment report. Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with the Biodiversity, Conservation and Science Directorate. This would include retirement of like-for-like offsets for impacts on matters of national environmental significance, in accordance with the EPBC Act.

As described in section B1.5.1 of the EIS, ARTC is managing the offset strategy for the Inland Rail program. ARTC has invited landholders within 100 kilometres of the route in NSW to contact them regarding establishing a Biodiversity Stewardship Site so that ARTC can purchase the appropriate credits. The offset rules are established in the Biodiversity Conservation Regulation 2017. In accordance with the offset rules established by the Biodiversity Conservation Regulation, and as described in section B1.5 of the EIS, offset obligations can be achieved by retiring the appropriate biodiversity credits from a Biodiversity Stewardship Site, monetary payment directly into the Biodiversity Conservation Fund, or funding an approved biodiversity action.

ARTC's priority is to purchase and retire biodiversity credits to compensate for the biodiversity loss. In seeking the appropriate credits, ARTC would source and establish the same vegetation that would be impacted by constructing Inland Rail in NSW, generally within the same areas, in accordance with NSW and Commonwealth legislative requirements. These requirements determine where stewardship sites can be located, the vegetation and habitats that would be protected, and how the vegetation contributes to local and regional biodiversity values, such as wildlife corridors.

Biodiversity offsets are not required to exactly match the area of impacted vegetation. However, offsets are required to take into account the landscape attributes of the ecosystem credits and species credits within each subregion, including connectivity, patch size and areas of retained native vegetation before and after the impacts of a proposal. Required ecosystem and species credits take these landscape features into account in the generation of required credits and how they can be sourced, in accordance with the legislated offset trading rules described in the Biodiversity Conservation Regulation 2017. Biodiversity values gained at an offset site will compensate for biodiversity values lost to development at another location to achieve a standard of 'no net loss' of biodiversity.

Under the Biodiversity Offsets Scheme, a proponent can choose to pay into the Biodiversity Conservation Fund to meet an offset obligation. This is an alternative to retiring credits. By doing this, the responsibility of finding an offset is transferred to the Biodiversity Conservation Trust. ARTC would only pursue this option if it were unable to directly purchase and retire sufficient biodiversity credits from Biodiversity Stewardship Sites.

Further information on the Inland Rail biodiversity offset credit process is provided at: inlandrail.artc.com.au/nsw-biodiversity-offset-credits-fact-sheet/.

Weed control during operation

Issue

A submitter sought detail on how weeds would be monitored and controlled during operation to ensure weeds would not be spread from the rail corridor to land adjoining the corridor.

Response

Vehicular movements along the rail corridor during operation would be limited to occasional maintenance vehicles using the operational access road within the corridor. Consequently, the risks for the dispersion of weeds would be low and would be managed in accordance with ARTC's standard maintenance procedures. While any residual lands remain in ARTC's ownership/control, ARTC would continue to manage the land in accordance with the General Biosecurity Duty under the *Biosecurity Act 2015*.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur in accordance with ARTC's standard operating procedures to meet its obligations under the *Biosecurity Act 2015*. ARTC's standard operating procedures include a vegetation management program involving pruning, slashing, weed control and spraying.

ARTC also undertake environmental site inspections. An annual schedule is developed in consultation with the relevant corridor managers and includes triggers for non-scheduled inspections. Environmental site inspections are undertaken by ARTC's Environment Advisors and focus on areas of risk such as waterways, known heritage items, sensitive flora or fauna and works in proximity to sensitive receivers.

Residents or other stakeholders can contact ARTC regarding asset or environmental issues (including vegetation management, fuel loads or weeds) via the Enviroline service (via: **Contact Us – ARTC**, 1300 550 402 or enviroline@artc.com.au), which is available 24 hours/seven days a week.

Further information about how biosecurity risks would be managed is provided in section 9.11.6 of this report.

9.2 Water resources

9.2.1 Construction impacts

Construction water sources

Issue

A number of submitters requested information on construction water supply and sources, including information on bore locations and whether water would be sourced from the Great Artesian Basin.

Response

Construction water sources

As described in section A6.3.5 of the EIS, the viability of several potential construction water sources was investigated during the reference design process with consideration of the existing and possible future drought conditions. Extraction of groundwater from deep aquifers beneath the Great Artesian Basin was determined to be the preferred option, due to the availability of groundwater licences and the limited use of these aquifers by landholders. Conversely, it was not considered feasible to take water from the shallow groundwater aquifer systems within the Great Artesian Basin due to the recent and possible future drought conditions and the lack of availability of shallow aquifer groundwater licences.

As described in Technical Report 4—Groundwater assessment and summarised in section B2.3.4 of the EIS, there would be sufficient water available under a controlled allocation for the extraction of groundwater for construction water within the Lachlan Fold Belt Murray Darling Basin Groundwater Source and the Gunnedah–Oxley Basin Murray Darling Basin Groundwater Source.

In accordance with mitigation measure WR5, the volume of water that would need to be extracted from groundwater bores, for construction water and potable water (for the Narromine North and Baradine temporary workforce accommodation facilities), would be confirmed and the appropriate approvals would be obtained prior to extraction. It is noted that ARTC has already commenced the exploration of other construction water supply options and lease and/or purchase of existing water access licences from surrounding landholders. Recent discussions with Santos and the NSW EPA have also further explored the opportunity of using treated and recycled wastewater from the Narrabri Gas Project as a beneficial reuse water supply for the construction of Inland Rail. Discussions have confirmed the feasibility of this option from a timing, quantity, quality and secondary approvals perspective. Sourcing water from the Narrabri Gas Project would ensure consistency with the principles contained in the Waste Avoidance and Resource Recovery Act 2001 (NSW).

It is anticipated that potable water for the temporary workforce accommodation facilities and compounds would be provided by either connections to the existing potable water supply network or through the extraction and potential treatment of groundwater.

In addition to the two alternative water supplies noted above, the construction contractor would investigate the ability to beneficially reuse treated water from council-operated wastewater treatment plants and the proposed temporary workforce accommodation facilities.

Construction water supply options would continue to be explored during detailed design. The need for new groundwater bores would depend on the outcomes of this further investigation; however, it is likely that a combination of water supply options would be used to achieve the water demand.

Bore field locations

As described in section B2.3.1 of the EIS, a total of 12 bore fields are proposed along the proposal site to provide construction water. These would be typically spaced about 25 km apart (as shown in the Map Book in Part E of the EIS). The number of bores within each bore field would range from 4 to 10, with an average of about 7 bores in each bore field. At these bores, groundwater would be extracted from the following groundwater sources below the Great Artesian Basin:

- ▶ Lachlan Fold Belt Murray Darling Basin Groundwater Source (part of the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 Water Sharing Plan)
- ▶ Gunnedah–Oxley Basin Murray Darling Basin Groundwater Source (part of the NSW Murray Darling Basin Porous Rock Groundwater Sources 2020 Water Sharing Plan).

The depth of the bores would range from about 110 to greater than 300 m below ground level.

In accordance with new mitigation measure WR14, a bore field extraction plan would be prepared as part of the soil and water management plan. The extraction plan would be provided to DPE Water prior to construction of the proposed bore field bores. The plan would include information regarding the locations, water source, depth and proposed volumes of water take per year and over the life of the construction phase of the proposal for the proposed bore field bores, as well as any measures required to minimise the potential for impacts due to the extraction of groundwater for construction water.

Water volumes required

Issue

A concern was raised about the volume of construction water required.

Response

Based on preliminary construction planning, it is estimated that a total of about 4,635 mega litres (ML) would be required. This would equate to an estimated average use of about 4.3 ML per day over the length of the proposal site. This estimate would be further refined in consultation with relevant agencies to ensure there are no unexpected impacts. Final water requirements would be subject to weather conditions and the methodology selected by the construction contractor(s).

In accordance with amended mitigation measure WR5, water volumes to be extracted from groundwater bores for construction water, and the amount of potable water required, would be confirmed and the appropriate approvals obtained prior to construction commencing. Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded.

Meters would be installed, and groundwater extraction would be recorded and reported to Natural Resources Access Regulator, in accordance with the relevant requirements of the *NSW Non-Urban Water Metering Policy* (DPIE, 2020f) and clause 21(6) of the Water Management (General) Regulation 2018.

Opportunities to reduce the need for water would be further explored during detailed design and construction planning, including use of additives, alternative compaction/construction techniques, improved reuse of excavated material, and use of different materials for haul roads.

Budget for groundwater extraction

Issue

A submitter questioned if sufficient budget was available for proposed groundwater extraction.

Response

The proposal budget includes allowance for all aspects of construction, including the proposed extraction of groundwater.

Use of surface water resources

Issue

A submitter was concerned that their surface water resources would be used for construction.

Response

Construction water requirements and anticipated water sources are described in the above responses. The preferred supply option/s would be confirmed during detailed construction planning. No water would be taken from existing landholders without a written agreement.

Effects on groundwater supply

Issue

Several submitters raised concerns about the effects of construction water use and associated impacts on groundwater supply and drawdown. Concerns included potential for lowering of the water table and how this would affect the operation of nearby bores.

Response

The groundwater assessment was undertaken, and Technical Report 4—Groundwater assessment prepared, in accordance with the SEARs, the *NSW Aquifer Interference Policy* (Department of Primary Industries, 2012) and relevant legislation and guidelines, as described in section B2.1.1 of the EIS and section 4 of Technical Report 4. It included an assessment of potential groundwater drawdown for:

- ▶ Shallow proposal features, i.e. all proposal features with the potential to cause drawdown except for the proposed bore field bores
- ▶ Deep proposal features, i.e. the proposed bore field bores.

The potential for drawdown associated with the shallow proposal features was assessed by comparing available groundwater level data to proposal design levels. The results were conveyed in long sections, which showed that proposal excavations are relatively minor and unlikely to intersect the water table. As such, groundwater level drawdown associated with shallow proposal features is not anticipated.

An initial qualitative assessment of the potential risk of groundwater drawdown was undertaken prior to detailed assessment, to guide the methodology used. This initial assessment determined that the risk to groundwater levels would be low as a result of the following:

- ▶ The majority of the proposed bore fields, with the exception of bore fields PB1 and PB2, would target deep aquifers beneath the Great Artesian Basin, with significant vertical separation between the aquifers that the proposal would target and the aquifers that are currently pumped by existing bores.
- ▶ Bore fields PB1 and PB2 would be located outside the Great Artesian Basin.
- ▶ Groundwater extraction for construction water is proposed to occur for a period of less than 500 working days at each bore field.

As a result, the potential for drawdown associated with deep proposal features was assessed through analytical element groundwater modelling. This approach is commensurate with the qualitatively assessed low risk of groundwater impact, the limited level of problem complexity, and data availability. The assessment of the bore fields is considered sufficiently rigorous, and the approach is generally consistent with the *Australian Groundwater Modelling Guidelines* (Barnett, et.al., 2012).

The results were assessed against the NSW Aquifer Interference Policy's minimal impact considerations. The potential impacts were generally predicted to be less than these criteria. The exception was at one bore outside the Great Artesian Basin, where drawdown of about 3.5 m was predicted. No other impacts on groundwater users were identified as part of the assessment. With the exception of the 10 existing groundwater bores within the construction footprint that would be decommissioned as part of the proposal (see section 7.1.4 of Technical Report 4), access to groundwater from existing bores would not be restricted by the proposal.

The analysis approach taken as part of the groundwater assessment was considered conservative; however, commitments to managing and monitoring the potential for impacts due to groundwater drawdown are defined by a number of mitigation measures, as described in section 9.2.2 of this report.

Effects on water access

Issue

Submitters sought guarantees that their water access would not be impacted. One submitter was concerned that water use agreements between landholders and the proposal could create community conflict.

Response

Since exhibition of the EIS, ARTC has consulted with a number of landowners along the alignment who have expressed interest in supplying water for construction. A formal expression of interest has been issued, with water sought from landowners through either purchase of water or lease and/or purchase of existing water access licences.

The expression of interest requested that the water be ideally located within 25 kilometres of the proposal site; however, locations up to 50 km away would be considered. The expression of interest closed in mid-March 2021.

By using a formal and consistent approach to engage with landholders regarding water access agreements, the potential for community conflict has been minimised.

Recycled water use

Issue

A submitter raised concern that reuse of water from the Narrabri Gas Project would result in soil contamination. They queried if landholders could refuse recycled water.

Response

Treated water from the Narrabri Gas Project would only be used if water quality testing confirms it is suitable for the intended use. In accordance with amended mitigation measure WR1, construction water supply options would continue to be explored during detailed design. These could include reuse of excess water from the Narrabri Gas Project or other suitable facilities in the area, or lease and/or purchase of existing water access licences from surrounding landholders. Water quality testing would be undertaken to confirm water sourced is suitable for its intended use and any required approvals/agreements would be obtained prior to use.

There is no intention to provide recycled water to landholders. If suitable, any recycled water from the Narrabri Gas Project would be used for construction water, for the purposes described in section A8.10.2 of the EIS.

9.2.2 Mitigation

Mitigating impacts on local groundwater supply

Issue

Some submitters queried how impacts on the local groundwater supply would be mitigated.

Response

Commitments to minimising the potential for impacts on groundwater (including groundwater supply) are defined by a number of mitigation measures, including WR3, WR4, WR5, WR7, WR8, WR9, WR10, WR12, WR14, WR-CI1, WR-CI3 and WR-CI4. In particular, mitigation measure WR4 commits to the installation of test bores and further investigation by a qualified hydrogeologist to confirm the depth and location of the proposed bore fields, so that impacts from the extraction of groundwater are minimised.

In accordance with mitigation measure WR3, a bore census would be undertaken for existing licensed bores within 1 km of the proposal's bore fields, where landholders permit. The census would collect baseline groundwater level data and information on a given bore's typical usage and characteristics (including bore construction, pump depth, yield, water level during pumping and water level outside of pumping periods).

Mitigation measure WR7 provides that a groundwater monitoring program would be developed in consultation with DPE Water and implemented as part of the soil and water management plan, to monitor potential groundwater impacts. The program would define the following in accordance with chapter 10 of Technical Report 4—Groundwater assessment:

- ▶ Monitoring parameters
- ▶ Monitoring locations
- ▶ Frequency and duration of monitoring.

The monitoring program would include baseline monitoring to determine the water quality of groundwater from the proposed bore field bores. Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions.

Information obtained from the bore census and monitoring program would be used in parallel to determine whether there is an impact to existing groundwater bores.

In addition, in accordance with amended mitigation measure WR5, water volumes required to be extracted from groundwater bores for construction water and potable water (for the Narromine North and Baradine temporary workforce accommodation facilities) would be confirmed and the appropriate approvals would be obtained prior to extraction.

Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded.

Meters would be installed, and groundwater extraction recorded and reported, in accordance with the requirements of the *NSW Non-Urban Water Metering Policy* (DPIE, 2020f) and clause 21(6) of the *Water Management (General) Regulation 2018*.

Monitoring water level drops

Issue

A submitter highlighted that monitoring water level drops beyond their pumps would not be helpful mitigation.

Response

As noted in the response in section 9.2.1 of this report, the groundwater assessment undertaken as part of the EIS included an assessment of the potential for groundwater drawdown due to the proposed bore fields and extraction of groundwater for construction. Notwithstanding the minimal potential for impacts identified, in accordance with mitigation measure WR3, a bore census would be undertaken for existing licensed bores within one kilometre of the proposal's bore fields, where landholders permit. The census would collect baseline groundwater level data and information on a given bore's typical usage and characteristics (including bore construction, pump depth, yield, water level during pumping, and water level outside of pumping periods).

Information obtained from the bore census and the monitoring program described in the response above would be used in parallel to determine whether there is an impact to existing groundwater bores.

In accordance with mitigation measure WR9, where groundwater monitoring identifies the potential for groundwater drawdown in existing bores to exceed the *NSW Aquifer Interference Policy* minimal impact considerations, make-good provisions would be triggered for those bores, in consultation with the relevant landholders and DPE Water. The precise arrangements would be determined in consultation with the landholder.

Compensation of water contamination

Issue

A submitter was concerned that groundwater supply may be contaminated or diminished and asked what compensation would be provided if this occurred.

Response

As described in sections 7.1.7 and 7.1.8 of Technical Report 4—Groundwater assessment, the groundwater that would be extracted from the deeper groundwater systems for construction water is currently of unknown quality. It is acknowledged that if the groundwater is not of suitable quality, and is not treated prior to application, there is the potential that it could impact surface water quality, shallow groundwater systems, and the quality of vegetation and surface soils.

However, to mitigate this potential impact, and in accordance with mitigation measure WR8, the quality of groundwater obtained from the proposed bore field bores would be assessed for the suitability of its intended use. Where required, treatment systems would be designed to ensure relevant water quality criteria from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018) are met.

A range of mitigation measures would be implemented to manage potential impacts on groundwater quality during construction, including measures SC3, SC-CI1, SC-CI2, SC7 and SC8. A soil and water management plan (mitigation measure WR6) would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts (including impacts on groundwater) during construction.

The groundwater monitoring program (mitigation measure WR7) would include baseline monitoring to determine the water quality of groundwater from the proposed bore field bores. Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions. A review would be undertaken six months and one year after the completion of groundwater pumping to assess the recovery rates and determine if further mitigation is required.

With implementation of the mitigation measures noted above, the potential for groundwater supply to be contaminated is considered low.

Bore replacement

Issue

A submitter raised concern about damage to their bore (Mirrabooka property), particularly as a result of vibration during operation. The submitter noted that any replacement bore beyond 20 metres of the current bore would be subject to new compliance and extraction rate limits that would impact the submitter's water resource. Furthermore, a new bore site beyond 20 metres would be less likely to be in a productive aquifer site.

Response

The operational noise and vibration assessment (Technical Report 9—Noise and vibration assessment—operational rail) assessed potential operational vibration impacts. As summarised in section B9.4.5 of the EIS, the buffer distance to achieve human comfort criteria in accordance with *Assessing Vibration: A Technical Guideline* is 13 m. The vibration criteria for structural damage to pipework (see section B8.2.2 of the EIS) are much higher than those for human comfort. As a result, for groundwater bores located at least 13 m from the rail alignment, no impacts are predicted due to vibration from train operations. Operation of the proposal would not result in any other impacts on existing groundwater bores.

As described in section 7.1.4 of Technical Report 4—Groundwater assessment, 10 existing groundwater bores that are located within the construction footprint would need to be decommissioned. This includes any existing bores located within the new rail corridor, which is within the construction footprint, with a minimum width of 40 m; therefore, if any existing bores are located close to the alignment, these would be decommissioned prior to construction. No replacement bores would be provided within the rail corridor in locations where there is the potential for structural damage due to vibration.

Those bores that require decommissioning would need to be replaced outside the operational footprint. As a result, there is a possibility that they would be located more than 20 m from the current bore location.

In accordance with amended mitigation measure WR2, where existing licensed bores are located within the proposal site, they would be decommissioned in accordance with the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee, 2020). Where bores are decommissioned, compensation would be provided, or alternative water supply arrangements made, in consultation with the landowner/landholder.

Groundwater monitoring

Issue

A submitter requested details on the proposed water monitoring program and suggested that bore water testing should include water quality, depth of water availability and pumping pressure, and should be done at regular intervals. They also noted that groundwater monitoring needed to occur beyond the proposal corridor.

Another submitter asked who would monitor the proposal's water extraction and if the bores would be metered.

Response

Regular groundwater monitoring of water quality and groundwater levels, at bore locations to be confirmed, would be undertaken as part of the groundwater monitoring program. In accordance with mitigation measure WR7, the groundwater monitoring program would be developed in consultation with DPE Water and implemented by the construction contractor(s) as part of the soil and water management plan. The program would define:

- ▶ Monitoring parameters
- ▶ Monitoring locations
- ▶ Frequency and duration of monitoring.

As described in chapter 10 of Technical Report 4—Groundwater assessment, the monitoring program would include groundwater monitoring at the proposed bore field bores to provide data to assess bore performance. Monitoring data collected would include information on groundwater levels and groundwater quality. The data would also provide the basis to inform assessment of whether make-good provisions should apply at certain bores if complaints arise concerning water level reductions. Any groundwater monitoring would likely be undertaken by ARTC's construction contractor(s). Further information regarding the proposed groundwater monitoring program, including the suggested monitoring intervals during the different phases of the proposal, is provided in chapter 10 of Technical Report 4.

In accordance with amended mitigation measure WR5, water volumes for construction water would be confirmed, and the appropriate approvals would be obtained, prior to extraction. Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded. Meters would be installed, and groundwater extraction recorded and reported, in accordance with the requirements of the *NSW Non-Urban Water Metering Policy* (DPIE, 2020f) and clause 21(6) of the *Water Management (General) Regulation 2018*.

9.3 Flooding

9.3.1 Construction impacts

Construction in flood-prone areas

Issue

Concerns were raised about construction in flood-prone areas, including that it would be challenging and not advisable.

Response

The proposal crosses flood-prone areas and, as a result, construction works would be required in these areas. The potential risks and impacts associated with this are summarised in section B3.3.1 of the EIS and described in section 6 of Technical Report 3—Flooding and hydrology assessment and in the updated flooding and hydrology assessment report. In accordance with mitigation measures FH3 and FH4, construction planning would seek to minimise these risks, and a flood and emergency response plan would be prepared and implemented as part of the CEMP.

Construction impacts

Issue

A submitter expressed concern that worst-case construction scenarios were underestimated due to the adequacy of the flooding assessment and because ground conditions following flooding would result in significant issues for construction.

Response

Responses to issues raised about the adequacy of the flooding and hydrology assessment are provided in section 8.3.3 of this report.

The potential for flooding impacts during construction is assessed in section 6 of Technical Report 3—Flooding and hydrology assessment and in the updated flooding and hydrology assessment report. The assessment is considered a worst-case assessment as it assumes that all temporary construction infrastructure (such as compounds and sediment basins) is in place and construction of the rail formation is complete. As such, there is a

range of temporary and permanent infrastructure within the floodplain that could impede floodwaters in the event of a flood occurring during construction.

To minimise impacts during construction, in accordance with mitigation measure FH3, planning and the layout of construction work sites and compounds would be undertaken with consideration of overland flow paths and flood risk, avoiding flood-labile land and flood events, where practicable.

Prior to construction, a flood and emergency response plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential impacts of construction activities on flood behaviour, as far as practicable. It would also include measures to manage flood risks during construction and address flood recovery during construction.

Further flood modelling and investigation would be carried out during detailed design as layouts and construction staging strategies are further developed.

9.3.2 Increased flood risk and impacts during operation

Increased flood risk

Issue

Concerns were raised that the proposal would disrupt water drainage and overland flows, and cause increased flooding, particularly in the following areas:

- ▶ Narrabri, Coonamble, Blackwater Cowal, Narromine, Pilliga townships
- ▶ Areas around watercourses, such as Namoi River, Narrabri Creek, Castlereagh River, Teridgerie Creek, Horseshoe Bend Creek, Bohena Creek, Goulbourn Creek, Ewenmar Creek and Mulgate Creek
- ▶ In and around the Webbs Siding outflow area of the Macquarie River
- ▶ Drainage areas of the Warrumbungle Mountains.

Response

Detailed flood modelling was undertaken for the proposal as described in Technical Report 3—Flooding and hydrology assessment and the updated flooding and hydrology assessment report, as summarised in section B3 of the EIS. The impact assessment has been based on detailed hydrologic and hydraulic modelling performed for the full proposal extent and was undertaken in accordance with the SEARs, and relevant legislation and guidelines. The updated flooding and hydrology assessment report predicts that there are no widespread changes in flood flowpaths that would affect any of the watercourses and areas identified in the submissions were considered by the assessment.

Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal. Mapping of potential impacts with the proposal's infrastructure in place is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results are provided for a range of flood events, from the 20% AEP event to the PMF event. Potential impacts on buildings, roads, existing rail lines and land uses have been assessed.

ARTC acknowledges that constructing the proposal across farmland and other areas would have the potential to affect the existing hydrological regime, including drainage of water within the landscape. A description of how operational flooding risks, in particular the management of flows within properties, would be managed is provided in section 9.3.6 of this report.

Further detailed information in response to specific operational flooding issues is provided in the following responses and in the combined Preferred Infrastructure/Amendment Report.

Impacts of increased flooding

Issue

Concerns were raised about the potential impacts of increased flooding caused by the proposal, including:

- ▶ Potential risk to human lives and stock
- ▶ Flooding of properties
- ▶ Increased maintenance issues

- ▶ Flood insurance fee increases
- ▶ Disruption of business operations that rely on transport and logistic links that may be flooded
- ▶ Reduction in productivity of land
- ▶ Cost of replacement/repairs to damaged infrastructure and machinery.

Response

Mapping of the potential flooding impacts with the proposal's infrastructure in place is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results for a range of flood events are provided, from the 20% AEP event to the PMF event. Potential impacts on buildings, roads, existing rail lines and land use are assessed in the report.

The results of the assessment described in the report, particularly the flood hazard mapping, provides information on the potential risks to human lives and stock. Similarly, the afflux mapping provides information on the predicted flood impacts at properties. An assessment of potential impacts on existing rail lines, highways and roads is provided in Technical Report 3 and in the updated flooding and hydrology assessment report. The assessment concludes that the predicted changes to extents of flooding with the proposal are negligible to minor. As such, the potential for disruption of business operations that rely on these for transport and logistic links is expected be similarly negligible to minor.

While the property acquisition process does not provide for compensation for indirect impacts, such as cost of increased maintenance or replacement/repairs to damaged infrastructure, the proposal would incorporate environmental management and design features to ensure that potential impacts are managed and mitigated as far as practicable, as described in chapter D5 of the EIS.

Further information about how operational flooding risks would be managed is provided in section 9.3.6 of this report.

Property insurance is a matter for individual landowners.

9.3.3 Flooding issues associated with culverts and embankments

Concerns regarding proposed culverts

Issue

Concerns about the effectiveness and potential impacts of the proposed culverts, including concerns that:

- ▶ Culverts would increase floodwater volume, depth and velocity
- ▶ Inadequate drainage systems would increase flood risk and cause business impacts, erosion, scouring, ponding, safety hazards, land access issues, road access issues and creek creation
- ▶ Floodwaters within existing creeks, such as Caleriwi Creek, carry a lot of debris that would block culverts, resulting in flooding of the property 'Claremont' and Goorianawa Road
- ▶ Proposed culverts within the property located in the Tonderburine area would create a new watercourse, resulting in erosion and flooding of their residence and other farm infrastructure.

Response

The flooding and hydrology assessment includes an assessment of potential impacts on properties associated with erosion risks at culverts. Culverts and bridges are generally located around existing drainage lines, watercourses and within floodplains and associated overflow areas to minimise changes to natural flow patterns.

The updated flooding and hydrology assessment includes a blockage risk assessment in accordance with Australian Rainfall and Runoff (Ball, et al., 2019). This risk assessment considers the potential for debris to be generated within the catchment area of the culvert. The types of debris considered are broadly categorised as floating debris of various sizes from small branches through to logs or trees, and non-floating debris which is the sediment load. A blockage factor was calculated for each structure based on the risk or potential for blockage to occur due to both floating and non-floating debris. Calculated blockage factors for culverts range between zero and 100 per cent, depending on the culvert location and assessed risk rating. Further information on culvert blockage factors is provided in the updated flooding and hydrology assessment report. The culverts near Caleriwi Creek have an adopted blockage factor of between 20 and 40 per cent and this has been included in the flood modelling.

An assessment of potential changes to flows and related impacts as a result of the proposed culverts, including changes to depth (afflux), velocity and flood hazard, has been undertaken as described in section 7.2 of Technical Report 3 and in the updated flooding and hydrology assessment report. 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.

Further refinement and modelling would be undertaken during detailed design to review and confirm the final arrangements of culverts.

Further information about how operational flooding risks would be managed is provided in section 9.3.6 of this report.

Maintenance requirements and procedures for ARTC's drainage infrastructure are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and implementation of ARTC's operational procedures ETE-09-01 Structures Inspection and ETE-09-02 Structures Inspection Procedure. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets.

Flooding caused by earth embankments

Issue

Submitters raised concerns that proposed embankments would increase flood risk and endanger properties and roads. A submitter was concerned about the safety of embankments placed between the Yarrandale Road and Box Ridge Road, and along the foothills of Warrumbungle Mountains, suggesting that the flooding conditions created would create a risk to people and stock.

Response

The flooding and hydrology assessment acknowledges that constructing embankments across farmland and other areas, including areas between Yarrandale Road and Box Ridge Road, and along the foothills of Warrumbungle Mountains, would have the potential to affect the existing hydrological regime. Reporting of the potential impacts, including mapping, is provided in Technical Report 3 and in the updated flooding and hydrology assessment report. The proposal seeks to minimise these impacts by including 75 bridges and about 630 banks of culverts in the railway embankment as shown in the map book.

Further information about how operational flooding risks would be managed is provided in section 9.3.6 of this report.

Flooding risks at the Mitchell Highway

Issue

Submissions raised concern that flooding risk on the Mitchell Highway will be exacerbated by the proposed embankment. This would result in afflux and divert dangerous flows onto the highway.

Response

Potential impacts on the Mitchell Highway were considered in section 7.1.4 of Technical Report 3. Results for change in length of overtopping were provided. The mapping provided in Appendix G of Technical Report 3 also provided information on afflux (change in flood levels), velocity, duration and flood hazard. Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal (as updated), which includes impacts on the Mitchell Highway. The updated flooding and hydrology assessment report predicts that, for events up to and including the 1% AEP flood, there would be negligible changes in the length of the Mitchell Highway subject to flooding. During large scale flood events (i.e. events greater than the 1% AEP flood and up to the PMF) the change in length of inundation would be a maximum of one per cent in the PMF. Therefore, there would be a negligible impact to the Mitchell Highway link during large scale flood events due to the proposal.

9.3.4 Property-specific impacts/concerns

Flooding risks at individual properties, including flows along roads

Issue

A submitter raised concern that flooding risk at their property will be exacerbated by the proximity of the proposal and that the modelling undertaken underestimates the extent of flows along Yarrandale Road. The alignment will alter flood flows across the property, resulting in ponding on the eastern boundary and erosion on the western boundary.

Another submission identified that during high rainfall events, flash flooding occurs in Goulburn Creek and Ewenmar Creek that can affect Mawbeys Road and Old Mill Road. Concern was raised that the proposal would divert floodwaters and impact access on these roads and their properties, 'Rosewood', 'Coorabong', 'Goburn', 'Glenayr', 'Roslyn' and 'Glenburn'.

Response

Responses to issues raised about the adequacy of the assessment and modelling undertaken are provided in section 8.3.3 of this report.

Existing conditions and potential impacts on local roads including Yarrandale Road, Mawbeys Road and Old Mill Road were considered in section 7.1.4 of Technical Report 3. The predicted changes in length of overtopping were described. The mapping in Appendix G of Technical Report 3 also provides information on afflux (change in flood levels), velocity, duration and flood hazard, for these roads and nearby properties. Modelling results presented in the updated flooding and hydrology assessment report also provide information on impacts in this area.

Flood modelling provided in the updated flooding and hydrology assessment report predicts that:

- ▶ There are negligible to minor changes in flood extents along Yarrandale Road, Mawbeys Road and Old Mill Road near the proposal.
- ▶ The property located near Yarrandale Road is currently subject to existing flood depths generally up to 0.25 metres in the 1% AEP event. With the proposal, changes in flood levels are predicted to be typically less than 0.1 metres.
- ▶ In the area of Goulbourn Creek and Ewenmar Creek, including the properties mentioned in the submission, there are negligible to minor changes in flood extents.

Culverts and bridges are generally located around existing drainage lines, watercourses and within floodplains and associated overflow areas to minimise changes to natural flow patterns. As noted above, further refinement and modelling would be undertaken during detailed design to review and confirm the final arrangements of culverts. This would include further consultation with directly impacted landholders regarding flow paths on their property.

Flooding risks at properties near watercourses

Issue

A submitter raised concern that the flooding risk at their property will be exacerbated by the proximity of the proposal. The alignment is located close to a number of creeks—particularly Jude's Creek, which runs through the property. These creeks are subject to flooding during periods of high rainfall.

Another submission identified that the proposal would increase flood levels at their house located near the Namoi River, as it is located within a floodplain and would accumulate debris on the bridge piers during flood events.

Response

The flooding and hydrology assessment considered the potential impacts associated with watercourses, including Jude's Creek and nearby unnamed waterways, and flooding impacts associated with the Namoi River and Narrabri Creek to properties.

Flood modelling provided in the updated flooding and hydrology assessment report shows that:

- ▶ Predicted flood extents around Jude's Creek remain largely unchanged with the proposal, with localised increases in depths close to the rail corridor
- ▶ The property located near the Namoi River is currently subject to existing flood depths up to one metre in the 1% AEP event. With the proposal, changes in flood levels are predicted to be less than one centimetre for the 1% AEP event.

The minimum and maximum spans between bridge piers for all proposed bridges are 14 m and 33 m, respectively. This is a large opening and it is considered unlikely to be blocked by floating debris that would significantly impede flood flows. An appropriate bridge loss coefficient was included in the models to account for the bridge piers impeding flood flows, and this already adequately allows for any blockage by debris. No additional blockage due to debris is required in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). However, noting the sensitivity of the town of Narrabri to flooding, a sensitivity analysis was undertaken to assess potential afflux impacts due to flood debris collecting on the Narrabri bridge piers. The analysis, presented in the updated flooding and hydrology assessment report, predicts that there would be negligible afflux impacts and as such, this has not been included in the flood models.

Further information about how operational flooding risks would be managed is provided in section 9.3.6 of this report.

Flood modelling has underestimated impacts on properties

Issue

Some submissions raised concerns that the flood modelling had underestimated the flooding on their properties as follows:

- ▶ A submission raised concern that the modelling underestimates the depth of flooding on their property 'Cooyong', where Teridgerie Creek and Horse Shoe Bend Creek meet. ARTC report that it is greater than 2 metres; however, the submitter had observed depths of 6 to 7 metres. The proposed culverts would not be adequate and will result in erosion and scour.
- ▶ A submission raised concern that ARTC have underestimated the flooding at their property near Curban and that the proposal would affect the flow of floodwaters, lead to localised inundation, and the culverts would not be adequate and will result in erosion.
- ▶ A submission raised concern that the flood modelling had underestimated the depth and extent of flooding at their property 'Wyuna'.

Response

As described above, the modelling has been undertaken in accordance with the methodology provided in *Australian Rainfall and Runoff* (Ball, et al., 2019) and has undergone a comprehensive calibration and validation process. The potential impacts of the proposal were considered in Technical Report 3 and in the updated flooding and hydrology assessment report. This includes assessment of inundation and erosion risk.

The mapping of existing and operational conditions provides a representation of the flooding at these locations and is consistent with the observed conditions on floodplain areas within which these properties are located. Greater depths would be present within the main channels of creeks such as Teridgerie Creek and Horse Shoe Bend Creek and have been included within the flood models.

The updated flooding and hydrology assessment report provides information on the predicted flooding in these areas.

The proposal has been designed to cater for the predicted flows. As described in section 9.3.6 of this report, in accordance with mitigation measure FH1, the flood modelling would be further refined during the detailed design process. The additional flood modelling, and any mitigation identified as an outcome of modelling, would be undertaken in consultation with impacted landholders.

Further information requested on property-specific impacts from flooding

Issue

Further information was requested, including more detailed information about the predicted flooding impacts at individual properties, to help property owners understand the proposal's effects.

Response

Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal (as updated). Mapping of potential impacts following construction of the proposal is provided in the updated flooding and hydrology assessment report. This includes mapping of afflux (change in flood levels), velocity, duration and flood hazard. Results are provided for a range of flood events, from the 20% AEP event to the PMF event. Potential impacts on buildings, roads, existing rail lines and land use are assessed. Detailed flood mapping provides an indication of the potential impacts on properties.

ARTC has met with landowners/landholders directly affected by the proposal. This included discussion of the flood modelling results, to date, to help landowners/landholders understand the effects of the proposal at their properties. ARTC will continue to consult with directly affected landowners/landholders.

Further detailed flood modelling would be undertaken as an integral part of the detailed design process. The additional flood modelling, and any mitigation and management measures identified as an outcome of modelling, would be undertaken in consultation with affected landowners/landholders. In conjunction with the modelling, ARTC would provide more detailed information to landowners/landholders regarding the effects of the proposal at their properties, and proposed mitigation and management measures.

Request for more detailed flood mapping

Issue

A submission raised concern that the information provided by ARTC regarding flooding impacts on their property, located on the Kamilaroi Highway, near Narrabri, were not specific enough and requested more precise information.

Response

The potential impacts of the proposal were considered in Technical Report 3 and in the updated flooding and hydrology assessment report. Web based mapping of existing flood extents and afflux for the 1% AEP event is also available on ARTC's Inland Rail web site at <https://inlandrail.artc.com.au/where-we-go/projects/narromine-to-narrabri/consultation/>

Consultation with this resident has been ongoing since 2016. ARTC has had a total of 73 interactions with the resident in person, via telephone and written correspondence. ARTC has also sent 42 notifications, containing project wide information, to the resident. A broad range of topics have been discussed, including flooding, noise/vibration, property access, traffic impacts, route selection decisions, planning approval process and property acquisition. ARTC will continue to consult with directly affected landowners/landholders to help landowners/landholders understand the effects of the proposal at their properties. The additional flood modelling, and any mitigation identified as an outcome of modelling (see section 9.3.6 of this report), would be undertaken in consultation with impacted landholders. ARTC would provide more detailed information to landowners/landholders regarding the flooding effects of the proposal at their properties and proposed mitigation measures.

9.3.5 Other operational issues

Increased flooding due to climate change

Issue

A submitter was concerned that increasing rainfall caused by climate change would overwhelm the proposal's drainage system and cause flooding. Concern was raised that climate change impacts have not been adequately considered, particularly potential liabilities and damage from increases in flooding impacts from climate change.

Response

It is noted that many of the culverts and bridges provided along the proposal have additional capacity to convey flows for larger events than the 1% AEP event.

The climate change assessment involved modelling the 1% AEP event with a 22.8 per cent increase in rainfall depth in accordance with *Australian Rainfall and Runoff* (Ball, et al., 2019). This is based on the upper range projection for greenhouse gas concentrations for the year 2090. Potential climate change impacts to buildings, roads, existing rail lines and land uses are assessed with predictions provided for afflux, duration and hazard.

The proposal's drainage system has been, and would continue to be, designed to minimise the potential for flooding risks.

Further information about how operational flooding risks would be managed is provided in section 9.3.6 of this report.

Infrastructure maintenance

Issue

Some submitters were concerned about maintenance issues caused by the proposal, such as build-up of debris around pylons and the cost of erosion protection.

Response

Maintenance requirements and procedures for ARTC's drainage infrastructure, including any build-up of debris around pylons, are captured by the relevant Environmental Management Framework for the proposal (as described in section D5.2 of the EIS) and by implementation of ARTC's operational procedures relating to structures inspection. These procedures are supplementary to ARTC's asset management system, which outlines mandatory and routine inspections to effectively maintain ARTC's assets. ARTC undertakes regular track patrols to ensure the safe and efficient operation of the network. The frequency of these inspections varies between corridors and depends on the volume of traffic, weather and condition/type of assets on the section of track.

Environmental site inspections are another component of ARTC's inspection regime. An annual schedule is developed in consultation with the relevant corridor managers and includes triggers for non-scheduled inspections. Environmental site inspections are undertaken by ARTC's Environment Advisors and focus on areas of risk such as waterways, known heritage items, sensitive flora or fauna and works in proximity to sensitive receivers.

Residents or other stakeholders can contact ARTC regarding asset or environmental issues (including culverts) via the Enviroline service (via: **Contact Us — ARTC**, 1300 550 402 or enviroline@artc.com.au), which is available 24 hours/seven days a week.

The proposal would include scour protection to achieve compliance with the quantitative design limits. In particular, preventing erosion and scour near culverts and bridges is a key consideration in the design to protect the integrity of culverts, bridges and the railway embankment. The cost of providing the erosion/scour protection has been considered in the construction costs for the proposal.

Proposed road realignment would affect flooding

Issue

A submission expressed concern that the proposed public road realignment near their property, 'Caraboo', would affect the flow of floodwaters and lead to localised inundation, and that the provision of a single culvert was not adequate and will result in erosion.

Response

The potential impacts of the proposal, including public road realignments, were considered in Technical Report 3 and in the updated flooding and hydrology assessment report. This includes assessment of inundation and erosion risk. Flood modelling provided in the updated flooding and hydrology assessment report predicts that there would be minimal changes in flood extents within this property and that the proposed culvert would be sufficient. The additional modelling undertaken during detailed design (see section 9.3.6 of this report) would include further consultation with directly impacted landholders regarding flow paths on their properties.

9.3.6 Mitigation

Mitigating and managing potential flooding impacts

Issue

Concerns were raised about how flooding impacts associated with the proposal's infrastructure, including impacts on properties, would be mitigated and managed.

Response

The proposal has been designed to, at a minimum, provide for the conveyance of flood flows for up to and including the 1% AEP event; in particular, the proposal has been designed to comply with the proposed quantitative design limits. The quantitative design limits have been revised since the EIS was exhibited and are provided in the updated flooding and hydrology assessment report.

The quantitative design limits apply outside the rail corridor, for events up to and including the 1% AEP flood event. The limits have been established in consultation with DPE and are based on relevant policies, planning controls and guidelines (described in section 2 of Technical Report 3 and in the updated flooding and hydrology assessment report), other Inland Rail projects and similar infrastructure projects in NSW. Adopting these limits would minimise the risk to public safety, buildings, existing highways and roads, existing rail lines and land uses.

The proposal seeks to minimise the potential impacts of constructing the new rail line over areas of floodplain by including 75 bridges and about 630 banks of culverts in the railway embankment (as shown in the updated map book). In accordance with mitigation measure FH1, the design would continue to be refined, where practicable,

to not worsen existing flooding characteristics. Mitigation measure FH1 also provides that further detailed flood modelling would be undertaken as an integral part of the detailed design process. Modelling would assess potential impacts to:

- ▶ Building and property inundation (including floor level surveys and consideration of existing inundation levels)
- ▶ Existing rail line, at rail connections
- ▶ Road flood levels and extent of flooding along roads
- ▶ Flood evacuation routes
- ▶ Overland flow paths and storage effects of construction and operational infrastructure.

The flood modelling undertaken as part of detailed design would have regard to the guidelines listed in section B3.1.1 of the EIS. The additional flood modelling, and mitigation identified as an outcome of modelling, would consider floodplain risk management plans and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. This would be undertaken in consultation with potentially impacted landholders and other relevant stakeholders (including the relevant council and local emergency management committees, DPE, and the NSW State Emergency Service).

During this process, ARTC would provide more detailed information to landowners/landholders regarding the effects of the proposal at their properties and proposed mitigation and management measures.

In accordance with mitigation measure FH2, the further modelling and site-specific assessments undertaken during detailed design would confirm the locations downstream of culverts and within drainage control areas that require erosion protection and the extent and type of protection required.

Where it is not practicable to meet the quantitative design limits, ARTC will undertake the process described in the updated flooding and hydrology assessment report.

9.4 Soils and contamination

9.4.1 Construction impacts

Construction on erodible soils and soil testing

Issue

Some submitters raised concerns about the viability of constructing the railway on erodible soils in the Black Hollow/Brigalow area, and in the foothills of the Warrumbungle Mountains. Concerns were also raised about potential erosion impacts.

A submitter queried what soil and compaction testing would be conducted prior to work commencing to understand the effects of construction.

Response

Existing ground conditions in the proposal site have been considered during design development and preparation of the EIS. The characteristics of different soil types, including those around Black Hollow, would be further considered as part of the detailed design to inform the rail embankment design, and erosion and sediment control requirements. This would involve further soil testing as required.

Potential erosion impacts during construction would be managed by implementing best-practice soil erosion management measures detailed in the soil and water management plan (mitigation measure WR6), which would be prepared in accordance with *Managing Urban Stormwater: Soils and construction—Volume 1* (Landcom, 2004), *Volume 2C Unsealed roads* (DECC, 2008b) and *Volume 2D, Main Road Construction* (DECC, 2008c) (collectively referred to as the Blue Book).

Erosion impacts and climate change

Issue

A submitter indicated that the estimated erosion impacts were inaccurate and did not account for increased rain events from climate change.

Response

Potential erosion risks during construction were assessed in section B3.4.1 of the EIS. All erosion and sediment control measures would be designed and implemented in accordance with relevant guidelines (e.g. the Blue Book) and would take into account potential climate and weather conditions at the time of construction.

The potential for impacts due to climate change were considered in chapter D4 of the EIS. This included consideration of impacts due to the increased intensity of extreme rainfall events. As described in chapter D4, the assessment included identifying potential adaption measures and/or design strategies to mitigate the potential for climate change impacts. In accordance with mitigation measures CC1, CC2 and CC3, the adaption measures identified for the proposal would be reviewed, and final measures would be incorporated into the design, construction and operation of the proposal, as far as practicable.

9.4.2 Operation impacts

Erosion and scouring caused by culverts

Issue

Some submitters raised concerns about the effects of erosion and scouring due to water channelling through culverts. Concern was expressed about culverts situated on dispersive soils and areas that experience increased flooding risk near the foothills of the Warrumbungle Mountains. Submitters suggested that erosion caused by culverts would cause damage, including to soils, infrastructure and local roads.

Response

An assessment of potential erosion impacts at culverts was undertaken in section 7.2 of Technical Report 3 and further information is provided in the updated flooding and hydrology assessment report. The assessment identified that due to the soil types, existing conditions of watercourses, and changes to flows and velocities as a result of the proposal, there is a risk of erosion and scour occurring. 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.

In accordance with mitigation measure FH2, further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection and to confirm the extent and type of protection required.

Impact of land clearing

Issue

Concerns were raised about the potential for erosion as a result of vegetation clearing. A submitter was concerned that removal of the nature corridor along their driveway would lead to land degradation from wind, flooding and rain-driven erosion.

Response

As described in section A8.7 of the EIS, any land directly disturbed by the construction of the proposal and not required for ongoing operations would be rehabilitated in accordance with a rehabilitation strategy. Further information is provided in section 9.4.3 of this report.

Quicksand caused by train vibration

Issue

A submitter raised concerns that sandy soils in the Pilliga region could be turned into quicksand from train vibration. The submitter questioned what investigation has been undertaken for this and how this would be mitigated.

Response

Existing ground conditions within the proposal site have been considered during the reference design and preparation of the EIS. The characteristics of different soil types, including the sand dominated soils throughout the Pilliga forests, would be further considered as part of the detailed design, to inform the rail embankment design. This would include risks associated with liquefaction at foundations from train-induced ground vibrations.

9.4.3 Mitigation

Rehabilitation

Issue

Some submissions questioned how ARTC would rejuvenate construction areas, including within private properties.

Response

As described in section A8.7 of the EIS, and in accordance with mitigation measures BD12 and LP19, any land directly disturbed by construction of the proposal, and not required for ongoing operations, would be rehabilitated in accordance with a rehabilitation strategy. The rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of the operational footprint (such as compounds, access roads and other areas disturbed during construction within the proposal site that would not be the location of final operational infrastructure).

The strategy would:

- ▶ Identify rehabilitation objectives and criteria
- ▶ Establish roles and responsibilities
- ▶ Define rehabilitation actions and requirements
- ▶ Define monitoring and maintenance requirements.

In general, rehabilitation would be undertaken in two stages. The first stage would involve stabilisation immediately following disturbance, such as at the completion of construction work in a particular area. The second stage would involve longer-term rehabilitation. This would be carried out on disturbed areas not required as part of the proposal's operational footprint.

The strategy would include:

- ▶ Site-specific guidance and specifications
- ▶ Requirements in relation to landform and soil/ground surface re-establishment
- ▶ Reinstatement of natural drainage patterns
- ▶ Rehabilitation of riparian areas disturbed during construction
- ▶ Rehabilitation of temporary construction areas to agreed pre-existing conditions
- ▶ Revegetation specifications and requirements
- ▶ Establishment of appropriate native grass species within the rail corridor, where practicable, to minimise exposed surfaces
- ▶ Opportunities to enhance local biodiversity and habitat value.

The rehabilitation strategy would integrate with the urban design and landscape plan (see section A7.6 of the EIS), which would define landscaping requirements.

The strategy would be prepared by a suitably qualified consultant, in consultation with relevant stakeholders (including councils and the community) and with consideration of:

- ▶ ARTC's Inland Rail Landscape and Rehabilitation Strategy and Inland Rail Landscape and Rehabilitation Framework
- ▶ The borrow pit rehabilitation strategy (provided in Appendix K)
- ▶ Rehabilitation requirements described in Technical Report 1—Biodiversity development assessment report
- ▶ Conditions of approval for the proposal.

In addition, and in accordance with new mitigation measure LP5, where construction is located on or immediately adjacent to private properties, and has the potential to affect properties, property-specific measures would be identified and implemented in consultation with landholders to address identified issues, where feasible and reasonable. This would include rehabilitation/rejuvenation of those parts of properties affected by construction works.

Erosion control devices

Issue

A submitter raised concern that erosion control devices installed in accordance to *Managing Urban Stormwater: Soils and Construction Volume 1* would not be capable of managing the effects of Warrumbungle Mountain flood water.

Response

All erosion and sediment control measures would be implemented in accordance with relevant guidelines, including *Managing Urban Stormwater: Soils and construction*. These guidelines include consideration of soil characteristics as part of the design and implementation of erosion and sediment control measures. The measures contained in the guidelines are based on field experience and have been previously demonstrated to be effective. The measures would take into account local conditions, including at the Warrumbungle Mountains.

9.5 Aboriginal heritage

9.5.1 Impacts

Construction in culturally sensitive areas

Issue

A concern was raised that the proposal site contains culturally sensitive areas, including Webbs Reserve. It was noted that Webbs Reserve contains scar trees and other Aboriginal artefacts and is ranked as highly culturally significant.

Response

Potential impacts on Aboriginal heritage are described in Technical Report 6—Aboriginal cultural heritage assessment report and summarised in section B6.3 of the EIS. The assessment identified a number of sites/items around the banks of the Macquarie River in the vicinity of the Webbs reserve area referred to by the submitter. Three of these sites/items could be directly impacted during construction. These sites include two artefact scatters and one archaeological deposit. All three sites were assessed as having an overall significance rating of moderate.

Consultation with Aboriginal stakeholders indicated that landforms associated within the Macquarie River were considered to be of high cultural significance as they contain traditional campsites associated with artefact scatters.

As described in section A6.2 of the EIS, potential impacts on Aboriginal heritage were minimised, as far as practicable, during the route selection process. This included locating the proposed bridge over the Macquarie River with consideration of known Aboriginal heritage sites in this area and avoiding heritage sites, where practicable.

In accordance with mitigation measure AH1, detailed design and construction planning would avoid direct impacts on culturally sensitive areas, including identified items/sites of Aboriginal heritage significance, as far as reasonably practicable. If impacts cannot be avoided, a range of mitigation measures have been provided to mitigate impacts on Aboriginal heritage, including measures AH2, AH4, AH5, AH6, AH7, AH8, AH9, AH10 and AH11. In particular, in accordance with mitigation measure AH10, an Aboriginal cultural heritage management plan would be prepared and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage.

9.5.2 Mitigation

Aboriginal heritage mitigation

Issue

A submitter raised concern that the Aboriginal heritage impact assessment did not include a method of rehabilitating damaged culturally significant plants, such as lilies, orchids, rushes and other herbs.

Response

In accordance with mitigation measure AH10, an Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage. This mitigation measure has been amended to include a requirement for the plan to include measures to minimise and mitigate potential impacts on plant species that hold medicinal and food value, guided by a cultural plant survey.

9.6 Non-Aboriginal heritage

9.6.1 Impacts

Impacts on historic and archaeological heritage

Issue

A submitter was concerned that the proposal traverses Drinane Public School, which is a local historical site.

Response

As identified in section B7.3.1 of the EIS, part of the locally heritage listed Drinane Public School site is located within the proposal site and would be directly impacted by the proposal. ARTC is committed to minimising the environmental impacts of the proposal and is investigating opportunities to reduce actual impact areas, where practicable. Mitigation measure NAH1 provides that detailed design and construction planning would avoid direct impacts on identified heritage and potential items, as far as reasonably practicable.

If impacts on the site cannot be avoided during detailed design, in accordance with mitigation measure NAH5, archival photographic recording of buildings to be removed would be carried out prior to removal in accordance with *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Council of NSW, 2006) and *How to prepare archival records of heritage items* (NSW Heritage Office, 1998). A heritage interpretation strategy would be prepared to provide a framework for interpreting the heritage items (listed and potential) impacted by the proposal, set out the key interpretative themes and identify communication strategies. Heritage interpretation would be undertaken in accordance with mitigation measure NAH4.

9.6.2 Mitigation

A submitter raised concern about the need to protect and conserve any fossils found in the Warrumbungle National Park area and suggested an independent archaeological team be onsite during construction.

Response

The proposal does not involve any work within the Warrumbungle National Park.

In accordance with mitigation measure NAH7, a heritage management plan would be prepared and implemented as part of the CEMP. It would include measures to manage non-Aboriginal heritage and minimise the potential for impacts during construction. The heritage management plan would include an unexpected finds procedure (mitigation measure NAH8) that would provide a consistent method for managing any unexpected heritage or archaeological items.

9.7 Noise and vibration (construction)

9.7.1 General impacts

Effects of construction noise and vibration on properties

Issue

Submitters were concerned about construction noise and vibration impacts, including the impacts of construction traffic, use of haul roads and general construction noise.

Response

The results of the construction noise and vibration assessment is summarised in chapter B8 (in relation to construction of the main proposal infrastructure) and chapters C1 to C3 (in relation to the use of key construction infrastructure). The detailed results are provided in Technical Report 8—Noise and vibration assessment—construction and other operations.

The assessment considered a range of construction scenarios and predicted noise levels from typical plant and equipment that is likely to be used, based on other rail construction projects. The modelling represents a representative ‘realistic worst-case’ scenario based on the assumption that several items of construction equipment would be used at the same time within individual construction scenarios. The adopted sound power levels (noise levels) for each scenario consider the range of plant and equipment likely to be used.

Where noise is above the construction noise management levels, all feasible and reasonable work practices to minimise noise would be implemented and all potentially affected receivers would be informed. Further information about how construction noise and vibration would be managed to minimise the potential for impacts is provided in section 9.7.3 of this report.

9.7.2 Property-specific impacts/concerns

Property and livestock impacts

Issue

A submitter raised concerns regarding adverse noise impacts on their property during construction, including effects on livestock and peak operational seasons (such as lambing), as well as the general use of the property. The property is located about 500 metres from the proposal and ARTC indicated that the residence would receive noise impacts of 80 dB. They have not received requested information on mitigation.

ARTC has not shown that noise and vibration impacts will not adversely affect the property during construction. Have the impacts of using the property for construction infrastructure (general construction compound and mobile concrete batching plant) been assessed—particularly given the proposed out-of-hours work? Vehicles accessing the compound will result in regular noise and vibration impacts early in the morning, late in the evening, and during the night and on weekends.

Response

Adequacy of construction assessment

The potential construction impacts on this property were assessed by the construction noise and vibration assessment (Technical Report 8). The assessment considered this residence and a potential residence (identified as receiver IDs 243906 and 243908 in Technical Report 8) and a number of other buildings at the property. Construction noise and vibration impacts are considered at the residential receivers, while construction vibration impacts are considered at all identified buildings on the property.

The construction assessment considered the potential impacts associated with all relevant construction activities near this property, including general construction activities within the construction footprint, utility adjustments and compounds.

Potential impacts of construction compound

The construction noise and vibration assessment has been updated as described in section 3.2.1 of this report. The updated assessment identified that noise levels due to the general construction compound at this property are predicted to be up to 50 dB(A) L_{Aeq} , and noise levels due to the mobile concrete batching plant are predicted to be up to 48 dB(A) L_{Aeq} . These predicted noise levels would exceed the relevant noise criteria (provided in section B8.2 of chapter B8 of the EIS) by 15 dB(A) and 13 dB(A), respectively.

The structural damage buffer distances for the highest vibration-generating activities in the vicinity of this property are 18 m for main construction works (vibratory roller). There are no structures on this property within this buffer distance that would receive construction vibration levels in excess of the structural damage criteria. Similarly, the residence is located outside the human comfort and perception of construction vibration buffers of 140 m and, as such, human comfort impacts are not predicted.

Commitments to managing the potential for noise and vibration impacts during construction are defined by a number of mitigation measures, as described in section 9.7.3 of this report.

Stock impacts

Technical Report 11—Agriculture and land use assessment considered a range of potential impacts on agricultural operations, including animal welfare and stock behaviour. The potential effects of noise on livestock grazing patterns were considered, finding that the few abnormal behavioural changes noted in published studies were well within the range of activity variation within a group of animals (see discussion, including cited references, in Table 7.10 on page 101 of Technical Report 11). Consequently, construction noise is not expected to affect stock productivity.

Notwithstanding this, ARTC commits to continue to consult with property owners to identify appropriate measures to minimise the impacts of the proposal on property operations. In accordance with amended mitigation measure LP5, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented in consultation with landholders to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices.

Issue

A submitter raised concern that they would be impacted by excessive noise and vibration during construction due to the proximity of construction to residences and farm infrastructure on their properties ('Rosewood' and 'Roslyn').

Response

Construction noise

Residences at these properties were identified as receiver IDs 243471 and 243475 ('Rosewood') and receiver ID 243428 ('Roslyn') by Technical Report 8. The updated construction noise and vibration assessment has identified the following key findings in relation to these properties. The approach to managing the potential for construction noise and vibration impacts is described in section 9.7.3 of this report.

Receiver ID 243471

Noise levels due to the main construction activities are predicted to range from 38 dB(A) L_{Aeq} for bridge piling works, up to around 64 dB(A) L_{Aeq} for stripping of topsoil, main earthworks and landscaping works.

Nearby utilities work on the property was predicted to exceed 75 dB(A) for short periods as this is located directly adjacent to the residence.

These predicted noise levels would exceed the relevant noise criteria (provided in section B8.2 of the EIS) by up to 40 dB(A) for utilities work.

Receiver ID 243475

Noise levels due to the main construction activities are predicted to range from 38 dB(A) L_{Aeq} for bridge piling works up to around 67 dB(A) L_{Aeq} for stripping of topsoil, main earthworks and landscaping works.

Nearby utilities work on the property was predicted to exceed 75 dB(A) for short periods as this is located directly adjacent to the residence.

These predicted noise levels would exceed the relevant noise criteria by up to 40 dB(A) for utilities work.

Receiver ID 243428

Noise levels due to the main construction activities are predicted to range from 37 dB(A) L_{Aeq} for level crossing works, up to around 46 dB(A) L_{Aeq} for stripping of topsoil, main earthworks and landscaping works.

Noise levels from piling for the nearby bridge is predicted to be up to 52 dB(A) L_{Aeq} .

Nearby utilities work is predicted to reach up to 67 dB(A) for short periods.

The nearest road construction work has predicted construction noise levels of between 39 dB(A) and 46 dB(A) L_{Aeq} , depending on the activity.

Construction infrastructure activities may be audible at times, with noise from a general compound predicted to be 36 dB(A) L_{Aeq} and noise from a batching plant predicted to be 35 dB(A) at this receiver.

These predicted noise levels would exceed the relevant noise criteria (provided in section B8.2 of the EIS) by up to 32 dB(A) for utilities work.

It is noted that construction equipment would move about the proposal site and operate at maximum power for only brief periods. At other times, noise levels would be reduced as the machinery may not require full power or would operate in a different location. It is highly unlikely that all assumed construction equipment would be operating at maximum power simultaneously; therefore, predicted noise levels are representative of the relatively short period of time when the equipment is operating at the nearest point to the receiver. At other times noise levels would be less.

Construction vibration

The structural damage buffer distances for the highest vibration-generating activities in the vicinity of these properties are 18 m for earthworks and 8 m for site clearing. There are no structures on these properties within these buffer distances that would receive construction vibration levels in excess of the structural damage criteria.

One of the residences at the 'Rosewood' property may experience vibration levels above the human comfort criteria during rail earthworks activities.

The approach to managing the potential for construction noise and vibration impacts is described in section 9.7.3 of this report.

Property-specific impacts as a result of construction noise

Issue

A submitter located on the Newell Highway at Bohena Creek raised concerns about adverse noise and vibration impacts on their property during construction, with their property located less than 400 metres from the rail corridor. Particular concern was raised about sleep disturbance impacts due to the proximity of the alignment and associated impacts on work performance. The submitter questioned the effectiveness of measures and how that would be managed.

Response

This residence was identified as receiver ID 332615 by Technical Report 8. The updated assessment identified the following in relation to predicted noise levels and potential impacts at this property:

- ▶ Noise levels due to rail construction activities are predicted to range from 23 dB(A) L_{Aeq} during track connection works, up to 57 dB(A) L_{Aeq} for stripping of topsoil, main earthworks and landscaping works.
- ▶ Noise levels associated with the nearby proposed road realignment and level crossing are predicted to range from 50 and 57 dB(A) L_{Aeq} , depending on the activity.
- ▶ There are no predicted exceedances associated with construction infrastructure such as compounds.
- ▶ This receiver is not located close to construction works that are planned to be undertaken outside the primary proposal construction hours. As a result, the potential for sleep disturbance would be limited to the 6am to 7am time period.

As noted in the above response, predicted noise levels are representative of the relatively short period of time when the equipment is operating at the nearest point to the receiver. At other times, noise levels would be less.

These predicted noise levels would exceed the relevant noise criteria (provided in section B8.2 of the EIS) by up to 22 dB(A) for stripping of topsoil, main earthworks and landscaping works.

The approach to managing the potential for construction noise and vibration impacts is described in section 9.7.3 of this report.

Borrow pit noise

Issue

A submitter raised concern about noise and vibration from borrow pit C and the associated haul road running to the east of their property.

Response

An assessment of potential construction noise and vibration impacts associated with borrow pit C was undertaken and is summarised in chapter C3 of the EIS. It included consideration of borrow pit establishment, use and haul road movements. The assessment predicted that there would be exceedances of the construction noise management level at up to six residential receivers, during borrow pit establishment, and up to 15 residential receivers, during borrow pit use (during standard construction hours), which includes the submitter's property.

Mitigation measures proposed to minimise potential noise and vibration impacts (see section 9.7.3 of this report) would be implemented during establishment and use of borrow pit C.

Sleep disturbance impacts

Issue

A submitter raised concern that construction would affect their sleep, with the tolerance for noise in rural areas being much lower than in urban areas, because people are used to minimal background noise.

Response

In accordance with the relevant assessment guidelines—*Interim Construction Noise Guideline* (DECC 2009), the criteria for sleep disturbance are established with reference to the existing background noise levels. As such, the criteria take into account the rural setting of much of the proposal site.

An assessment of potential sleep disturbance impacts was undertaken and is summarised in section B8.4.3 of the EIS. The assessment considered the limited discrete construction activities (e.g. some bridge works) that would be undertaken at night (not exceeding 48 hours at any one location) and general construction activities undertaken between 6am and 7am. A range of potential exceedances of the criteria were identified, which would require management.

In accordance with mitigation measure CNV5, an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures, and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels.

Further information about managing potential noise and vibration impacts during construction is provided in the following response.

9.7.3 Mitigation

Mitigating and managing potential construction noise and vibration impacts

Issue

Concerns were raised about how noise and vibration impacts during construction, including impacts on properties, would be mitigated and managed.

Response

As described in section B8.5.1 of the EIS, where noise is above the construction noise management levels, all feasible and reasonable work practices to minimise noise would be implemented, and all potentially affected receivers would be informed. If no quieter work method is feasible and reasonable, consultation with occupants of affected residences would be undertaken to explain the duration and noise levels of the works and any respite periods that would be provided.

Mitigation measures have been developed with the aim of minimising or mitigating (as far as practicable) the identified construction noise and vibration impacts.

The Inland Rail NSW Construction Noise and Vibration Management Framework (provided in Appendix L of the EIS) was developed to guide the management of noise and vibration during construction of Inland Rail.

The framework includes a requirement to develop construction noise and vibration impact statements. These impact statements would be prepared prior to specific construction activities, based on a more detailed understanding of the construction methods, including the size and type of construction equipment; duration and timing of works; and detailed reviews of local receivers, as required. Construction noise and vibration impact statements would include:

- ▶ A more detailed understanding of surrounding receivers, including particularly sensitive receivers, such as education and childcare, and any vibration-sensitive medical, imaging, and scientific equipment
- ▶ Application of appropriate noise and vibration criteria for each receiver type
- ▶ An assessment of the potential noise and vibration impacts as a result of different construction activities
- ▶ Minimum requirements in relation to standard noise and vibration mitigation measures

- ▶ Noise and vibration auditing and monitoring requirements
- ▶ Additional measures to be implemented when works outside the recommended standard construction hours, or exceedances of the noise or vibration management levels, are likely to occur.

Where sensitive receivers are located within the identified buffer distances, based on the equipment likely to be used, an assessment of the potential vibration impacts would be undertaken. Feasible and reasonable mitigation measures would be identified and implemented in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework.

Mitigation measures proposed to minimise noise and vibration impacts during construction include measures CNV1 to CNV8, CNV-CI1 and CNV-CI2. In particular, in accordance with mitigation measure CNV1, location and activity-specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment; duration and timing of works; and detailed reviews of local receivers, as required. The statements would confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures. The statements would also confirm noise and vibration auditing and monitoring requirements.

Mitigation measure CNV3 provides that a construction noise and vibration management plan would be prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration and minimise the potential for impacts during construction.

Mitigation measure CNV4 provides that the Inland Rail NSW Construction Noise and Vibration Management Framework would be implemented, and the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the noise and vibration assessment (see section 2 of the updated noise and vibration assessment—construction and other operations report). All feasible and reasonable noise and vibration measures would be implemented.

Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, the noise and vibration management plan, and the construction noise and vibration impact statements.

As noted in section B8.4.2 of the EIS, there are significant portions of the proposal site that are sufficient distance from noise sensitive receivers such that noise impacts are not anticipated. Works could be undertaken at these locations within the primary proposal construction hours without affecting noise sensitive receivers. No specific mitigation measures would be required at these locations and this would be identified in the construction noise and vibration management plan. Potential noise and vibration during out-of-hours work would be managed in accordance with the out-of-hours work protocol (mitigation measure CNV5).

9.8 Noise and vibration (operation)

9.8.1 General impacts

Effects of operational noise and vibration on residents and amenity

Issue

A number of concerns were raised about operational noise and maximum noise levels. Submitters expressed concern that noise and vibration from trains would affect their residences and community amenity. Concerns were also raised about noise caused by shunting, public roads and level crossings.

Response

The results of the operational noise and vibration assessment are summarised in chapter B9 of the EIS. The detailed results are provided in Technical Report 8—Noise and vibration assessment—construction and other operations and Technical Report 9—Noise and vibration assessment—operational rail. The operational noise and vibration assessment has been updated, as described in section 3.2.1 of this report.

The assessment reports identify relevant criteria, potential operational noise and vibration impacts, locations of predicted exceedances of the relevant criteria, and receivers that qualify for consideration of mitigation.

The updated noise and vibration assessment for rail operations (described in the updated noise and vibration assessment—operational rail report) identified that a total of 49 sensitive receivers are predicted to experience exceedances of the criteria at the commencement of operations and an additional 27 sensitive receivers (a total of 76 receivers) are predicted to experience exceedances at full operation in 2040. The maximum noise levels occur

during the highest discrete noise events from individual train passby events, or train operations at level crossings and crossing loops, including use of train horns and brakes. The updated assessment identifies that maximum noise levels are predicted to exceed the 80 dB(A) maximum noise level criterion by 11 dB(A) at 35 sensitive receivers. The highest predicted noise level was 13 dB(A) above the noise assessment criteria. These receivers would be eligible for consideration of feasible and reasonable noise mitigation.

Predicted noise levels for all receivers within the study area are provided in Appendices D and E of the updated assessment report. The assessment of maximum noise levels included noise generated by shunting.

It is expected that amenity changes at properties along the rail corridor resulting from train operations would be intermittent throughout the day, although noise and vibration caused by idling trains may be experienced for longer durations at properties near crossing loops.

Potential operational road traffic noise impacts were also considered for roads that are subject to substantial realignments. The modelling results indicated that noise levels would be below the road traffic noise criteria at the nearest sensitive receivers.

Vibration levels from train operations were predicted to achieve the criteria for managing human comfort vibration disturbance and cosmetic damage at sensitive receivers.

ARTC is committed to implementing a range of measures to mitigate the potential operational noise impacts identified. Further information about how the potential for noise impacts would be managed during operation is provided in section 9.8.5 of this report.

9.8.2 Property-specific impacts/concerns

Operational noise impacts at individual properties

Issue

A submitter raised concerns about adverse noise impacts on their property (Thurleigh), which is less than 800 metres from the rail corridor.

Response

Predicted noise levels for all receivers within the study area are provided in Appendices D and E of the updated noise and vibration assessment—operational rail report. Residences on this property are identified as receiver IDs 244554 and 244514 in the report. The updated assessment has identified the following findings in relation to these residences with reference to the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013):

Receiver ID 244514 is located outside the operational noise assessment study area and would not exceed any relevant operational noise criteria.

Predicted noise levels at receiver ID 244554 are 51 dB(A) L_{Aeq} (night time, 9hr) and a maximum noise level of 75 dB(A). These would not exceed the relevant operational noise criteria.

Issue

A submitter located on the Kamilaroi Highway at Narrabri identified that they had not been included in the operational noise assessment (Technical Report 9). The submitter requested the maximum level at their property be provided and proposed mitigation.

Response

This residential receiver was not included in the operational rail noise assessment (Technical Report 9) by error. The residence has been assessed by the updated operational noise and vibration assessment and is identified as receiver ID 246470.

Predicted noise levels at this property would exceed the night-time average noise level criteria of 55 dB(A) with levels of 57 dB(A) in 2026 and 58 dB(A) in 2040. Maximum noise levels at this property are estimated to be 82 dB(A) in 2026 and 2040. These would exceed the relevant operational noise criteria in 2026 and would qualify for consideration for mitigation.

In accordance with mitigation measures ONV1 and ONV2, an operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design. This would confirm the proposed mitigation for this property in consultation with the landowner.

Issue

A submitter noted that there would be significant noise and vibration impacts on their property, 'Nampara', in Narromine during operation, and that the proposed soundproofing mitigation would impact on people considering purchasing the property.

Response

Three residences are identified within the 'Nampara' property as receiver IDs 332459, 332467 and 332471 in the updated noise and vibration assessment—operational rail report. The updated assessment has identified that two of these (receiver IDs 332467 and 332471) qualify for consideration of noise mitigation. The third receiver (ID 332459), is not predicted to exceed the operational noise criteria in *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). As a result, it would not qualify for consideration of noise mitigation.

Issue

A submitter located on the Newell Highway at Bohena Creek raised concerns about adverse noise and vibration impacts on their property during operation, as their property is located less than 400 m from the rail corridor. The submitter questioned if the proposed operational noise mitigation would be implemented before construction begins and questioned the effectiveness of measures and how that would be managed.

Response

This receiver (receiver ID 332615) has been identified as being eligible for consideration of noise mitigation in 2026 and 2040 by the updated noise and vibration assessment—operational rail report.

Further information about the approach to managing noise during operation is provided in section 9.8.5 of this report.

Where at-property noise treatments are identified as the preferred mitigation option, ARTC would aim for these works to be undertaken as soon as practicable to assist with managing construction noise. This would be limited to those sensitive receivers confirmed as qualifying for operational noise mitigation in the year of opening by the operational noise and vibration review (mitigation measures ONV1 and ONV2), dependent on the condition of the dwelling, landowner agreement and cooperation, and the availability of trades and materials.

Issue

A submitter (Rosewood and Roslyn) raised concerns about noise during the 24-hour operation, noting that their property is 120 metres from the rail corridor. Concern was raised about noise from trains braking and horns at the railway crossing.

Response

These residences are identified as receiver IDs 243471 and 243475 ('Rosewood') and 243428 ('Roslyn') in the updated noise and vibration assessment—operational rail report. The updated assessment has identified the following key findings in relation to the most impacted residence (ID 243471):

Predicted noise levels at night time are 60 dB(A) in 2026 and 60 dB(A) in 2040, which exceed the relevant criteria of 55 dB(A).

Predicted maximum noise levels are 85 dB(A) in 2026 and 2040, which exceed the relevant criteria of 80 dB(A).

One of the residences at the 'Rosewood' property (receiver ID 243471) qualifies for consideration of noise mitigation as described in section 11.1 of the updated noise and vibration assessment—operational rail report. The other two receivers (ID 243475 and 243428) are not predicted to exceed the operational noise criteria in *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). As a result, they would not qualify for consideration of noise mitigation. Further information about the approach to managing noise during operation is provided in section 9.8.5 of this report.

Issue

A submitter (Trelawney Park) expressed concern about noise impacts on their property during operation, including effects on livestock, as well as the client's general use of the property. The property is located about 500 metres from the proposal and ARTC indicated that the residence would receive noise impacts of 80 dB. They have not received requested information on mitigation.

The submission expressed concern that operation noise and vibration impacts were inadequately assessed and that the mitigation measures proposed in Table B9.8 will be insufficient in terms of impact on their property.

Response

Responses to issues raised about the adequacy of the operational noise and vibration assessment are provided in section 8.3.2 of this report.

The potential operational noise and vibration impacts on this property (identified as receiver ID 243906) were assessed by Technical Report 9. The assessment identified one residential receiver and a number of other buildings at the property. The updated operation noise and vibration assessment has identified that the residence at this property qualifies for consideration of noise mitigation. Further information about the proposed approach to managing noise during operation is provided in section 9.8.5 of this report.

A response to issues raised about the potential impacts on livestock is provided in section 9.8.4 of this report.

Issue

A submitter located about 140 metres from the proposal site requested a noise impact assessment map for their property.

Another submitter raised concerns that their property, which is located off Box Ridge Road, Gilgandra, would experience a considerable increase in noise and that an increase in 45-60 dBA at 1 kilometre from the proposal would not be acceptable, particularly given the low background noise levels. The submitter also noted that the proposed mitigation of sound barriers or air conditioners would not be appropriate and would impact on their way of life.

Response

Predicted noise levels for all receivers within the study area are provided in Appendices D and E of the updated noise and vibration assessment—operational rail report.

The assessment identified a range of reasonable and feasible noise mitigation measures to reduce operational rail noise to below the relevant trigger levels. These included noise barriers, façade treatments (potentially incorporating air conditioning), upgraded property fencing, track lubrication systems and soft tone level crossing bells. Noise mitigation options would be discussed with relevant property owners to ensure their preferences are considered and the outcomes would be documented in the operational noise and vibration review (in accordance with mitigation measure ONV1).

Noise impacts from train movements on proposed viaduct

Issue

A submitter raised concerns about noise from the operation of the proposed viaduct over the Great Western railway line, the Mitchell Highway and the Macquarie River. The submitter raised concerns that the line would be elevated at 6 metres above ground level, allowing noise to travel unhindered to the town of Narromine. The submitter noted that this area would require attenuation/mitigation.

Response

Operational noise and vibration impacts are described in sections 7 to 13 of Technical Report 9—Noise and vibration assessment—operational rail and summarised in section B9.4 of the EIS. The operational noise and vibration assessment has been updated as described in section 3.2.1 of this report.

The operational rail noise assessment (Technical Report 9 and the updated noise and vibration assessment—operational rail report) includes an assessment of potential operational noise impacts associated with the bridge over the Great Western railway line (referred to as the Dubbo to Narromine Line in the EIS), the Mitchell Highway and the Macquarie River. The majority of receivers in this area are located a sufficient distance from the proposal such that no experiences of the criteria would be predicted. A single receiver (ID 332467) to the north of the Macquarie River was identified as qualifying for mitigation for year 2026 and 2040.

Baseline noise levels

Issue

A submitter (lot 82 DP 839664) noted that the baseline noise level was reported as 30 dBA; however, the actual noise level is considered to be much quieter than this. The submitter is concerned that the noise increase during operation will be of higher significance and impact than was analysed in the EIS.

The submitter noted that minor noise can be heard from vast distances and raised concern that the noise impacts would negatively impact on their farming business, quality of life, and property value.

Response

As described in section 4 of Technical Report 8—Noise and vibration assessment— construction and other operations, noise monitoring was undertaken at 21 locations and in accordance with relevant guidelines, including the *Industrial Noise Policy* (NSW EPA, 2001) and *Noise Policy for Industry* (NSW EPA, 2017). The monitoring locations were selected to provide a good representation of the existing noise environment and were identified with reference to topography, distance from the proposal site, and contribution from other noise activities, such as industry, road or rail noise. As a result, the monitoring data is considered to be valid and representative of the existing noise levels within the study area.

An individual's perception of noise is influenced by their environment. A noise level that is perceived to be loud in one situation may appear quiet in another. The guidelines require the assessment to be undertaken with reference to relevant criteria in accordance with *Rail Infrastructure Noise Guideline* (NSW EPA, 2013) as described in section 3 of the updated noise and vibration assessment—operational rail report. While noise may be audible, if it does not exceed the relevant criteria at a receiver then further consideration of mitigation is not required. It should be noted that the *Noise Policy for Industry* requires that where background noise levels during the evening and night are less than 30dB(A), then the criteria is set to 30dB(A).

ARTC is committed to implementing a range of measures to mitigate the potential operational noise impacts identified. Further information about how the potential for noise impacts would be managed during operation is provided in section 9.8.5 of this report.

Impact of train noise

Issue

A submitter raised concern that the proposal would extend across flat, open ground through their property, and would not have the same buffering benefits of the Newell Highway from the trees between the road and their property boundary. Concern was raised that a train travelling at 85 to 115 km/hour would be a lot noisier than any traffic on the Newell Highway, particularly considering Inland Rail is proposed to be built about two metres above natural ground level. It was noted that all possible mitigation measures need to be taken to reduce the noise disturbance.

Response

The operational rail noise modelling considers rail alignment height, train speed, consist and length and surrounding topography (amongst other matters).

Predicted noise levels for all receivers within the study area are provided in Appendices D and E of the updated noise and vibration assessment – operational rail report.

The assessment identified a range of reasonable and feasible noise mitigation measures to reduce operational rail noise to below the relevant trigger levels. These included noise barriers, façade treatments (potentially incorporating air conditioning), upgraded property fencing, track lubrication systems and soft tone level crossing bells. Noise mitigation options would be discussed with relevant property owners to ensure their preferences are considered and the outcomes documented in the operational noise and vibration review (in accordance with mitigation measures ONV1 and ONV2).

Further information on management of potential operational noise impacts is provided in section 9.8.5 of this report.

9.8.3 Vibration impacts

Vibration effects on bores

Issue

Concern was raised that the operation of the railway would cause seismic disturbances that may impact irrigation bores. It was asked what contingency would be put in place in case this occurred.

Response

Potential vibration impacts during operation are described in Technical Report 9 and summarised in section B9.4.5 of the EIS. The assessment concluded that vibration levels from train operations would not exceed the relevant criteria (see section 3 of the updated noise and vibration assessment—operational rail report) for structures greater than 13 m from the track. No vibration impacts on irrigation bores located a minimum of 13 m are predicted.

Vibration effects on infrastructure

Issue

Some submitters were concerned that the vibration caused by the proposal could damage their property's buildings. Issues raised included concerns about impacts on:

- ▶ House, sheds and foundations at a property located 140 m from the rail line close to Narrabri
- ▶ The properties Eveleigh and Thurleigh, including impacts on sheds and grain storage facilities
- ▶ Silos and sheds at Rosewood and Roslyn, located 50 m from the rail line.

Response

As noted above, the operational vibration assessment concluded that vibration levels from train operations would not exceed the relevant criteria for structures greater than 13 m from the track. As such, there are no predicted vibration issues for the structures at these properties.

In accordance with mitigation measure ONV5, operational noise and vibration compliance monitoring would be undertaken once Inland Rail has commenced operation, at representative locations, to compare actual noise performance against that predicted by the operational noise and vibration review. Compliance monitoring requirements would be defined by the operational noise and vibration review.

Vibration impacts on human comfort

Issue

A submitter raised concerns that vibration from trains would be felt at great distances.

Response

As described above, the vibration assessment in Technical Report 9 and the updated noise and vibration assessment—operational rail report concludes that vibration levels from train operations would not exceed the relevant criteria (see section 3 of the updated noise and vibration assessment—operational rail report) at any residences along the proposal site.

While the vibration levels are within the assessment criteria, there can still be the potential for rail operations to generate perceptible levels of ground-borne vibration at sensitive receivers. Further information about the proposed approach to mitigation is provided in section 9.8.5 of this report.

9.8.4 Other operational impacts

Effects of operational noise and vibration on livestock

Issue

Concerns were raised that noise would affect livestock on properties. Issues raised including potential effects on breeding programs and peak operational seasons (such as lambing), and a concern that stock may be injured if noise and vibration causes them to stampede.

Response

In Technical Report 11—Agriculture and land use assessment considered a range of potential impacts on agricultural operations, including animal welfare and stock behaviour. The potential effects of noise on livestock grazing patterns were considered, finding that the few abnormal behavioural changes noted in published studies were well within the range of activity variation within a group of animals (see discussion, including cited references, in Table 7.10 on page 101 of Technical Report 11). In addition, the noise resulting from train operations would be intermittent throughout the day. Consequently, operational noise is not expected to affect stock.

Notwithstanding this, ARTC commits to continue to consult with property owners to identify appropriate measures to minimise the impacts of the proposal on property operations.

Impacts on tourism

Issue

Concern was raised that the noise would impact tourism, particularly tourists that come to the area for tranquil surroundings.

Response

Noise and vibration sensitive receiver types for operational assessments are classified in accordance with the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). The operational noise criteria for airborne noise for open space—passive use (which includes parkland and bush reserves) and active use are provided in Table B9.2 of the EIS. The operational noise assessment identified no exceedances of the relevant criteria for these uses.

Although exceedances of the operational noise criteria are not predicted, recreation facilities and services in close proximity to the proposal site would have the potential to experience changes to amenity as a result of operating trains. This would include the potential to experience increased noise and vibration. It is expected that noise resulting from train operations would be intermittent throughout the day, with an average of 10 trains per day (both directions) in 2026 (for the Narromine to Narrabri section), increasing to about 14 trains per day (both directions) in 2040.

Further information about how the potential for noise impacts would be managed during operation is provided in section 9.8.5 of this report.

Impacts on business

Issue

A submitter raised concern that noise and vibration would reduce income from campers and would affect their exotic bird breeding enterprise and serenity.

Response

The residence at this property is identified as receiver ID 246320 in the updated noise and vibration assessment—operational rail report. The updated assessment has identified that the residence qualifies for consideration of noise mitigation.

The residence is located about 500 m from the alignment and is located closer to the proposal relative to other activities such as areas for camping (about 1.5 km from the alignment). As such, these areas would experience lower noise levels.

While exceedances of the operational noise criteria at the camping area are not predicted, changes to amenity as a result of operating trains may be experienced. Similarly, there may be increased noise levels at the location of the bird breeding.

Further information about how the potential for noise impacts would be managed during operation is provided in section 9.8.5 of this report.

9.8.5 Mitigation

Details on noise mitigation proposed

Issue

A number of submitters requested details on operational noise mitigation, including what measures would be implemented, where the mitigation (including acoustic attenuation treatments) would reduce the impacts on existing houses and night-time sleep disturbance, and what would be done if the measures are not effective.

A submitter requested that long-term operational noise levels be taken into account when selecting suitable noise mitigation measures.

Response

The operation noise and vibration assessments (Technical Reports 8 and 9) were prepared in accordance with the SEARs and relevant guidelines, including the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). The *Rail Infrastructure Noise Guideline* defines the process for establishing operational noise criteria and identifying receivers that qualify for consideration for mitigation.

As described in section B9.5.1 of the EIS, and in accordance with mitigation measure ONV1, an operational noise and vibration review would be undertaken to confirm noise and vibration predictions, based on the final design, and confirm how predicted impacts would be mitigated. The operational noise and vibration review would define further design work and iterative modelling required to identify feasible and reasonable mitigation measures for operational noise and vibration. The operational noise and vibration review would:

- ▶ Confirm predicted noise and vibration levels at sensitive receivers, which may include the results of façade testing for non-residential receivers (if required)
- ▶ Assess feasible and reasonable noise and vibration measures in a hierarchical manner (as described below)
- ▶ Identify options for controlling noise and vibration at the source and/or receiver, including location, type, and timing of implementation
- ▶ Include consultation (in accordance with the communication management plan described in chapter A4 of the EIS) to seek feedback from directly affected stakeholders on the proposed measures
- ▶ Specify feasible and reasonable measures for affected sensitive receivers
- ▶ Include a timetable for delivery of measures prior to operation
- ▶ Outline post-operational monitoring to verify noise and vibration predictions.

To validate the predicted noise levels, monitoring would be undertaken after the commencement of operation of Inland Rail as a whole. Monitoring would confirm compliance with the predicted noise levels, as modified by a review of feasible and reasonable measures undertaken at the completion of detailed design.

In accordance with mitigation measure ONV2, feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed by the results of modelling. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy. Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners.

Table B9.8 in the EIS identifies the range of key potential operational noise mitigation options, which include noise barriers, rail dampers and property controls. Other identified potential noise controls include use of train wayside horns and soft-tone level crossing warning bells.

As described in section B9.5.2 of the EIS, ARTC applies the following considerations to selecting feasible and reasonable noise mitigation measures:

- ▶ Noise barriers are generally only considered where there are groups of affected sensitive receivers. For isolated sensitive receivers, such as single dwellings in rural areas, noise barriers would generally not be considered.
- ▶ Noise mitigation for isolated sensitive receivers is expected to include:
 - ▶ At-property architectural treatments to the building to control rail noise inside building, and/or
 - ▶ Upgrades to the property boundary fencing to improve screening of rail noise.
- ▶ For two sensitive receivers on the same side of the track, the potential for a noise barrier or architectural treatment of the building would be considered on a case-by-case basis.
- ▶ For three or more sensitive receivers in close proximity on the same side of the track noise barriers, these would be considered as a primary noise mitigation option.

The selection and specification of noise mitigation also requires consideration of a range of other factors, including safety, community, visual amenity, constructability, environmental and cost factors.

The proposal would be operated in accordance with the operational noise and vibration review, the conditions of approval for the proposal and the environment protection licence for Inland Rail.

In accordance with mitigation measure ONV5, operational noise and vibration compliance monitoring would be undertaken, once Inland Rail has commenced operation, at representative locations to compare actual noise performance against that predicted by the operational noise and vibration review. Compliance monitoring requirements would be defined by the operational noise and vibration review.

The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.

Involvement of landholders in selecting mitigation measures

Issue

Some submitters asked if landholders would be involved in the methods used.

Response

As described above, where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners.

Commitment to mitigation measures

Issue

A submitter requested a commitment to noise mitigation and acoustic attenuation at their property (Thurleigh) to reduce the impacts on existing houses including night-time sleep disturbance.

Response

The updated noise and vibration assessment—operational rail report identified that the residences (receiver IDs 244554 and 244514) on this property are not predicted to exceed the operational noise criteria in *Rail Infrastructure Noise Guideline* (NSW EPA, 2013). As a result, it does not qualify for consideration of noise mitigation.

Noise impacts of train horns

Issue

A submitter requested a wayside horn be installed to reduce noise disturbance of train horns at a level crossing.

Response

Train operations are conducted in accordance with standard rail safety procedures, which require the use of horns as they pass through level crossings and at other times. It is acknowledged that noise emitted by train horns can be a source of annoyance for the general public; however, the train horn is an essential safety warning device and is designed to be broadcast to a large area.

As described above, Table B9.8 in the EIS identified the use of train wayside horns as a potential operational noise mitigation option. This would be further considered by ARTC, along with other mitigation options, in selecting feasible and reasonable noise mitigation measures.

Effect of mitigation measures

Issue

A submitter raised concern about the mitigation measure to keep windows closed, use double-glazed windows and use air conditioning to avoid opening windows. The submitter questioned if ARTC considered the cost of running air conditioners, maintenance required for air conditions and the high frequency of power outages.

Another submitter noted that the proposed mitigation measure of airconditioned houses does not fit into the reasons why a farmer chooses their way of life.

Response

For those residences identified as qualifying for consideration of noise mitigation, the implementation of at-property treatments, such as double-glazed windows and air conditioners, are one of the potential mitigation measures that would be considered during detailed design in accordance with mitigation measures ONV1 and ONV2. Where at-property noise treatments are identified as the preferred mitigation option, these would be developed in consultation with individual property owners and would include consideration of the installation costs.

9.9 Air quality

9.9.1 Construction impacts

Impacts of dust generated by construction

Issue

Concerns were raised about the effects of dust generated by construction activities. Issues raised included:

- ▶ Increase in dust levels due to vehicle movements along local roads, haul roads, the new north–south corridor between the towns of Narromine and Narrabri, Auscott Road and while transporting materials from quarries in the Dubbo LGA
- ▶ Increase in local dust levels from constructing the rail line, the temporary workforce accommodation facility and the use of borrow pit C
- ▶ Increase in dust levels affecting properties, houses, machinery, sheds and wool quality, and increasing maintenance and cleaning costs
- ▶ Air quality issues caused by dust would be exacerbated during dry and drought conditions.

Response

The construction air quality assessment, as described in sections B10.3, C1.3.4, C2.3.8 and C3.3.6 of the EIS, included consideration of potential air quality impacts associated with rail and road construction, concrete batching plants, borrow pits, temporary workforce accommodation and multi-function compounds. Potential amenity impacts on sensitive receivers are described in section 7.5.2 of Technical Report 13—Social assessment.

The air quality assessment found that the main potential impact on air quality during construction would occur as a result of the generation of dust from construction works and the movement of equipment and machinery along the proposal site, particularly on unsealed roads. The assessment identified that without mitigation, 57 sensitive receivers could be affected by dust during construction. This includes:

- ▶ 25 receivers within 50 m of rail and road infrastructure construction
- ▶ 1 receiver within 550 m of borrow pit C
- ▶ 26 receivers within 140 m of the temporary workforce accommodation facilities at Gilgandra and Baradine (potentially impacted during the establishment of the facilities)
- ▶ 5 receivers within 140 m of multi-function compounds at Narromine South and Narromine West.

Potential dust impacts on property and agriculture are described in section 7.9 of Technical Report 11—Agriculture and land use assessment and summarised in section B12.3.3 of the EIS. The assessment noted that during construction there is potential for dust to settle on crops and pastures; however, dust suppression protocols, which would be developed as part of the air quality management plan, would reduce the occurrence. As a result, the impacts on production are expected to be insignificant. During construction, dust impacts would vary substantially from day to day depending on the level of activity, duration, soil type and topography, and the wind speed and direction.

In accordance with mitigation measure AQ1, an air quality management plan would be prepared and implemented as part of the CEMP. It would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction. Examples of the measures that would be included in the air quality management plan to minimise dust impacts are provided in the outline CEMP in Appendix I of the EIS. Mitigation measure AQ2 provides that where sensitive receivers are located within the separation distances determined for each key activity, or visible dust is generated from vehicles using unsealed access roads, road watering and/or other stabilising approaches would be implemented.

With the implementation of the air quality management measures outlined above, no significant impacts in air quality are expected.

9.9.2 Operation impacts

Concern regarding diesel emissions

Issue

Concern was raised that the proposal would result in substantial diesel emissions that would impact regional air quality, and that nothing has been done to minimise air quality issues.

A submitter also raised a concern about the potential impact of fuel (diesel) emissions on specialist crops.

Response

Responses to issues raised about the adequacy of the assessment are provided in section 8.3.9 of this report. The assessment included consideration of key pollutants relevant to train emissions compared to the criteria in the Approved Methods. These criteria are provided for the protection of human health and the environment. The exception is the criteria for hydrogen fluoride, which are included for the protection of general and specialist crops (including grapes and stone fruit); however, hydrogen fluoride is not a significant emission from diesel fuel combustion, as evidenced by the lack of hydrogen fluoride emission factors in standard sources. Therefore, assessment of impacts against these criteria was not considered to be required.

As described in section 8.3.9, the assessment concluded that there would be no regional or localised air quality impacts from locomotives idling at crossing loops. The conservative dispersion modelling assessment found that compliance with the criteria was achieved within 25 m from crossing loops, and there are no receptors within 25 m of the proposed crossing loop locations.

The assessment of the potential impacts of train movements along the rail corridor concluded that the emissions to air associated with exhaust emissions from locomotives in transit for the proposal would not exceed the relevant impact assessment criteria described in the Approved Methods. This assessment was based on a review of emissions from the Northern Sydney Freight Corridor, including nitrogen dioxide, sulfur dioxide, carbon monoxide, PM10, PM2.5 and benzene. The Northern Sydney Freight Corridor has higher volumes of trains and emissions than the proposal and is located in an area with higher existing background levels of particulate matter and maximum measured nitrogen dioxide concentrations. Further information is provided in section 8.3.9 of this report.

As such, there are no expected human health or environmental impacts, including any impacts on crops.

9.10 Traffic and transport

9.10.1 Construction impacts

Construction traffic disruption

Issue

Concerns were raised about the potential for disruption as a result of construction traffic and the reduction in amenity in affected streets.

Response

As described in Technical Report 10—Traffic and transport assessment and summarised in section B11.3.1 of the EIS, construction would generate additional vehicle movements, including light and heavy vehicles. Light vehicles would generally be used by construction workers moving to and from the construction work areas and/or compounds. Heavy vehicle movements would generally be associated with trucks delivering materials and would also include buses delivering workers from the temporary workforce accommodation facilities.

Heavy vehicle traffic movements would be distributed across various public roads in the vicinity of each construction area depending on the activity being undertaken. It is expected that construction vehicle movements, particularly delivery trucks, would be spread out across the day. This would also assist in minimising any additional delays for vehicles turning from side roads at intersections along the construction access routes.

Indicative worst-case construction traffic volumes for each construction area are provided in sections A8.11.3 and B11.3.1 of the EIS. These include all heavy vehicle movements, including those to and from borrow pits.

The reference design and indicative construction planning undertaken to date for the proposal incorporates a number of features and proposed measures to minimise construction traffic movements and the associated impacts on the local road network, in particular gravel roads. This includes the construction of high-quality haul roads within

the construction footprint (see section A8.11.2 of the EIS). This would enable materials and personnel to be transported within the proposal site, as far as practicable, minimising traffic on local roads. In addition, it is proposed to use existing rail lines to deliver bulk construction materials, where practicable. This would include the delivery of rail and sleepers commencing during the pre-construction phase as described in section A8.2 of the EIS. The early delivery of these materials would assist in minimising the potential for traffic and access impacts during other construction phases.

ARTC commits to implementing additional reasonable and feasible measures to minimise potential impacts on the local road network, including impacts on road safety. In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable. Mitigation measure TT2 provides that ARTC seeks input from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and on the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Mitigation measure TT7 provides that ARTC consults with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders.

Construction traffic from temporary workforce accommodation

Issue

Concern was raised about traffic impacts associated with temporary workforce accommodation traffic moving along Federation Street to Coonamble Road, noting that this was a dangerous spot for access to residences

A submitter also queried how the impacts of extra vehicle use on roads around the Federation–Chelmsford Avenue level crossing would be alleviated.

Response

As described in sections A8.11.3 and C2.3.9 of the EIS, the general workforce would be transported between the proposal site and the temporary workforce accommodation via shuttle buses. It is anticipated the majority of the movement of the workforce would happen at the beginning and end of the workday. Specialist contractors, foreman, and superintendents may use private vehicles for more flexible mobility. During construction, there would be increased bus movements with up to 16 vehicle movements per day (two-way) in most construction areas to and from the temporary workforce accommodation.

As described in section C2.3.9, access to the Gilgandra temporary workforce accommodation facility is proposed via Federation Street. All workforce movements and material deliveries would be via Federation Street. This is not expected to result in any significant impacts on the level crossing at the intersection of Federation Street and Chelmsford Avenue or residential streets surrounding the temporary workforce accommodation in Gilgandra. The potential for impacts would be managed by implementing relevant mitigation measures, including measures TT1, TT2, TT6 and TT7 noted above. In particular, and in accordance with mitigation measure TT-CI1, the traffic, transport and access management plan would include measures to manage potential traffic impacts at and near temporary workforce accommodation facilities. The plan would include approved access routes and any restrictions on the use of residential streets.

Construction traffic from borrow pits

Issue

A submitter queried whether vehicles transporting spoil from borrow pits had been counted in total vehicle movements. Concern was raised about the local traffic impacts of the haul road route for borrow pit C.

Response

The traffic and transport assessment undertaken for the EIS considered the movement of traffic associated with material deliveries (borrow pits, capping and ballast, and precast concrete). While it was noted that traffic volumes would vary depending on the activities undertaken, a worst-case scenario for each construction area was assessed based on estimated total traffic volumes generated during site establishment/finishing, and rehabilitation and main construction activities (as shown in Table 5.5 in Technical Report 10—Traffic and transport assessment). Therefore, the assessment did not differentiate between construction traffic produced by workforce movements and material deliveries.

The potential construction access routes within the four construction areas are listed in Table 5.6 of Technical Report 10. Table 6.1 in Technical Report 10 details the anticipated changes on key local roads during construction for those roads analysed as part of the construction traffic assessment. As noted in the technical report, roads that have very low traffic volumes were not considered, as these roads are anticipated to operate at level of service A. The assessment found that for those roads analysed, there would be no change to the existing level of service. Additionally, the operation of the remainder of the surrounding road network is not expected to be significantly impacted by construction traffic. This is because the roads have sufficient capacity to absorb the increased traffic and delays at intersections would have a localised impact only due to low traffic volumes on affected roads.

While impacts on the surrounding local road network due to construction traffic are expected to be minimal, it is acknowledged that there may be some changes to the construction access routes considered by the assessment once the construction contractor is confirmed. Commitments to minimise the impacts of construction traffic on the road network are defined by a number of mitigation measures, including TT1, TT6, TT7, TT8 and TT10. In particular, in accordance with amended mitigation measure TT6, the traffic, transport and access management would include measures, processes and responsibilities to minimise the potential for impacts on the community, and the operation of the surrounding road and transport environment during construction.

Impacts of construction vehicles on roads

Issue

Concerns were raised about the impact of construction traffic on local roads and access tracks. Issues raised included:

- ▶ Roads in the Quanda area are not designed for frequent, heavy vehicle use and may deteriorate or pose a safety risk.
- ▶ Access tracks to borrow pit access routes are not suitable for heavy vehicles.
- ▶ Increased traffic would require additional grading for roads to maintain their safety.
- ▶ Construction access/haul roads need to be maintained to ensure public safety.

Response

The EIS considers and assesses the potential impacts of construction on the local road network. Mitigation measure TT1 commits ARTC to avoiding or minimising the potential for impacts on the surrounding road and transport network, as far as reasonably practicable.

As described in section B11.3.1 of the EIS, no upgrades or improvements are expected to be required for any public roads as a result of heavy vehicle movements for construction of the proposal. Mitigation measure TT10 provides that a dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority. The dilapidation survey and monitoring would be undertaken by a suitably qualified and experienced person. Pavement condition monitoring would be carried out during works, as required. The mitigation measure has been amended to confirm that rectification measures would be implemented, as needed, during and/or following completion of construction to address any damage caused by construction.

Safety risks would be considered as part of construction planning, consultation and development and implementation of the traffic, transport and access management plan (mitigation measures TT1, TT2, TT6 and TT7) as described above.

In the event that existing private access tracks in the vicinity of a proposed borrow pit are identified as the preferred access to the borrow pit, the tracks would be upgraded to the standard required for safe access by heavy vehicles and to suit the existing ground conditions. Detailed designs for the upgrading would be developed during construction planning in consultation with the property owner.

9.10.2 Operation impacts

Operation traffic disruption

Issue

Concern was raised that the introduction of the railway would result in impacts on traffic congestion.

Response

As described in section A2.1 of the EIS, the southern and central portions of the proposal site extend through sparsely populated rural land, while the northern end of the proposal site is surrounded by a number of larger reserves, including State forests, conservation areas and national parks. The proposal does not traverse through any town centres. The only way in which the proposal may result in traffic congestion in towns would be as a result of traffic impacts from level crossings located close to the towns.

An assessment of potential delays to road traffic at level crossing was undertaken as described in section 6.2.1 of Technical Report 10—Traffic and transport assessment. The assessment identified the potential for delays at the worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway, as this is the busiest location at which a level crossing is proposed.

As described in section 3.3 of Technical Report 10, the traffic and transport assessment methodology included using traffic volume information from traffic surveys undertaken in November 2018 and February 2019. This information was used to represent typical (average) conditions within the study area and was the basis for assessing travel delay and queue lengths at the proposed Castlereagh Highway level crossing. However, the prevailing drought conditions at the time the traffic surveys were undertaken affected the harvest period and it was noted that those surveys may not be representative of the numbers and types of vehicles during a typical harvest period. As a result, following exhibition of the EIS, additional traffic counts were undertaken in November 2020 during a harvest period which produced higher than average yield. During this period, higher traffic volumes were experienced along some of the roads in the study area, particularly from heavy vehicles. To understand the impacts from higher traffic activity, the traffic analysis at the Castlereagh Highway level crossing has been updated using harvest period traffic volumes, as described in section 3.2.2 of this report.

The assessment found that there would still be a maximum delay of 96 seconds in the assessed opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train speed). The maximum queue length in the opening year and 2040 would be greater than that described in the EIS – at 66 m and 74 m, respectively.

Delays at all other proposed level crossings would be much less than those reported for the Castlereagh Highway. Additionally, it is expected that any traffic-related delays would be localised in nature and not lead to congestion impacts in nearby towns.

In accordance with mitigation measure TT11, the operation of all level crossings constructed on classified roads as part of the proposal would be reviewed, after Inland Rail commences operation, to confirm that the level of protection is appropriate and that the proposed infrastructure is appropriate for the traffic conditions.

Effects of road changes

Issue

Some submitters raised concerns about the impact of the proposal on specific roads and access arrangements. Issues raised included:

- ▶ The closure of Dappo Road at the T intersection with Wallaby Road would greatly inconvenience the movement of stock and plant.
- ▶ The Eumungerie Road level crossing is located in a dangerous position on a corner and near a hill. The safety risks and potential loss of life need to be assessed.
- ▶ The proposal would impact on the connection of the east–west Mitchell Highway link during large scale flood events.
- ▶ Alteration of Auscott Road would disturb nearby properties.
- ▶ The proposal would affect access to the Narrabri Sewage Treatment Plant from the Newell Highway

Response

As described in section A7.4.1 of the EIS, Dappo Road would be closed where it crosses the proposal site. Road users would need to use Webbs Siding Road, which is located about 1 km to the north. Closure of this road was determined to be the preferred option as there is insufficient height beneath the embankment to provide an underpass that meets the road design guidelines. The proposed diversion (via Webbs Siding Road) would provide a reasonable length of deviation, meet road design guidelines, and provide for movements of all traffic (see section A6.3.3 of the EIS). Movement of stock and plant would need to continue to comply with all road safety rules.

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards. Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with ONRSR's policies and guidelines has been used to determine proposed level crossing treatments (active or passive). The approach to this involves applying the Australian Level Crossing Assessment Model (ALCAM) to determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified.

In accordance with mitigation measure TT2, input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders. Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. This would ensure that crossings are safe for long-term use. ARTC would continue to consult with relevant road managers during detailed design to finalise preferred treatments at each location.

Any trucks using the Kamilaroi Highway to access Auscott Road would need to abide by the NSW road rules.

Potential flooding impacts on the Mitchell Highway are considered in section 7.1.4 of Technical Report 3—Flooding and hydrology assessment. Results for the change in length of overtopping were provided. The mapping in Appendix G of Technical Report 3 also provides information on afflux (change in flood levels), velocity, duration and flood hazard. Modelling results presented in the updated flooding and hydrology assessment report provide information on compliance with the quantitative design limits adopted for the proposal (as updated), which includes impacts on the Mitchell Highway. The updated flooding and hydrology assessment report predicts that, for events up to and including the 1% AEP flood, there would be negligible changes in the length of the Mitchell Highway subject to flooding. During large scale flood events (i.e. events greater than the 1% AEP flood and up to the PMF) the change in length of inundation would be a maximum of one per cent in the PMF. Therefore, there would be a negligible impact to the Mitchell Highway link during large scale flood events due to the proposal.

Access to the Narrabri Sewage Treatment Plant would be provided via a level crossing. ARTC is undertaking further discussions with Narrabri Shire Council to confirm access arrangements.

Impacts on farming operations from proposed public level crossing

Issue

It was also noted that the proposed level crossing at Collie Road would severely impact the farming operations as the property (Roslyn) is on the western side of the proposed level crossing. All essential farming infrastructure and farming operation are at the Rosewood homestead block. All stock and machinery movement would require additional timeframes to cross the level crossing, and extra staffing will be necessary.

Response

As noted in the above response, an assessment of potential delays to road traffic at level crossing was undertaken based on the potential worst-case active level crossing, which was considered to be the level crossing proposed at Castlereagh Highway. The updated assessment (described in section 3.2.2 of this report) found that there would be a maximum delay of 96 seconds in the opening year of 2026 and a maximum delay of 121 seconds in 2040 (based on 115 km/hr train speed). The maximum queue length in the opening year and 2040 would be 66 m and 74 m, respectively.

Delays at all other proposed level crossings, including the level crossing at Collie Road, would be much less than those reported for the Castlereagh Highway. Additionally, it is estimated that the proposal would be trafficked by an average of 10 trains per day (both directions) in 2026, increasing to about 14 trains per day in 2040. As a result, the potential for significant delays to occur due to multiple crossings at the Collie Road level crossing is considered to be low.

Further information about the proposed approach to managing potential access impacts for properties is provided in the responses in sections 9.11.4 and 9.11.5.

Firefighting access

Issue

A submitter raised concerns that the proposal would prevent the Euromedah Rural Fire Service from accessing their property and the western rail corridor for firefighting.

Response

Emergency services (such as the Rural Fire Service) would be able to access individual properties via the access to that property. Emergency service vehicles would be able to cross the rail corridor via the crossings that would be provided as part of the proposal.

Access for Narrabri Inland Port

Issue

A submitter raised concerns that the proposal would affect access to the proposed Narrabri Inland Port.

Response

The proposal would not affect access to the proposed Northern NSW Inland Port. ARTC acknowledges that Narrabri Shire Council has invested significant effort into the ongoing development of the Northern NSW Inland Port, which has been complemented by Australian and NSW Government contributions. ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, of which Narrabri Shire Council was a part recipient. ARTC remains committed to working with Council as the business case investigations associated with the Northern NSW Inland Port progress, to determine the feasibility of future opportunities associated with Inland Rail.

9.10.3 Mitigation

Traffic and transport impacts

Issue

Some submitters requested further detail on the measures that would be implemented to reduce traffic and transport impacts. A submitter requested traffic management measures that would enable businesses to operate without disruption. Other queries included:

- ▶ Whether heavy vehicles would be subject to a speed limit
- ▶ Would clear signage be provided to indicate heavy vehicles turning
- ▶ Whether roads would be widened to accommodate turning trucks
- ▶ Strategies to ensure safe access to the Inland Rail corridor from Gilgandra Shire roads.

Response

Heavy vehicles using public roads would be subject to NSW road rules. Heavy vehicles using construction access/haul roads would be subject to speed limits for safety and to minimise dust generation.

Signage would be provided around construction zones in accordance with relevant road manager requirements and Australian Standards.

No upgrades or improvements to public roads are expected to be required to accommodate construction traffic.

As described in the responses in sections 9.10.1 and 9.10.2 of this report, commitments to managing traffic and transport impacts, including safety risks, are defined by a number of mitigation measures including TT1, TT2, TT6 and TT7. In particular, in accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community, and on the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators. It would include measures to provide for safe access to work sites from public roads (including those in the Gilgandra LGA).

Mitigation measure TT7 provides that ARTC consults with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders.

9.11 Land use and property

9.11.1 Acquisition and property infrastructure impacts

Land acquisition

Issue

Concern was raised that some properties (such as small farms) would be significantly impacted by land acquisition. Further detail was requested about the acquisition process, including:

- ▶ Acquisition of land that landowners can no longer access due to the proposal
- ▶ Acquisition of private access roads
- ▶ Whether acquisition would be undertaken before the detailed design was completed.

Response

All property acquisitions would be undertaken in consultation with landowners/landholders. In accordance with mitigation measure LP2, and as described in section B12.5.1 of the EIS, acquisition would be undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) and the land acquisition reforms announced by the NSW Government in 2016, which can be viewed online at: finance.nsw.gov.au/land-property/land-acquisition-reform-2016.

Where the approach to acquire property interests is either by agreement or compulsory acquisition under the *Land Acquisition (Just Terms Compensation) Act 1991*, ARTC is committed to adhering to the guiding principles and standards established by the Centre of Property Acquisition NSW. Refer to: propertyacquisition.nsw.gov.au/standards-and-principles.

Appropriate management measures would be developed, documented and agreed as part of the property acquisition consultation process, where practicable. In accordance with mitigation measure LP3, during the property-acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties. Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes. Agreements may include (for example):

- ▶ Measures to minimise property impacts, including impacts on agricultural operations
- ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery are able to be maintained as efficiently as possible
- ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (such as new or adjusted accesses to the public road network or internal access networks), divestment or amalgamation opportunities
- ▶ Required adjustments to, and/or replacement of, affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc
- ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use.

Depending on the individual circumstances of each land/business owner, and the proposed impacts upon the land and to operations, compensation may take the form of money or land/works—as agreed by the parties. As part of the negotiation process, each property subject to acquisition would be assessed on an individual basis, as the potential impacts of the proposal and specific design elements localised to that property would ultimately influence how compensation is determined and would need to account for other ancillary impacts specific to each property.

Initial consultation with all directly affected landholders commenced in mid 2020 and ARTC formally commenced the acquisition process in 2021. Any agreements for the acquisition of all or parts of properties would occur during this process.

Responses to issues raised about compensation are provided in section 9.11.8 of this report.

Infrastructure relocation and associated costs

Issue

A submitter noted that they would need to relocate their shearing sheds and yarding (Rosewood property) due to the ongoing disturbance from the proposal. It was noted that relocation of the network of yards would be impossible given the soil type, lay of the land, and the presence of Goulburn's Creek within the property. Additionally, the cost of relocating infrastructure would be substantial.

Response

Each property subject to acquisition would be assessed on an individual basis to determine appropriate property-specific management measures. This would include, in accordance with mitigation measure LP3, measures to minimise property impacts and required adjustments to affected structures. Compensation payable would be determined in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Further information about compensation is provided in the responses in section 9.11.8 of this report.

Acquisition would affect property viability

Issue

A submitter raised concern that acquisition of part of their property (Caraboo) would result in a reduced area to provide sufficient feed pasture. Concern was raised that this would affect the viability of primary production due to a reduction in usable land, erosion and other impacts.

Response

As noted in the above response, each property subject to acquisition would be assessed on an individual basis to determine appropriate property-specific management measures.

In the event that a partial acquisition would affect the viability of a whole property, ARTC would consider whether acquisition of the whole property would be appropriate.

Farming business relocation

Issue

Concern was raised that there would not be appropriate replacement properties to purchase in the event that the impacts of the proposal means that farmers would need to relocate their businesses. As a result, there would be loss of regionally specific expertise.

Response

As described above and in the responses in section 9.11.8 of this report, compensation would be payable in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). This would be determined on a case-by-case basis, taking into consideration relevant matters.

9.11.2 Construction impacts

Impacts on farming practises

Issue

Submitters raised concerns that construction activities would impact on farming practices, including cropping activities.

Response

Impacts on rural properties during construction are considered in Technical Report 11—Agriculture and land use assessment, and the results are summarised in section B12.3 of the EIS. ARTC acknowledges these issues, which would continue to be addressed as the design and construction planning progress. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

In relation to the potential impacts of construction, in accordance with mitigation measure LP4, property owners and occupants would be consulted, in accordance with the proposal-specific communication management plan (to be developed by ARTC in accordance with mitigation measure SE1), to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services, or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock.

In addition, amended mitigation measure LP5 provides that, where construction is located on or immediately adjacent to private properties, and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

Fencing and impacts on stock during construction

Issue

Submitters queried the arrangements regarding temporary fencing, including:

- ▶ Whether temporary fencing would be installed around construction areas proposed on operational paddocks to enable grazing to continue during the construction period.
- ▶ It would be difficult to use grazing land/paddocks/preferred grazing areas—with all the dividing fences taken down for access there would be no way of containing stock during the construction phase, given that the proposal would run through three of their paddocks and also affect their boundary fence.

Response

Responses to issues raised about the provision and design of permanent fencing are provided in section 7.2.5 of this report.

In accordance with mitigation measures LP1, LP5 and LP10, ARTC would consult with individual landholders to determine appropriate property-specific approaches to managing the impacts of the proposal on individual properties, including the provision of fencing. Property-specific approaches may include, for example, providing permanent stock fencing as soon as practicable in the construction phase. As noted above, measures identified in accordance with amended mitigation measure LP5 would include (as appropriate) any required adjustments to fencing.

The provision of temporary fencing during construction would be determined in consultation with the landholder. As described in section A8.13 of the EIS, NSW workplace safety laws require construction sites to have adequate site security, which includes appropriate fencing. The fencing would permit grazing to continue on adjacent lands.

Construction land access

Issue

Concerns were raised about property access arrangements during construction, including:

- ▶ How severed land would be accessed during construction
- ▶ A concern that the size and frequency of construction vehicle movements would hinder access to the property
- ▶ Access to driveways during construction.

Response

Technical Report 10—Traffic and transport assessment identifies potential access impacts associated with the proposal and mitigation measures to be implemented to address these impacts. In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for traffic, transport and access impacts on the community, and on the operation of the surrounding road and transport environment during construction.

Mitigation measure LP17 provides that access to individual residences, services and businesses, and for livestock, plant and machinery across the rail corridor, would be maintained during construction. The measure provides that the construction traffic, transport and access management plan would include measures to ensure that access to properties would be maintained at all times during construction. Where alternative access arrangements need to be made, these would be developed in consultation with affected property owners/occupants.

Land degradation impacts

Issue

Some submitters raised concern that construction works would cause land degradation from compaction or erosion, impacting long-term agricultural productivity and productive land. A request was made to have a boundary erected between properties and works to protect land from compaction. It was queried how the proposal would mitigate these issues.

Response

As construction is completed, land required for construction only would be rehabilitated and returned as close as practicable to the pre-construction condition, or as agreed with landholders. As described in section A8.7 of the EIS, at the end of construction, all disturbed areas not required for ongoing operations would be rehabilitated in accordance with the rehabilitation strategy. Further information about the approach to rehabilitation is provided in the response in section 9.4.3 of this report.

Preparing and implementing the rehabilitation strategy would include consideration of pre-existing land use and matters such as soil compaction, erosion and rehabilitation.

The potential for erosion to occur during construction is assessed in section B4.3.1 of the EIS. Potential erosion impacts would be managed by implementing standard best-practice soil erosion management measures. All erosion and sediment control measures would be implemented in accordance with relevant guidelines (e.g. *Managing Urban Stormwater: Soils and construction—Volume 1* (Landcom, 2004), *Volume 2C Unsealed roads* (DECC, 2008a) and *Volume 2D, Main Road Construction* (DECC, 2008b) (collectively referred to as the Blue Book).

As described in section A8.13 of the EIS, NSW workplace safety laws require construction sites to have adequate site security, which includes appropriate fencing. The fencing would reflect the land use and activities, and would be agreed in consultation with the landholder as part of the negotiation process.

Proposed use of properties for construction infrastructure

Issue

The EIS indicates that significant construction infrastructure will be located on Trelawney Park. The property owners noted that ARTC has not described compensation for the impacts of these activities on their property, and that consent was not given to ARTC for their land to be used for construction without a compensation agreement.

A request was made for landholders to have an input to leases for construction areas. A submitter questioned how lease values for temporary construction zones would be determined.

Response

The location of construction infrastructure shown in the EIS is subject to further refinement during detailed design and construction planning, and further consultation with landowners.

The proposed construction infrastructure on Trelawney Park includes a general compound, topsoil storage, capping and ballast storage, mobile concrete batching plant, groundwater borefield and sediment basins. The infrastructure is proposed to be located at the eastern boundary of the property immediately adjacent to the proposal site. This would assist in minimising impacts on agricultural activities and avoiding construction traffic movements near the residence.

As described in section B12.3.1 of the EIS, land required during construction only would be via a lease with the relevant landholder. Landholders would be consulted during the process. Lease values would be determined in accordance with established guidelines and statutory requirements.

Further information about the approach to compensation is provided in the responses in section 9.11.8 of this report.

Use of private access roads

Issue

A submitter asked if private access roads would be used during wet weather and who would be responsible for repairs. The submitter questioned that if project staff left farms gates open, causing stock damage to neighbouring farms, who will be liable?

Response

In relation to construction, as described in section B12.3.1 of the EIS, land required during construction only would be via a lease with the relevant government agency or private landholder. As construction is completed, this land would be rehabilitated and returned as close as practicable to the pre-construction condition, or as agreed with landowners. The construction contractor would be responsible for any agreed repairs to roads and for ensuring all conditions of the lease are complied with.

If ARTC or the contractor is found to have caused damage to private property or stock the damage would be rectified, or the landowner compensated.

9.11.3 Operation property impacts—segregation/fragmentation

Segregation of properties and impacts on agricultural use

Issue

Submitters raised concern that the segregation/fragmentation of farming properties as a result of the new rail corridor would reduce the availability of land for agriculture, reduce property functionality, increase costs and impact viability and property values. This was particularly of concern for smaller properties. Issues raised included:

- ▶ Some family farming operations contain properties held by different individuals that are operated as a unit and that this was not recognised—impacts on one property would affect the livelihoods and businesses of all other family members who have not been accounted for
- ▶ Concern about impacts on irrigation due to reduced field length and impact on pine plantation operations
- ▶ Increased fence lines would reduce farmable land on properties
- ▶ There would be less land available for agriculture with the rail line leaving paddocks in triangular shapes
- ▶ Farm procedures, processes and systems will have to be reviewed, which will decrease productivity
- ▶ Fragmentation would create issues for livestock and machinery movement and would impact on properties from a public liability and cost point of view
- ▶ Access between properties would be significantly impacted as the core property would have the current rail corridor wrap around it on both sides—severing operations and access to the other properties as all livestock movements and heavy machinery movements between all properties pass through the core property.

Response

Issues and potential impacts in relation to property severance, operations and access to and within properties are considered in chapter B12 of the EIS, with further detail provided in Technical Report 11—Agriculture and land use assessment and Technical Report 13—Social assessment. The EIS identified that property severance could affect the configuration of a property, affecting efficiency, productivity and viability, e.g. as a result of changes to access arrangement for the movement of farm machinery or stock to different areas of a property. Other identified property impacts include impeded access, changes to internal roads and load limits, and the isolation of hubs within a farm's operational layout. The EIS acknowledges that some severed portions may become unviable due to the size of the remaining area, configuration or access.

These impacts would differ for each property, potentially affecting properties that operate as a single management unit and changing property configurations, with the potential for severance of parts of properties and isolation of key agricultural infrastructure. Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

ARTC acknowledges this issue, which will continue to be addressed as the design and construction planning progress. The land use and property mitigation measures have been updated to provide more clarity about ARTC's commitments in relation to property impacts.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Other mitigation measures relevant to addressing the potential impacts of the proposal on properties and agricultural enterprises include:

- ▶ LP10—Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
- ▶ LP20—Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders, to ensure continuity of stock and domestic water supplies, prior to removal of existing impacted infrastructure.
- ▶ LP22—ARTC will develop a 'Call Train Control' process to enable landowners to use levels crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.

The full set of (updated) mitigation measures is provided in section 11.

Responses to issues raised in relation to acquisition are provided in section 9.11.1 of this report. Responses to issues raised about internal property access impacts are provided in section 9.11.4. Responses to other issues raised relating to agricultural use of properties, and other land use and property impacts, are provided in sections 9.11.6 and 9.11.11 of this report, respectively.

9.11.4 Internal property access issues

Internal access changes and property impacts

Issue

A number of submitters raised concerns about how the presence of the rail corridor across/within their properties, and associated segregation, would affect how they would move around and access different areas within the property; and how they would use the property. Issues raised included:

- ▶ How machinery and stock would be moved around the property
- ▶ Changes to internal access arrangements would increase operational costs for landholders
- ▶ Farms would be landlocked (particularly during flood events) without internal access
- ▶ The saleability of land would be affected
- ▶ Access to usable, productive area for livestock grazing and agistment would be lost
- ▶ Alternate access to provide safe access adjacent to the corridor on the property's north-western side, to intersect with the Yarrie Lake Road, should be provided
- ▶ Land would be separated from the farm's infrastructure, incurring costs and rendering some land unusable
- ▶ Funding should be provided to duplicate infrastructure on either side of the line to avoid use of public roads for stock movement.

Response

ARTC acknowledges the issues raised regarding access within individual properties. The EIS does not set out detailed and specific provisions in terms of rail corridor crossings (including stock crossings) within private properties, as these need to be determined in consultation with individual affected property owners/operators.

ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

ARTC has already undertaken extensive consultation with landowners and, where feasible, considered access requirements for agricultural machinery, upgraded access, or provided new access and alternative routes, noting that in some instances access has not been provided in the landowner's preferred location due to safety and design requirements. This consultation is ongoing as part of the property acquisition process and would continue during detailed design and construction planning.

Access for livestock across the proposal would be provided for by means of level crossings or stock underpasses at bridges and culverts (where topography and sizing permits). The movement of agricultural machinery across the proposal at level crossings would need to comply with NSW road rules.

Provision of private level crossings/access across the rail corridor

Issue

Concerns were raised and requests were made in relation to the provision of private dedicated crossings within properties to enable property owners to move stock and machinery across the rail corridor. These included queries about what would be provided, how crossings would be designed, and whether properties would be provided with private level crossings. Issues raised included:

- ▶ A submitter raised concern that a level crossing is not proposed in their property (Deakin), and that they would be required to drive unregistered vehicles and machinery on public roads and lanes to reach the back of the property that has been cut off by the proposal.
- ▶ A submitter questioned the height of the rail line crossing property at The Island Road in Narrabri and the ability to get vehicles under the track to access back paddocks.
- ▶ A submitter questioned if the underpass at their property (Cooyong) would be wide and high enough to get farming plant through to other parts of the property. The underpass would need to be 6.4 x 10 metres wide to fit farming plant or, preferably, a private crossing should be provided. The submitter also questioned if the proposed private crossing at Thurleigh would be wide enough.
- ▶ A submitter noted that early consultation indicated that they would have joint access (for machinery and trucks) with neighbours to an existing culvert. The submitter questioned if the proposal would include access to the culvert. Without access the land would be valueless and would need to be resumed.
- ▶ Property owners were advised that a private level crossing at the southern end of Nalders Access Road would be provided to ensure they could maintain access to their property; however, the EIS suggests there will not be a public level crossing at the southern end of Nalders Access Road and does not contain information on a private level crossing. They highlighted that a private level crossing (with holding pens to move stock and truck turning bays off National Park Road) needs to be provided to avoid detrimental impacts on operation of the business, travel time and property values.
- ▶ A submitter raised concern that the proposal would result in a significant access issue with the division of the northern corner of their property (Rosewood) by the railway track. The removal of current access gate on the North side of Old Mill Road and relocation of the northern gate would result in lengthy mustering to move livestock to the southern section and would require additional staff to cross Old Mill Road.
- ▶ Unregistered farming vehicles would have to be registered if travel on public roads became necessary for property access. The cost of registering and maintaining vehicles should be met by ARTC in the absence of providing a private level crossing.

Response

ARTC acknowledges the issues raised regarding access within individual properties. The EIS does not set out detailed and specific provisions in terms of rail corridor crossings (including stock crossings) within private properties, as these need to be determined in consultation with individual affected property owners/operators. Issues and potential impacts in relation to property severance, operations and access to and within properties are considered in chapter B12 of the EIS, with further detail provided in Technical Report 11—Agriculture and land use assessment and Technical Report 13—Social assessment.

As described in section B11.4.2 of the EIS, where creation of the rail corridor would sever a lot that currently has legal access to a public road, access would continue to be provided to both parts of the lot from a public road (or roads). Access across the rail corridor to the severed part of a lot can be provided by a level crossing; however, minimising the number of new level crossings provided as part of the proposal is desirable for safety reasons (see section A6.3.3 of the EIS). Access would continue to be maintained, and/or potential impacts managed, by:

- ▶ Providing alternative access from a public road, where available
- ▶ Considering acquiring severed land (if rendered unusable)
- ▶ Providing common access points to serve multiple lots or properties (i.e. consolidation)
- ▶ Providing a stock underpass under the rail corridor.

Further assessment of potential property impacts, including property severance, has been undertaken and is provided in section 7.6.5 of the combined Preferred Infrastructure/Amendment Report.

The provision and design of private level crossings would be determined in accordance with relevant design requirements, including ARTC and Australian Standards, and in consultation with landowners/landholders. As part of the detailed design, ARTC would develop a number of typical layouts for private level crossings. The safe movement of stock and farm machinery across the rail line at private crossings would be considered when developing these typical level crossing layouts. Stakeholder engagement and discussions with landowners have included review of stock and plant movements. Additional information regarding potential locations and design considerations for private level crossings is provided in section 6.4 of the combined Preferred Infrastructure / Amendment Report.

The land use and property mitigation measures have been updated to provide more clarity about ARTC's commitments in relation to property access and rail corridor crossings. ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements, as far as practicable. In accordance with amended mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements, and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.

With regards to a public level crossing at Nalders Access Road, as described in section 3.1 of this report, a number of amendments are proposed to minimise the potential impacts of the proposal and respond to issues raised. These amendments include changes to the number and type of new public level crossings, taking into account:

- ▶ Further design development, including a review of sighting distances and updated traffic data from traffic surveys undertaken in November 2020
- ▶ Consultation with affected landholders and other relevant stakeholders
- ▶ Changes to crossing loop locations.

As a result of these amendments, a new public passive level crossing is now proposed at Nalders Access Road and is shown in the updated map book (see operational maps – sheet 76).

The movement of agricultural machinery and farming vehicles on public roads would need to comply with NSW road rules.

Moving stock safely

Issue

Concern was raised about safety issues associated with moving stock across the rail line and the increased chance of accidents. It was asked if the trains would stop to allow stock movement over crossings.

Response

As noted in the above response, ARTC commits to working with landholders to develop measures to minimise the impacts of the new rail corridor on internal property access arrangements as far as practicable, including the movement of stock and machinery. In accordance with mitigation measure LP7, where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design.

Trains would not stop to allow stock movement—stock would need to be moved in between train movements. Provisions for stock crossing would be discussed with landowners/landholders. Culverts and bridges can be used as stock underpasses. Where there is no structure available, ARTC is currently proposing a 'Call Train Control' process that would allow landowners/landholders to use level crossings as stock crossings. Landowners/landholders and ARTC would sign an agreement that allows them to call train control and get a time window to safely cross the track. It is important to note that stock would not get priority over train operations.

In accordance with mitigation measure LP22, ARTC will develop a 'Call Train Control' process to enable landowners to use levels crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations. ARTC would continue to support rail safety education programs. In accordance with mitigation measure SE15, a rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.

Permits to cross the rail corridor

Issue

A submitter queried whether they would have to obtain permits to cross the rail corridor or move their stock across the new track.

Response

Fencing would be constructed along the rail corridor where it adjoins private land. The rail corridor would need to be crossed via public or private level crossings (see responses in sections 9.10 and 9.11.4 of this report for further information on proposed crossings).

ARTC would confirm the process for crossing the rail corridor, including the movement of large machinery and stock, in consultation with landholders.

Impacts on access through travelling stock reserve

Issue

A submitter raised concern that a travelling stock reserve is located adjacent to their property and the proposed rail line would run through the travelling stock reserve. As the reserve is only 90 metres wide, the submitter questioned how livestock movement, rail line traffic and an existing private rail shunt line would be located within the reserve, as this provides access to their property.

Response

As described in section A7.3.8 of the EIS, where existing travelling stock reserves are severed by the proposal, access across the proposal site has been provided for by means of level crossings or stock underpasses at bridges and culverts. Underpasses would be designed with consideration of *Primefact 823 Underpasses for moving livestock under expressways* (DPIE, 2009). Sufficient room would be provided to ensure livestock movement is maintained. The travelling stock route raised in the submission is located to the north of Narrabri next to the Newell Highway. An underpass would be provided at the northern end to provide for stock movements.

In accordance with mitigation measure LP12, Local Land Services would continue to be consulted during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made as required, subject to maintaining rail safety.

Creation of gullies affecting access

Issue

A submitter raised concern that deep scoured gullies created by culverts would make movement across properties impossible.

Response

As described in the responses in section 9.3 of this report, the potential impacts of the proposal were considered in Technical Report 3 and in the updated flooding and hydrology assessment report. This includes an assessment of potential impacts on properties associated with erosion risks at culverts that could result in deep scoured gullies. Culverts and bridges are generally located around existing drainage lines, watercourses, and within floodplains and associated overflow areas to minimise changes to natural flow patterns.

In accordance with mitigation measure FH2, further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection, and to confirm the extent and type of protection required.

9.11.5 Access to properties

Impacts on access to properties from the public road network

Issue

A number of concerns were raised about the impacts of the proposal on access to their properties, including impacts on private access roads. Issues raised included:

- ▶ The proposal would sever the access to my property.
- ▶ Submitters raised concerns that changing access points to properties could increase costs and affect how their properties are managed.
- ▶ A submitter raised concern about the impact to their private access to the highway.
- ▶ A submitter raised concern about impacts on property access from Box Ridge Road, which is required for work and emergency purposes. The submitter noted that alternative access would not be possible due to the impassability of Baronne Creek that passes through the property.
- ▶ A submitter raised concern that vehicular access to their property would be required from both Kickabil Road and Milpulling Road. The submitter noted that the proposed bridge on Kickabil Road would affect their driveway and requested that the proposed design addresses both driveways.

A submitter raised concern about the safety of people accessing their property as they would need to cross the high-speed rail line. The submitter noted they would not feel comfortable inviting people to their property due to the safety risk.

Response

Potential access impacts are summarised in section B11.4.2 of the EIS and described in more detail in Technical Report 10—Traffic and transport assessment. As described in section B11.4.2, the proposal seeks to maintain access to properties by a reasonable public road route. Access would continue to be maintained, and/or potential impacts managed, by:

- ▶ Providing alternative access from a public road, where available
- ▶ Considering acquiring severed land (if rendered unusable)
- ▶ Providing common access points to serve multiple lots or properties (i.e. consolidation).

Alternative access, generally in the form of a level crossing and/or access road, would be provided at a number of private properties, where the proposal would sever the existing access to a public road. This may affect private landholders, with potential effects including increased travel distances and/or changes to the movement of equipment and stock. Affected landholders would continue to be consulted during detailed design to refine proposed access arrangements and minimise the potential for impacts as far as practicable. Where creation of the rail corridor would sever a lot that currently has legal access to a public road, access would continue to be provided to both parts of the lot from a public road (or roads). Where it is agreed that the severed portion is unusable, it would be subject to acquisition.

In accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on property accesses, as far as reasonably practicable.

Mitigation measure LP6 provides that, where the proposal affects access to and from a public road, input would be sought from relevant landholders regarding alternative access arrangements prior to finalising the detailed design. Where any legal access to a property is permanently affected and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and reasonable. Where an alternative access is not feasible or reasonable, and a property or part of a property is left with no access to a public road, consideration would be given to acquisition of the property or part of the property.

9.11.6 Other operation impacts on agricultural use

Impacts on stock during operation

Issue

Some submitters raised concern about the impacts on stock during the operation of the trains. Issues raised included concerns that:

- ▶ The proposal would impact on the welfare and quality of stock.
- ▶ The proposal would interrupt feeding patterns and prolong fattening of livestock, as well as cause issues at weaning with cattle unable to settle as quickly and calmly.
- ▶ Train schedules could cause mustering delays and that, if mobile service was improved, an app could be used to assist in timing of stock movement.

Response

Technical Report 11—Agriculture and land use assessment considered a wide range of potential impacts on agricultural operations, including animal welfare and stock behaviour concerns. Section 7.9 of the report considers the potential impacts of noise on livestock grazing patterns, finding that the few abnormal behavioural changes noted in published studies (see discussion, including cited references, in Table 7.10 on page 101 of Technical Report 11). Were well within the range of activity variation within a group of animals and, consequently, the proposal was not expected to have an impact on productivity.

ARTC would continue to work with all potentially affected stakeholders to minimise potential property impacts, in accordance with the mitigation measures (see Appendix B) and the conditions of approval. LP1 provides that the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Provisions for stock crossing would be discussed with landowners. Culverts and bridges can be used as stock underpasses. Where there is no structure available, in accordance with mitigation measure LP22, ARTC will develop a 'Call Train Control' process to enable landowners to use level crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations. Landowners and ARTC would sign an agreement that allows landowners to call train control and get a time window to safely cross the track. It is important to note that stock would not get priority over train operations. Any improvements to mobile phone services are a matter for the relevant service provider.

Biosecurity risks

Issue

Some submitters were concerned about biosecurity and risks to agricultural businesses, including:

- ▶ How transmissible diseases, pests and noxious weeds would be managed
- ▶ Spread of diseases and pests (including foot rot and lice) from using public level crossings
- ▶ Farming businesses may struggle to comply with certification bodies with the identification of new risks.

Response

As noted in section B12.3.3 of the EIS, the *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks. The General Biosecurity Duty under the Act requires a person who deals with a biosecurity risk has a duty to ensure (as far as reasonably practicable) that the risk is prevented, eliminated or minimised.

Sections B1.3.5 and B12.3.3 of the EIS consider the potential to spread weeds and pests, including feral animals. The biodiversity assessment (see section B1.3.5 of the EIS) also identifies predation by feral pigs, feral cats and the European red fox as key threatening processes that may be caused by the proposal.

Further information on the potential impacts of weeds and predation on biodiversity is provided in section B1.2.2 of the EIS and section 8.4 of Technical Report 1—Biodiversity development assessment report. A land use conflict risk assessment was undertaken in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI, 2011) and was included in Appendix A of Technical Report 11—Agriculture and land use assessment. This identifies that planning, construction and operation activities may create the possibility of introducing or spreading weeds, pests

and diseases onto a property. In addition, soil disturbance could reduce competition against current weeds and necessitate increased control costs.

In accordance with mitigation measures BD8 and LP16, the biodiversity management plan, which would be implemented during construction as part of the CEMP, would include measures to manage biosecurity risks in accordance with the *Biosecurity Act 2015*. Examples of such biosecurity management measures that are typically employed on construction projects include vehicle washdown requirements, and plant and equipment inspections.

During operation, and in accordance with mitigation measure BD14, weed inspections would be undertaken and weed management would occur in accordance with ARTC's standard operating procedures to meet its obligations under the *Biosecurity Act 2015*. Further information about weed control during operation is provided in the responses in section 9.1.3 of this report.

Impacts on agriculture as a result of erosion, flooding and damage to infrastructure

Issue

Some submitters were concerned that the proposal would result in a loss of productive land from erosion, scouring from culverts, water logging of crops, and flooding and damage to infrastructure, particularly during times of significant rain events.

Response

Technical Report 3—Flooding and hydrology assessment included an assessment of potential impacts in relation to flooding of agricultural lands, and erosion and scour associated with culverts and bridges. These impacts, while limited in extent, would vary widely between individual properties. Table 7.9 of Technical Report 11—Agriculture and land use assessment recognises that flooding could result in direct impacts such as repairs to fencing, damage to machinery and loss of productivity with the potential to cause erosion.

ARTC acknowledges these issues, which would continue to be addressed as the design and construction planning progress. 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. In accordance with mitigation measures FH1 and FH2, further modelling would be undertaken during detailed design to minimise flooding impacts, as far as practicable, and confirm the extent and type of scour protection needed.

The proposal would be designed, and drainage infrastructure provided, to minimise the potential for impacts on property and infrastructure, as far as practicable. In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design (including on matters related to the design of the proposal such as any changes to drainage infrastructure) to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Tree loss

Issue

Concern was raised that the proposal would remove trees that are used to provide shade for agricultural stock. A submitter also indicated that the proposal interrupted native tree planting efforts.

Response

The proposal may affect property improvements (such as tree plantings) where they occur within the proposal site. In accordance with mitigation measure LP19, the rehabilitation strategy would include measures to restore disturbed sites that do not form part of the operational footprint (such as compounds, temporary workforce accommodation), as close as practicable to the pre-construction condition or as agreed with the landholder. Rehabilitation of disturbed areas would be undertaken progressively, consistent with the rehabilitation strategy and property-level design requirements (where relevant).

As part of ARTC's ongoing discussions with landholders, they have been advised that land subject to temporary lease arrangements during construction could be cleared. Following completion of the lease, the land would be handed back to the landholder. Any vegetation removed to establish construction facilities/work sites would not be replaced; however, as far as practicable, the valuation process for the lease would capture the loss a landowner/landholder would incur by having less trees and they would be compensated accordingly.

Access to water supply for agricultural purposes

Issue

Concern was raised about the potential impacts on access to water supplies from interrupted runoff into dams or that bore water access would be reduced. It was suggested that the proposal would result in a loss of dams that could not be replaced due to watercourse changes. Concern was raised about potential impacts on the ability to operate stock in affected areas and the quality of stock being reduced.

Concern was also raised that there would be costs and efficiency losses for properties that would be required to create new watering sources in land that had lost access to current water supplies.

Response

Technical Report 11 recognises that construction and operation activities could affect farm water pipelines, dams and drainage channels and, as a result, livestock drinking water supplies. In accordance with mitigation measure LP20, farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure. Costs associated with reinstating infrastructure for access to water that is changed as a result of the proposal would be borne by ARTC.

Importance of agricultural land

Issue

Submitters noted that agricultural land and business are important for food production and should be protected.

Response

Technical Report 11 recognises and identifies the various agricultural activities within the region and assesses the potential impacts of the proposal on agriculture and land use. Minimising impacts on agricultural lands was a key consideration in the route selection processes, as summarised in section A6 of the EIS. For example, as far as practicable, the design has sought to follow property boundaries to minimise property impacts. As summarised in section B12.3.3 of the EIS, the proposal would impact less than 1 per cent of agricultural land and biophysical strategic agricultural land within the study area.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable.

Other mitigation measures relevant to addressing the potential impacts of the proposal on properties and agricultural enterprises include:

- ▶ LP10—Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
- ▶ LP20—Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
- ▶ LP22—ARTC will develop a ‘Call Train Control’ process to enable landowners to use levels crossings as stock crossings. Details of the ‘Call Train Control’ process will be provided to agricultural landholders prior to the commencement of operations.

Property-specific measures to respond to the impacts of the proposal would to be determined in consultation with individual landholders/landowners as part of the detailed design and construction planning process:

- ▶ In accordance with mitigation measure LP3, during the property-acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties.
- ▶ Amended mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable.

9.11.7 Future development

Development of rural towns

Issue

Concern was raised that where the proposal is close to rural towns it would reduce their ability to grow and develop new areas.

Concern was raised that Narromine Council has cancelled a planned subdivision because of Inland Rail's eastern alignment route, which restricts future development opportunities.

Response

Minimising impacts on towns and future development potential was a key consideration in the route selection processes as summarised in section A6 of the EIS. As a result, the proposal largely avoids areas of likely key future development. An assessment of potential impacts on urban and commercial lands is provided in Technical Report 11. The assessment identified that the proposal is unlikely to impact on the capacity of urban zoned land to be used for that purpose.

ARTC has undertaken extensive engagement with Narromine Council and the planned subdivision was not raised as an issue by Council or others during the assessment process.

Impact on land zoning and future development

Issue

A submitter raised concerns that their property would no longer meet RU1 land zoning criteria with the proposal. The submitter requested that their land be rezoned into rural residential to allow for subdivision.

Concern was raised that the proposal would impact future development plans for affected agricultural properties.

Response

As described in section 7.7 of Technical Report 11 and summarised in section B12.4.3 of the EIS, the local environmental plan controls restrict the subdivision of rural land below a specified size (typically 500 to 1,000 hectares). New lots that may be created as a result of the proposal (e.g. located across the rail corridor from the main property) may be below the minimum lot size.

Rezoning of land is a matter for local councils. Compensation to landowners/landholders whose properties are affected by acquisition for the cost of rezoning would be determined in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

Responses to issues raised about acquisition and compensation payable are provided in sections 9.11.1 and 9.11.8 of this report.

Narrabri gas project

Issue

Concern was raised that the railway crossing the submitter's property may lead to construction of a gas pipeline, as the proposal is located within the vicinity of the Narrabri coal seam gas project. Previous requests for clarification on this issue were not responded to.

Response

The proposal and the Narrabri gas project are independent projects. Neither project relies on the other to justify its need. Any future development in the region is a matter for the relevant planning authority at that time.

9.11.8 Compensation

Compensation payable

Issue

Some submissions queried the compensation that would be payable for the effects of the proposal, including as a result of acquisition. Issues included:

- ▶ Concerns were raised that compensation of the proposal's effects on land devaluation would not be adequate. Requests were made for compensation or for acquisition of affected properties.
- ▶ Details were requested as to how compensation would be allocated, and how costs would be calculated. Suggestions were made for compensation systems and packages.
- ▶ A submitter asked if there would be an automatic compensation system for claims related to stock being hit by trains, and if previous investments in the land would be included in the price.
- ▶ A submitter suggested that compensation could not be negotiated without a detailed design.
- ▶ A submitter queried what financial mitigation measures would be in place to protect severed farm businesses. It was suggested that loans should be put in place to support affected farming businesses.

Response

All property acquisitions would be undertaken in consultation with landowners/landholders and in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) (refer to mitigation measure LP3).

The Centre of Property Acquisition NSW is a resource available to impacted landowners and provides information on the type of compensation payable under current legislation (see propertyacquisition.nsw.gov.au/compensation-types).

ARTC commenced initial property acquisition meetings with landowners in April 2021 to seek their participation around negotiation on compensation. Landowners affected by acquisition are encouraged to engage their own independent valuation advice with reasonable costs reimbursed by ARTC. Compensation relating to the loss of property is subject to ongoing discussions and negotiations with affected landowners and will be resolved through the property adjustment plan.

ARTC is committed to ensuring that compensation is fair and equitable for the acquisition of land. Compensation will be assessed pursuant to the *Land Acquisition (Just Terms Compensation) Act 1991*, having regard to the following heads of compensation:

- ▶ The market value of the land on the date of its acquisition
- ▶ Any special value of the land to the person on the date of its acquisition
- ▶ Any loss attributable to severance
- ▶ Any loss attributable to disturbance
- ▶ The disadvantage resulting from relocation
- ▶ Any increase or decrease in the value of any other land of the person at the date of acquisition, which adjoins or is severed from the acquired land by reason of the carrying out of, or the proposal to carry out, the public purpose for which the land was acquired.

With regards to the potential for stock loss, in accordance with mitigation measure LP10, livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. Fencing would be constructed along the rail corridor where it adjoins private land.

Compensation for other impacts on properties

Issue

Concern was raised that compensation should be provided to properties that would be impacted due to operational impacts, such as noise and vibration, visual effects, pollution, health, safety, stress caused by financial insecurity, groundwater contamination or loss, flooding damage and freight costs. Other submitters requested compensation for:

- ▶ Establishment and maintenance costs for creating and maintaining additional firebreaks
- ▶ Spoil mined on their properties
- ▶ Costs of mitigating the proposal's impacts, such as soundproofing and shed and yarding costs, if animals cannot adjust to noise and vibration.

Concern was raised that impacts on properties not directly severed by the proposal would not be compensated.

Response

A response to issues raised about compensation payable is provided in section 9.11.9 of this report. Compensation would be determined in accordance with the statutory obligations under the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

Potential impacts associated with the proposal have been considered and assessed by the EIS in accordance with the SEARs, relevant legislation and guidelines. Appropriate mitigation measures would be implemented during detailed design, construction and operation of the proposal to mitigate the potential impacts on the local community.

The proposal would incorporate environmental management and design features to ensure that potential impacts are managed and mitigated, as far as practicable, as described in chapters A7, A8 and D5 of the EIS. ARTC would be responsible for mitigating impacts in accordance with relevant guidelines and the conditions of approval.

9.11.9 Impact on property values

Decreased property values

Issue

Concerns were raised that the proposal would impact on property prices. Issues raised included:

- ▶ A submitter suggested that proposed mitigation measures would not make up for property value loss.
- ▶ Some submitters were concerned about how decreased property prices would affect their retirement or children's inheritance.
- ▶ The proposal's impact on property prices has not been adequately discussed.
- ▶ A submitter raised concern that the proposal has affected the saleability of their property (Nampara), which has been on the market since 2019.

Response

A response to issues raised about compensation payable is provided in section 9.11.8 of this report. Compensation would be determined in accordance with the statutory obligations under the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

The proposal would incorporate environmental management and design features to ensure that potential impacts are managed and mitigated, as far as practicable, as described in chapters A7, A8 and D5 of the EIS. In addition, appropriate mitigation measures would be implemented during detailed design, construction, and operation of the proposal to mitigate the potential impacts on adjacent sensitive receivers. The full set of mitigation measures (as amended) is provided in section 11 of this report.

Amended mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.

Council rate revenue

Issue

A submitter suggested that Narrabri Shire Council rate revenues would fall due to a decrease in property values.

Response

The setting of rates is a matter for Narrabri Shire Council.

9.11.10 Costs, liability and insurance

Issue

Concern was raised that the proposal would increase public liability coverages. Details on how liability for events would be determined was requested. Another submitter sought assurance that impacts caused by errors in project design, such as miscalculation of flooding risk, would not result in additional liabilities and costs for landowners.

Submitters sought confirmation that they would not be required to pay extra for increased insurance. A submitter raised concern that public liability insurance would increase. Concern was raised that farmers would not be able to obtain insurance for fires caused by trains.

A submitter raised concern that the proposal would result in ongoing costs to their business of having many acres of arable cropping land converted to gravel roads and stock lanes. Concern was raised that ARTC is not proposing to buy this land and that the property owner would be responsible for maintenance and insurance costs of both the gravel road and the fencing, and pay council rates on unproductive land.

Response

Ongoing property insurance is a matter for each individual landowner. ARTC would be responsible for maintaining all the infrastructure that forms part of the proposal and would be responsible for these ongoing costs. Regarding the conversion of arable cropping land to proposal infrastructure such as gravel roads, a response to issues raised about compensation payable is provided in section 9.11.8 of this report. Compensation would be determined in accordance with the statutory obligations under the *Land Acquisition (Just Terms Compensation) Act 1991*.

9.11.11 Other land use and property issues

Plane spraying

Issue

Concern was raised that weed and chemical spraying with planes could not occur with trains passing and shunting through the area. It was noted that plane spraying is essential to the management practices and production costs as it is so important to apply chemicals on time to cotton, which is a vital crop in the production system.

Response

Weed and chemical spraying with planes can continue in accordance with existing requirements and statutory obligations for aerially applying pesticides.

Narrabri Sewage Treatment Plant

Issue

A submitter was concerned about the proposal's effects on Narrabri Sewage Treatment Plant and if a contingency plan would be put in place if a sewage pipe bursts during a flood. It was asked how public and stock safety would be guaranteed in the event of a pipe bursting.

Response

The proposal would not impact on the operation of the Narrabri Sewage Treatment Plant. Contingency measures relating to the operation of the plant are a matter for Narrabri Shire Council.

Energy supply

Issue

A submitter asked if the energy used to run bores would influence local energy supply.

Response

As described in section A8.10 of the EIS, power to run the proposed borefields would be supplied by either connection to mains supply, or generators where mains power is unavailable or insufficient. The final option will be determined by the construction contractor(s) in consultation with the energy provider. As such, there are no expected impacts on power supply to landowners.

Mitigation measures not detailed enough

Issue

Concern was raised that mitigation measures were not detailed or specific enough in relation to individual properties.

Response

Many of the property-specific measures that would be implemented by ARTC to respond to the impacts of the proposal need to be determined in consultation with individual landholders/landowners as part of the detailed design and construction planning process.

Further information about the measures that would be implemented at properties to address the impacts of the proposal are provided in sections 9.11.1 to 9.11.6 of this report. For example:

- ▶ In accordance with mitigation measure LP3, during the property-acquisition process, ARTC would seek to secure agreement with affected landholders to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties.
- ▶ Amended mitigation measure LP5 provides that, where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable.

These measures need to be determined at the individual property level in consultation with landholders/landowners.

Other mitigation measures relevant to addressing the potential impacts of the proposal on properties and agricultural enterprises include:

- ▶ LP10—Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
- ▶ LP20—Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
- ▶ LP22—ARTC will develop a ‘Call Train Control’ process to enable landowners to use level crossings as stock crossings. Details of the ‘Call Train Control’ process will be provided to agricultural landholders prior to the commencement of operations.

9.12 Visual amenity

9.12.1 Construction impacts

Construction impacts on views

Issue

Some submitters raised concerns about the impacts of construction on the visual amenity of the landscape, including the impact of tree clearing.

Response

Potential landscape and visual impacts associated with the proposal are described in Technical Report 12—Landscape and visual impact assessment and summarised in chapter B13 of the EIS. In accordance with the SEARs and assessment guidelines, the assessment has considered impacts on representative sensitive viewpoints, and has provided a more general assessment on sensitive receivers.

As described in section B13.3 of the EIS, during construction, the proposal would result in temporary changes to visual amenity associated with the presence of construction machinery and disturbance at work sites. Visible elements during construction of the rail and road infrastructure would include work sites, machinery and equipment, site fencing, compounds, storage areas, stockpiles, waste materials, borrow pits, temporary workforce accommodation and partially constructed structures. The potential impacts on visual amenity of these changes would depend on the nature and intensity of the construction activity. The change in the visual environment would generally be experienced from a relatively short distance.

Section B13.3.1 of the EIS provides a summary of changes and the significance of potential impacts at sensitive representative viewpoints during construction. Overall, impact significance ratings at key viewpoints ranged from negligible to moderate. Six viewpoints were predicted to have a moderate potential for impacts as a result of vegetation clearing and construction of major features close to the viewpoint.

ARTC is committed to implementing a range of measures to mitigate the potential visual impacts identified during construction. Measures include:

- ▶ LV1—Detailed design and construction planning would seek to minimise the construction and operation footprints and avoid impacts on mature native vegetation, as far as reasonably practicable.
- ▶ LV5—Construction compounds would be located, as far as practicable, within cleared areas and away from sensitive receivers. Compounds would be designed and orientated to minimise visual impacts. This would include locating areas of low visual amenity away from sensitive receivers, and erecting boundary screening around compounds, where appropriate.
- ▶ LV6 – Trees to be retained would be protected prior to the commencement of construction, in accordance with *AS4970-2009 Protection of trees on development sites* (Standards Australia, 2009).
- ▶ LV8—Lighting of work areas, compounds, and work sites would be designed and sited in accordance with mitigation measure LV4, and oriented to minimise glare and light spill impact on adjacent receivers.

The removal of vegetation would lead to visual impacts until the works are complete and disturbed areas that are not within the operational footprint are rehabilitated. As described in section A8.7 of the EIS, and in accordance with mitigation measures BD12 and LP19, any land directly disturbed by construction of the proposal, and not required for ongoing operations, would be rehabilitated in accordance with a rehabilitation strategy. In accordance with mitigation measure LV7, rehabilitation of disturbed areas would be undertaken progressively in accordance with the rehabilitation strategy and individual property agreements (where relevant). This would assist in minimising the potential impacts of tree clearing. Further information about the proposed approach to rehabilitation is provided in the response in section 9.4.3 of this report.

Property-specific impacts during construction

Issue

A submission suggested that ARTC had not demonstrated that construction infrastructure on their property would not result in adverse visual impacts during construction. It is imperative that the visual impacts of the proposal on the property are adequately and robustly addressed, and any necessary mitigation measures are implemented.

Response

A response to issues raised about the adequacy of the visual assessment is provided in section 8.3.7 of this report. As described in section 8.3.7, the assessment considers potential impacts on representative sensitive viewpoints and provides a more general assessment of the potential impacts on sensitive receivers. It does not provide individual property-specific assessments, or assessments for all sensitive views, as this is not required by the SEARs or the assessment guidelines.

As described above, during construction, the proposal would result in temporary changes to visual amenity associated with the presence of construction machinery and disturbance at work sites. The potential impacts on visual amenity of construction would depend on the nature and intensity of the construction activity. The change in the visual environment would generally be experienced from a relatively short distance.

The key measures to mitigate the potential visual impacts identified during construction are described in the above response.

Dark skies and night work

Issue

Concerns were raised that lights used during night construction and at temporary workforce accommodation facilities would affect the Siding Spring Observatory, the International Dark Sky Park and tourists interested in star gazing.

Response

As described in section A8.8.2 of the EIS, construction would typically be undertaken during daylight hours, between 6am and 6pm. Limited discrete construction activities may be undertaken outside the primary proposal construction. This would include work where there are no sensitive receivers, work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line), and nominated out-of-hours construction activities. Further information is provided in section A8.8.2 of the EIS.

Potential lighting impacts on the Dark Sky Region during construction were described in section 7.3 of Technical Report 12—Landscape and visual assessment and summarised in section B13.3 of the EIS. The assessment concluded that the proposal would have limited potential to impact the Dark Sky Region, as night-time work would be minimal. Notwithstanding this, construction lighting would be designed to minimise offsite light spill as far as practicable.

Mitigation measure LV4 has been amended to include a requirement to consult with the Siding Spring Observatory Dark Sky Committee as part of the design and siting of temporary and permanent lighting. This is in addition to the requirement to design and site lighting in accordance with *AS/NZS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* (Standards Australia, 2019) and the good lighting design principles documented in the *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (Department of Planning and Environment, 2016).

In addition, and in accordance with mitigation measure LV8, lighting of work areas, compounds, and work sites would be designed and sited in accordance with mitigation measure LV4, and oriented to minimise glare and light spill impact on adjacent receivers.

9.12.2 Operation impacts

Impacts on visual amenity

Issue

A number of concerns were raised about the potential impacts of the proposal on visual amenity in Narrabri, Kickabil, Bohena Creek, Narromine, Armatree and Coonamble. Some submitters objected to impacts on the region's tranquil atmosphere and rural character. Submitters suggested that the proposal would impact on tourism due to reduced visual amenity in the area. Issues raised included:

There will be significant impact for those people who appreciate the views and beauty of looking at the Warrumbungle Mountains.

The bridge/viaduct will have a major negative impact for the people of Narrabri.

The proposal is unsightly and industrial looking. It destroys the peaceful and visual amenity of the town.

The proposal will have a very high negative visual effect for landholders when it cuts through their paddocks, and for tourists waiting at a level crossing when coming and going to the National Park.

Response

As described in section B13.2.2 of the EIS, sensitive visual receivers within the study area include:

- ▶ Residents of rural properties and residential areas on the outer edges of Narromine and Narrabri that have views to the proposal site
- ▶ Road users
- ▶ Rural and industrial workers

- ▶ Visitors to recreational areas/lookouts with views to the proposal site.

As noted in the response in section 8.3.7 of this report, 32 viewpoints were selected to represent of the range of views to the proposal site. As described in section B13.4.3 of the EIS, moderate impacts were predicted at two viewpoints (VP14 and VP22), due to the extent of vegetation removal and the introduction of a new rail bridge on the Namoi River, respectively. Fourteen viewpoints (viewpoints VP01, VP02, VP04, VP05, VP06, VP07, VP08, VP09, VP11, VP13, VP17, VP18, VP19 and VP21) were found to have a moderate–low visual impact.

Viewpoint 12 was identified as having views toward Table Top Mountain (which is located within the Warrumbungle slopes and uplands landscape character zone). The viewpoint was assessed as having a negligible visual impact during operation, as the rail line would not be visible.

ARTC commits to implementing a range of measures to mitigate the potential visual impacts identified. Further information is provided in section 9.12.3 of this report.

Property-specific impacts

Issue

A number of submitters raised concerns about potential adverse visual impacts at their properties, given the proximity of the proposal, and the potential loss of vegetation to accommodate the railway alignment. Issues raised included:

- ▶ ARTC has not demonstrated that the proposal will not result in adverse visual impacts on their property (Trewalney) during operation.
- ▶ The Macquarie River Bridge and rail line will have a detrimental impact on the visual amenity of our property.
- ▶ Wilga View was named because of the wilga trees and the magnificent view of the Warrumbungle Mountains, which will be destroyed with trains blocking the view.
- ▶ The visual impact will be severe and my house was built to maximise the view.
- ▶ Shade trees will be destroyed.
- ▶ The proposal will degrade the visual amenity of our property.
- ▶ The view of the mountains will now become a view of a large steel rail track.

Response

A response to issues raised about the adequacy of the visual assessment is provided in section 8.3.7 of this report. The EIS and Technical Report 12 acknowledge the potential for visual impacts as a result of the presence of the proposal's operational infrastructure. As described in section B13.4 of the EIS, the proposal would introduce new infrastructure in what is currently mainly a rural area. This would result in a change in the character of properties that are directly impacted by the proposal and a change in views for those properties that have views to the proposal site. General visual impacts would occur as a result of vegetation loss, introduction of a new rail corridor, changes to existing roads, and associated infrastructure in a typically rural landscape setting.

As described in section 8.3.7, in accordance with the SEARs and assessment guidelines, the assessment considers impacts on representative sensitive viewpoints and provides a more general assessment on sensitive receivers. It does not provide individual property-specific assessments or assessments for all sensitive views; however, notwithstanding this, a range of mitigation and management measures would be implemented to minimise the potential visual impacts associated with the proposal.

As described in section B13.4.3, 14 out of 32 representative viewpoints were found to have a moderate–low visual impact during operation. Of these, viewpoints 5 and 21 would have views of the Macquarie River bridge.

The approach to mitigating the visual impacts of the proposal is described in section 9.12.3 of this report.

Privacy impacts

Issue

A submitter raised concern about the loss of privacy.

Response

Subject to individual property circumstances, implementing the mitigation measures that commit to avoiding impacts on mature native vegetation as far as practicable (mitigation measure LV1), and implementing the rehabilitation strategy (in accordance with mitigation measure LV7) (see section 9.12.1 of this report) and the urban design and landscape plan (see section 9.12.3 of this report) would assist with minimising potential privacy impacts, as far as practicable.

9.12.3 Mitigation

Mitigating the permanent visual impacts of the proposal

Issue

Concerns were raised about how the permanent visual impacts of the proposal, including the presence of the rail line and other infrastructure, such as bridges, would be mitigated. A submitter queried what would be put in place to maintain their rural outlook.

Response

As described in section A7.6.1 of the EIS, the general urban design and landscaping objectives that have been identified for the proposal are to:

- ▶ Fit sensitively within the setting and topography of each landscape topology it passes through
- ▶ Minimise impacts on cross connectivity and maximise active transport permeability for communities
- ▶ Design built-form elements that fit well in their setting, are legible and minimise disturbance to existing connectivity
- ▶ Respond to the local natural and cultural context to integrate the proposal into the local setting
- ▶ Minimise landscape and visual impacts for communities
- ▶ Deliver a fully integrated resilient landscape corridor that requires minimal maintenance.

These urban design objectives would continue to be refined and tested during detailed design. This would assist in minimising the potential for adverse impacts on communities and the broader landscape.

As described in section A7.6.2 of the EIS, and in accordance with mitigation measure LV2, an urban design and landscape plan would be prepared by a suitably qualified consultant in consultation with relevant stakeholders. The urban design and landscape plan would guide the appropriate urban design responses for key infrastructure and landscaping approaches. The plan would be context-specific and include a vision and place-specific objectives and principles to ensure the design is well integrated into its surrounding environment. The plan would be prepared in accordance with the urban design and landscaping objectives identified for the proposal and relevant guidelines, policies and strategies (as listed in section A7.6.2 of the EIS). These include ARTC's *Inland Rail Landscape and Rehabilitation Strategy* and the *Inland Rail Landscape and Rehabilitation Framework*, which have been developed to establish governing landscape objectives and principles, as well as outline landscape and rehabilitation treatment solutions for various phases of the overall Inland Rail program.

In accordance with mitigation measure LV2, the urban design and landscape plan would include:

- ▶ Vegetation screening in strategic locations to visually mitigate impacts from new structures and rail operations, including around bridges and locations where the proposal would be visible from sensitive receivers—where the presence of screening does not impact safe rail operations
- ▶ Appropriate species that respond to the existing landscape character setting and environmental conditions
- ▶ Design guidelines to minimise the visual impacts of bridges, with consideration of the existing landscape and visual context and with regard to *Bridge aesthetics: design guidelines to improve the appearance of bridges in NSW* (Roads and Maritime Services, 2012).

Detailed design would be undertaken in accordance with the urban design objectives developed for the design, and the urban design and landscape plan.

Other mitigation measures that would be implemented to minimise the potential visual impacts of the proposed infrastructure include:

- ▶ LV1—Detailed design and construction planning would seek to minimise the construction and operation footprints, and avoid impacts on mature native vegetation, as far as reasonably practicable.
- ▶ LV3—Batter slopes would be integrated into the surrounding landscape as far as practicable. Appropriate slope stabilisation would be integrated into batter design to ensure successful rehabilitation and stabilisation.
- ▶ LV9—Vegetation provided in accordance with the rehabilitation strategy (mitigation measure BD12) and urban design and landscape plan (mitigation measure LV2) would be subject to ongoing monitoring and maintenance in accordance with ARTC's standard operating procedures.

All mitigation measures are provided in Appendix B of this report.

9.13 Socio-economic

9.13.1 Construction impacts

Effects on medical services and other facilities

Issue

Concerns were raised about the potential impacts of the construction workforce on the capacity of local services. Issues raised included impacts on:

- ▶ Health, accommodation and emergency services in Gilgandra
- ▶ Narrabri's attractiveness to skilled workers, increasing the difficulty of maintaining doctors
- ▶ The town's mental health facilities—they would not be able to cope with mental health effects caused by the proposal.

Response

As described in section B14.3.5 of the EIS, the capacity of local and regional health services to meet increased demand from construction varies across the study area, with larger centres better resourced in relation to health services and facilities. Increased demand for these services has the potential to affect availability and access to medical and health services for local residents.

It is expected that each temporary workforce accommodation facility would have a dedicated health space that could be used for onsite occupational health and safety requirements. The layout, staffing and amenities provided would be defined by the temporary workforce accommodation plan, which would be prepared in accordance with mitigation measure SE-CI2. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and in consultation with relevant key stakeholders, including the relevant local council.

New mitigation measure SE5 provides that, prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs as far as practicable with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.

Mitigation measures SE11 and SE13 commit to developing and implementing the workforce management plan, in consultation with councils and service providers, to manage potential impacts of the non-resident construction workforce on local and regional communities, including:

- ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services
- ▶ Processes for managing potential increased demands due to non-resident workforce.

The plan would include appropriate processes and measures to ensure local health and emergency service providers are made aware of the potential demands on their services, and given support and assistance to plan their resources appropriately. The plan would include a monitoring and reporting framework, consistent with the overall monitoring and reporting framework that would be implemented via the social impact management plan (new mitigation measure SE4).

Impacts on Coonamble tourism

Issue

A submitter was concerned that the presence of a large construction site would discourage tourists from visiting Coonamble and noted that tourism is vital for Coonamble businesses.

Response

The importance of tourism in the study area is recognised by Technical Report 13—Social assessment. The social assessment considers potential impacts on business, industry and employment, including tourism, and the results are described in Technical Report 13 and summarised in chapter B14 of the EIS.

A range of mitigation measures are proposed (and detailed in full in Appendix B) to minimise potential socio-economic impacts, particularly amenity impacts during construction.

ARTC would continue to work with local councils and other local and regional service providers to minimise the potential impacts of construction on local communities and services. As described in section 4.4 of the EIS and in accordance with mitigation measure SE1, ARTC would continue to engage with stakeholders in accordance with the Inland Rail Communications and Engagement Strategy, and the proposal-specific communication management plan. Mitigation measure LP1 provides that the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Construction work hours

Issue

A submitter was concerned that the proposed long construction hours of 6am to 6pm daily, with a break every second week for half Saturday and Sunday, would impact the surrounding community.

Response

As described in section A8.8.2 of the EIS, a small increase in working hours above the recommended standard hours in the *Interim Construction Noise Guideline* (DECC, 2009) is proposed to shorten the length of construction, as far as practicable, and minimise associated disruptions to the community. The following primary proposal construction hours are proposed:

- ▶ Monday to Friday: 6am to 6pm
- ▶ Saturday: 6am to 6pm
- ▶ Sundays: 6am to 6pm
- ▶ Public holidays: no work.

No work would be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except in the following circumstances:

- ▶ Where potentially affected receivers agree that the work can be undertaken
- ▶ Where construction noise levels do not exceed the rating background level by more than 5 dB(A) at residential receivers
- ▶ No more than the noise management levels specified in the *Interim Construction Noise Guideline* (Table 3) would be experienced at non-residential sensitive receivers.

Discrete construction activities may also be undertaken outside the primary proposal construction hours as follows:

- ▶ Work where there are no sensitive receivers with the potential to be affected by noise and vibration impacts
- ▶ Work during rail corridor possessions at the proposed Narrabri, Narromine and Curban connections and work over existing rail lines (Dubbo to Narromine line and Narrabri to Walgett line), which may need to be carried out on a 24-hour basis
- ▶ Other out-of-hours construction activities, including delivery of oversized plant or structures and emergency work
- ▶ Other discrete construction activities, such as large concrete pours and girder/deck installations at some bridges would also occur; however, these would be limited to 48 hours at any one location.

Work outside the *Interim Construction Noise Guideline* recommended standard hours would be undertaken with appropriate noise management controls and management measures, implemented in accordance with the conditions of approval and the proposed mitigation measures. Mitigation measure CNV5 provides that an out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels. The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders (including the NSW EPA) and the community with the potential to be impacted, and would be incorporated into the construction noise and vibration management plan.

Further information about the approach to managing the potential noise impacts during construction is provided in section 9.7.3 of this report.

9.13.2 Operation impacts

Effects on businesses during operation

Issue

Concern was raised that the proposal would negatively impact on local business. Issues raised included:

- ▶ Increased flooding risks to transportation and logistics links impacting the way businesses operate
- ▶ Loss of rural farm tourism
- ▶ Loss of commercial opportunities in the town
- ▶ Train times and changes to access would lead to longer travel times and would impact the operation of school bus services
- ▶ The proximity of the rail close to business would alter the way the business operates due to safety concerns from train movements.

Response

Potential impacts on property and businesses associated with the operation of the proposal are described in Technical Report 11—Agriculture and land use and Technical Report 14—Economic assessment, and summarised in sections B12 and B14 of the EIS, respectively. Appropriate mitigation measures would be implemented during detailed design, construction and operation to mitigate potential impacts on businesses.

ARTC recognises its responsibility to deliver and operate Inland Rail with the least social and economic impacts practicable, while enhancing the benefits Inland Rail will deliver at the local, regional and national levels. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts, and maximise potential local and regional benefits of Inland Rail.

As described in section B14.5.1 of the EIS, and in accordance with new mitigation measure SE4, a social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptation management framework for construction. It would be developed in consultation with local councils.

Responses to issues raised about potential flooding and access impacts on properties are provided in sections 9.3, 9.11.4 and 9.11.5 of this report.

As described in section 9.3.1 of this report, and in accordance with mitigation measures SE1 and LP1, ARTC would continue to work with relevant stakeholders to minimise the potential impacts of the proposal on local communities and services.

In relation to safety concerns, mitigation measure SE15 commits to the development and implementation of a rail safety awareness program, prior to the operation of Inland Rail, to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal. In addition, and in accordance with mitigation measure LP22, ARTC will develop a 'Call Train Control' process to enable landowners to use level crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.

The proposal would also offer benefits to local areas and the overall region. Further information is provided in the following response.

Benefit to rural communities

Issue

Some submitters felt that the proposal would not benefit rural, inland communities in NSW. Concern was raised that without utilising the existing train line, or stopping in some towns, the proposal would not stimulate business growth in rural towns.

Response

As described in section B14.4.5 of the EIS, operation of the proposal would have the potential to deliver economic benefits for the region as a result of enhanced efficiencies and increased freight capacity along the interstate rail network. Operation is expected to increase access to freight rail services for transporting produce to market, benefiting the regional agricultural industry and supply chains; in particular, regional agricultural producers would be able to move products more efficiently for domestic use and export, and potentially reduce associated transport costs.

Operation could create supply chain efficiencies for freight, which would benefit producers, consumers and the regional community. It also has the potential to act as a catalyst for further private sector investment in the study area, particularly for freight and logistics operations.

ARTC is committed to working with local communities to meet their needs and deliver customer benefits. These opportunities will unfold as the proposal moves towards the commencement of construction.

The Parkes to Narromine project, which was completed in September 2020, demonstrates the types of benefits that Inland Rail is bringing to local economies, including:

- ▶ \$109.7 million spent with local businesses
- ▶ \$14.1 million spent with Indigenous businesses
- ▶ 99 local businesses that have supplied to the proposal.

Further information can be found in the *Moving ahead with Inland Rail* report published by ARTC in February 2020 (which can be accessed at inlandrail.artc.com.au/moving-ahead-with-inland-rail/).

ARTC recognises its responsibility to deliver and operate Inland Rail with the least social impacts practicable, while enhancing the benefits Inland Rail will deliver at the local, regional and national levels. ARTC commits to implementing the mitigation measures and undertaking the proposal in accordance with the conditions of approval, to address the identified impacts. ARTC has established procedures to guide the development and implementation of measures to minimise potential socio-economic impacts and maximise potential local and regional benefits of Inland Rail.

ARTC would continue to work with local councils and other service providers in the region to maximise potential local and regional benefits. ARTC is committing to a number of measures in relation to local employment and procurement opportunities. Mitigation measure SE6 provides that ARTC would continue to support local employment in accordance with the *Australian Jobs Act 2013* (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.

In accordance with mitigation measure SE7, a proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would include an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.

Impacts on amenity

Issue

Concerns were raised that the proposal would impact the amenity of residential properties, as a result of impacts including noise, vibration, flooding, access, visual effects and other operation impacts. Specific impacts raised included:

- ▶ Privacy and security will be adversely impacted
- ▶ Narromine will no longer be seen as providing a desirable rural acreage lifestyle
- ▶ Reduced serenity and sentimental value of homes and communities.

9.13.2.1 Response

In accordance with the SEARs, a comprehensive range of specialist technical assessments were undertaken to consider the potential impacts on the community, including noise and vibration impacts, property impacts, flooding and visual impacts. Potential impacts were acknowledged, integrated and assessed in Technical Report 13—Social assessment and the results summarised in section B14.4 of the EIS.

Appropriate mitigation measures would be implemented during detailed design, construction, and operation of the proposal to mitigate the potential impacts on adjacent sensitive receivers. The amended mitigation measures for the proposal are provided in Appendix B.

Further information about how the potential impacts of the proposal would be managed, including to minimise the potential impacts on amenity and properties, is provided in the responses in the preceding sections of this report.

9.13.3 Health impacts

Impacts on health

Issue

Some submissions expressed concern that the planning of the proposal has affected their mental health due to the uncertainty surrounding the proposal and its potential impacts. Effects mentioned included stress, depression, anxiety and feelings of isolation. Some people felt the proposal compounded mental health issues caused by the drought, economic downturn and COVID-19.

Some submitters were concerned that operation of the proposal would cause stress and affect their mental health in the future. This was a particular issue for those that would be directly affected. Concern was raised that mental health effects of the project could have long-term effects on family and community cohesion. It was felt the assessment inadequately addressed these issues.

Some submitters were also concerned about their physical health. Some submissions indicated the effects of the proposal have made it difficult to recover from health problems and that they may be required to move as a result.

Response

ARTC acknowledges that large projects such as Inland Rail can lead to uncertainty for community members, particularly during the reference design and environmental approvals phase, as detailed information is not yet available. This uncertainty can contribute to feelings of stress and anxiety for individuals and communities. As acknowledged in Technical Report 13—Social assessment, ARTC understands that the communities in the region have been through recent shocks such as drought, bushfire and COVID-19, which all have the potential to contribute to feelings of stress.

The potential for community wellbeing impacts are summarised in section B14.3.1 of the EIS and described in sections 7.3.2 and 7.5.4 of Technical Report 13.

This includes potential wellbeing impacts for property owners facing changes, due to property impacts subject to property acquisition, and potential wellbeing impacts for community members, due to varying community attitudes towards the proposal, and the long planning, design and approval timeframe of the proposal.

As described in section B14.5.1 of the EIS, comprehensive and appropriate communication and consultation with the community and other key stakeholders will play a key role in managing the potential for socio-economic impacts during construction and operation. Effective communication and engagement are fundamental to reducing risk and minimising potential impacts. Identifying, engaging and effectively communicating with stakeholders is critical to the successful delivery of the proposal.

ARTC appreciates that the property acquisition process can be a particular source of stress for land or property owners. The NSW Government has an established process that ARTC has and will continue to follow.

More information about the land acquisition process in NSW and compensation can be found on the NSW Government's Centre for Property acquisition website at propertyacquisition.nsw.gov.au. This information includes processes and support mechanisms that are in place to address the needs of residents and the community in a fair and transparent way. Further information in response to issues raised about the acquisition process is provided in section 9.11.1 of this report.

In accordance with amended mitigation measure SE1, ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy. A proposal-specific communication management plan would be developed, in accordance with the Inland Rail Communications and Engagement Strategy, and implemented prior to and during construction, to ensure that:

- ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate
- ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties
- ▶ Enquiries and complaints are managed and a timely response is provided for concerns raised
- ▶ Accurate and accessible information is made available
- ▶ Feedback from the community is encouraged.

The communication management plan would define the requirements for the complaints management system to be implemented during construction.

It is expected that together, the overall community and stakeholder engagement strategy (measure SE1) and communication management plan (measure SE2), would provide avenues for community members to express any concerns and frustrations that they may have about the proposal and gain relevant information to assist with potential stress and anxiety.

In accordance with mitigation measure LP4, property owners and occupants would be consulted in accordance with the communication management plan, to ensure that owners/occupants are informed about:

- ▶ The timing and scope of activities in their area
- ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services or farm operational arrangements
- ▶ Activities that have the potential to impact on livestock if not managed properly, such as construction vehicle movement across a paddock.

It is anticipated that the ARTC's consultation approach with landowners affected by property impacts would assist with potential stress and anxiety.

9.14 Climate change and sustainability

9.14.1 Climate change and greenhouse gases

Sustainability and climate change assessment—emission reduction estimates

Issue

A submitter suggested that the estimated emissions reduction of 750,000 tonnes per annum of carbon dioxide may be overestimated.

Response

The key benefits of Inland Rail are summarised in section A5.3.1 of the EIS and were obtained from the *Inland Rail Programme Business Case* (ARTC, 2015). The benefits, which include improved sustainability and reduced emissions by 750,000 tonnes per year, were estimated for 2050. Truck movements removed from roads are estimated to increase as the total freight task increases post 2050.

Infrastructure Australia evaluated Inland Rail and identified it as having long-term benefits to potential users and the broader economy. Infrastructure Australia also considered that, from a strategic perspective, there is merit in using rail to move substantial volumes of freight over long distances.

9.15 Hazards and safety

9.15.1 Construction

Risk caused by increased traffic

Issue

Some submitters were concerned that increased construction traffic would pose a safety risk. Particular concern was raised where construction would occur near children and school bus stops.

Response

ARTC commits to implementing reasonable and feasible measures to minimise potential impacts on the local road network, including potential road safety impacts. A range of mitigation measures are proposed to minimise the potential traffic, transport and access impacts during construction (see mitigation measures TT1, TT6 to TT10 and TT-CI1 in Appendix B). In particular, in accordance with mitigation measure TT1, detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and on the operation of the surrounding road and transport environment during construction. The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.

Mitigation measure TT7 provides that ARTC consults with relevant stakeholders (including local councils) to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders during construction. Any additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders.

Safety concerns associated with construction areas

Issue

Submitters raised concerns about the presence of construction and maintenance workforces amongst isolated properties. Concern was raised about risks to personal safety and theft. Issues included:

- ▶ Guard dogs would no longer be effective after being exposed to constant construction activities
- ▶ Whether employees would have police checks
- ▶ Whether construction areas would have security presence
- ▶ Precautions that would be taken to prevent illegal entry onto corridor adjacent to properties
- ▶ How risks to personal safety and theft would be mitigated
- ▶ How ARTC would ensure the safety of everyone, including pets.

Response

ARTC acknowledges that large projects such as Inland Rail can lead to uncertainty for community members.

The potential for community wellbeing and safety issues are described in section 7.5.4 of Technical Report 13—Social assessment. This includes potential safety perceptions for community members. In particular, residents may be concerned about perceived safety and security concerns associated with temporary workforce accommodation facilities. The report notes that there is a growing body of literature that has found that non-residential workforces represent no higher risk for crime or disorder than the general population but are often the source of blame for existing issues.

Ultimately, the construction contractor would be responsible for implementing appropriate workforce conduct policies and safety procedures, including requirements for positive behaviour and respect for local residents and businesses. The contractor and ARTC would also provide and promote a complaints mechanism which ensures acknowledgement and resolutions to any issues that evolve. Consultation with councils and the community on previous projects has indicated few perceived issues with workforce behaviour during construction. There are unlikely to be negative cumulative effects on community cohesion resulting from the project workforce.

In terms of police checks, ARTC conducts background checks on its employees. However, the workforce employed by the contractor is managed independently of ARTC. This is why it is the responsibility of the contractor to manage and monitor their workforce and the safety concerns of the community.

In accordance with mitigation measure SE13, the workforce management plan would define measures that would be implemented to manage the potential impacts of the non-resident construction workforce, including a code of conduct for workers and a zero-tolerance policy relating to anti-social behaviour.

As described in section B14.5.1 of the EIS, comprehensive and appropriate communication, and consultation with the community and other key stakeholders will play a key role in managing the potential for socio-economic impacts during construction and operation. Effective communication and engagement are fundamental to reducing risk and minimising potential impacts. Identifying, engaging and effectively communicating with stakeholders is critical to the successful delivery of the proposal. Community members and other relevant stakeholders would continue to be consulted in accordance with the communication management plan (mitigation measure SE1). The communication management plan would define the requirements for the complaints management system to be implemented during construction.

In accordance with mitigation measure LP4, property owners and occupants would be consulted in accordance with the communication management plan, to ensure that owners/occupants are informed about the timing and scope of activities in their area.

9.15.2 Operation impacts

Risk posed by train operation and level crossings

Issue

A number of submitters raised concerns about an increased risk to people using railway crossings. This was a particular concern in areas where elderly people and children would use crossings frequently, e.g. at the school bus stop on the corner of Old Mill Road and Collie Road. Concern was raised that signage would not be sufficient and that no matter how well-designed level crossings are, there is still a risk of fatality, which is unacceptable, and overpasses should be considered.

A submitter requested that trains include flashing lights to increase safety.

Location-specific risks noted included:

- ▶ Kamilaroi Highway users heading towards Wee Waa may experience bottlenecks and increased accident risk at the rail crossing during harvest time
- ▶ Train operation through the Mawbey's Road, Old Mill Road and Gilmours Road main thoroughfare would pose a safety risk.

Response

As described in sections A6.3.3 and A7.3.7 of the EIS, the proposed road and rail interactions have been assessed and designed in accordance with relevant Australian, Transport for NSW and ARTC design standards.

The rail alignment would cross the Kamilaroi Highway via a bridge that would also cross the Narrabri Creek/Namoi River, Yarrie Lake Road and The Island Road. As a result, no impacts are expected to road users of the Kamilaroi Highway due to the proposal crossing at this location. As the rail alignment would also cross Old Mill Road via a bridge at Emogandy Creek, no impacts to road users are expected due to the presence of the proposal at this location. A passive level crossing would be provided where the alignment crosses Gilmours Road, which is a local unsealed road that intersects with Old Mill Road. However, given the low volumes of traffic recorded at locations near this road (Leaches Creek Road and Old Mill Road), any impacts to road users due to the presence of this level crossing are expected to be minor.

Where it has been determined that a level crossing is the preferred solution, a consistent methodology that aligns with ONRSR's policies and guidelines has been used to determine proposed level crossing treatments (active or passive). The approach to this involves applying the Australian Level Crossing Assessment Model (ALCAM) to

determine the 'risk score' for each level crossing, and then undertaking cost-benefit analysis to assess whether higher levels of protection are justified. In June 2020, ONRSR finalised an audit of the Inland Rail Road–Rail Crossing Strategy, the focus of which was on ensuring level crossing safety risks are eliminated or minimised, as far as reasonably practicable. There were no findings or recommendations identified by the audit requiring action by ARTC.

Mitigation measure TT4 provides that level crossings would be designed in accordance with relevant guidelines and standards, including *AS 1742.7:2016 Manual of uniform traffic control devices, Part 7: Railway crossings* (Standards Australia, 2016), *Guide to Road Design Part 4: Intersections and Crossings* (Austroads, 2021a), *Guideline: Lighting for railway crossings* (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. This would ensure that crossings are safe for long-term use. ARTC would continue consultation with relevant road managers during detailed design to finalise preferred treatments at each location. In accordance with new mitigation measure TT5, a public level crossing treatment report would be prepared to document the level crossing process design and assessment process that has been undertaken.

In accordance with mitigation measure TT11, the operation of all level crossings on classified roads, constructed as part of the proposal, would be reviewed to confirm that the:

- ▶ Level of protection is appropriate
- ▶ Proposed infrastructure is appropriate for the traffic conditions.

In addition to engineering solutions, ARTC would continue to support rail safety education programs through its membership of the TrackSAFE Foundation. In accordance with mitigation measure SE15, a rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.

Safety risk caused by route within travelling stock reserve

Issue

A submitter raised concerns that the proposed route through the travelling stock reserve is dangerous and increases the likelihood of a serious accident involving livestock, vehicles and people. With the width reduced, stockmen would have difficulty controlling livestock and the added element of high speed.

The submitter questioned the type of fencing would be placed along the travelling stock route to stop livestock breaking into irrigated crops and provide safety for workers as stockmen would not be able to control livestock.

Response

As described in section A7.3.8 of the EIS, where existing travelling stock reserves are severed by the proposal, access across the proposal site has been provided for by means of level crossings or stock underpasses at bridges and culverts. Underpasses would be designed with consideration of *Primefact 823 Underpasses for moving livestock under expressways* (DPIE, 2009). Sufficient room would be provided to ensure livestock movement is maintained.

In accordance with mitigation measure LP12, Local Land Services would continue to be consulted during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made as required, subject to maintaining rail safety.

In accordance with mitigation measure LP10, livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock-train collisions. ARTC has an Inland Rail Program-wide fencing strategy that would guide the detailed design of fencing for the proposal. Further information about fencing is provided in the response in section 7.2.5.

ARTC would confirm the process for crossing the rail corridor, including the movement of large machinery and stock, in consultation with landholders.

Safely crossing a passive level crossing

Issue

A submitter requested clarification about how they would safely cross the passive level crossing proposed on Seven Mile Lane with large machinery and stock. Queries included how machinery or stock could be moved quickly enough to avoid an accident if the only warning is a train horn, and how farmers would receive early warning of a train if there is no mobile reception at the crossing (as is currently the case).

Response

Provisions for stock crossing would be discussed with landowners/landholders. Culverts and bridges can be used as stock underpasses. Where there is no structure available, ARTC is currently proposing a 'Call Train Control' process that would allow landowners/landholders to use level crossings as stock crossings.

Landowners/landholders and ARTC would sign an agreement that allows them to call train control and get a time window to safely cross the track. It is important to note that stock would not get priority over train operations.

In accordance with mitigation measure SE15, a rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.

Fire and emergency safety

Issue

Concern was raised that the proposal would increase fire danger from sparking wheels and drier conditions in the Pilliga forests and on agricultural land. It was suggested that a Fire Hazard Reduction Plan should be developed in conjunction with the Rural Fire Service (RFS). A submitter questioned how bushfire risk would be prevented.

The importance of all-weather, independent access routes for use during emergencies was emphasised. A submitter asked how properties that had lost access points would exit during emergencies. Concerns were also raised about emergency routes if the public road was blocked. A submitter was concerned about the risk posed to people and animals if they had to wait for a train to pass in an emergency.

Response

In relation to management of fire risk, in accordance with mitigation measure LP21, the flood and emergency response plan (measure FH4) would include measures to minimise the potential for bushfire risks from construction activities. Measures to be included in the plan would include that all works involving potential ignition sources would be subject to a risk assessment or ban on total fire ban days. During operation, any maintenance activities that represent a bushfire risk would be undertaken in accordance with ARTC's standard operating procedures.

During detailed design ARTC would undertake further consultation with FCNSW, emergency service providers and other relevant stakeholders to ensure the plan provides adequate measures.

In the event of a bushfire, the rail line would be closed temporarily to prevent trains entering the bushfire zone. In rare circumstances where trains have already entered or are approaching a bushfire zone, the train/s would be:

- ▶ Moved away, where practicable, to where it can be safely managed
- ▶ Driven in a safe manner at a reduced speed using headlight illumination and whistles
- ▶ Relocated clear of level crossings.

Potential impacts on access, including for emergency services, were assessed by Technical Report 10—Traffic and transport assessment and summarised in chapter B11 of the EIS. Mitigation measures have been developed to address the potential impacts identified.

In accordance with mitigation measure TT6, a traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and on the operation of the surrounding road and transport environment during construction. As part of this, mitigation measure LP17 provides that access to individual residences, services and businesses, and for livestock, plant and machinery across the rail corridor, would be maintained during construction.

In addition, in accordance with mitigation measure TT9, emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.

Risk tolerance

Issue

A submitter questioned what the catastrophic vehicle accident rate would be and what was considered an acceptable level of human and stock casualties. They suggested that the casualties caused by the proposal would surpass the reduction in road deaths that the EIS predicted.

Response

As described in section 5.1 of Technical Report 10—Traffic and transport assessment, while the proposal would increase the number of interfaces between road and rail within the corridor, the potential safety impact due to introduced conflicts would be managed by undertaking the design with an appropriate emphasis on safety, according to relevant design standards and requirements as listed in section A7.2.2 of the EIS. As such, no significant increase in crash risk is expected.

ARTC notes that while catastrophic vehicle incidents at level crossings can happen, they are rare. The 2019-20 ONRSR Rail Safety Report noted that across the 23,000 level crossings in Australia, there were three collisions involving fatalities.

ARTC is an active member of several state and national level crossing safety committees where the primary focus is on improving level crossing safety for road and rail users and reducing incidents at level crossings. This occurs through a range of initiatives, including engineering upgrades and public education campaigns.

While there are no known incidents of stock strikes at level crossings, ARTC has put in place a number of controls to assist in the safe movement of stock across level crossings. These include fencing and gates at private crossings as well as a 'Call Train Control' process which ARTC has developed specifically to assist landowners/landholders move stock and over-dimensional machinery across the rail line.

ARTC uses a consistent safety-based methodology to develop all proposed road-rail interface treatments across the Inland Rail Program. This is aligned with Rail Safety National Law and is based on minimising risks as far as reasonably practicable. This methodology is detailed in Appendix C of the Technical Report 10.

In addition, in accordance with new measure TT5, a public level crossing treatment report would be prepared to document the assessment and design of level crossing treatments during detailed design. The report would be developed in consultation with Transport for NSW and the relevant councils.

The report would include provide an assessment of road risks relevant consistent with the guideline *Railway Crossing Safety Series 2011, Plan: Establishing a Railway Crossing Safety Management Plan* (Roads and Traffic Authority, 2011).

Safety risk caused from frightened animals

Issue

A submitter was concerned that noise and vibration caused by constructing and operating the proposal could cause injury or death to people if horses were frightened and reacted.

Response

Responses to issues raised about the potential impacts of construction on farming practices and stock are provided in section 9.11.2 of this report.

In relation to operation, the scheduled movements of trains would be low – about one train per hour on average. This would assist people with properties adjoining the rail corridor plan activities (such as horse riding) in the vicinity of the line. The approach of a train would not be a sudden event. It would be audible on approach enabling any people near the track to prepare for its arrival.

In addition, and as noted in the above responses, ARTC would continue to support rail safety education programs through its membership of the TrackSAFE Foundation. In accordance with mitigation measure SE15, a rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains.

Risk posed by viaducts

Issue

A submitter expressed concern that placement of the viaduct's pylons would pose safety risk to their residence.

Response

Potential risks would be managed by undertaking the design with an appropriate emphasis on safety, according to relevant design standards and requirements as listed in section A7.2.2 of the EIS.

ARTC has committed to continue to liaise with property owners on relevant aspects of the proposal, including potential property impacts and measures to address these impacts. A range of mitigation measures confirm this commitment, which has been strengthened by amendments to a number of the measures originally provided in the EIS. Mitigation measure SE1 has been amended to confirm ARTC's commitment to providing stakeholders with opportunities for input to the design and construction planning, where appropriate, in accordance with the communication management plan for the proposal.

In accordance with mitigation measure LP1, the design and construction planning would continue to be refined to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing during detailed design to identify feasible and reasonable measures to minimise impacts on their operations/properties.

Mitigation measure LP4 provides that property owners and occupants would be consulted in accordance with the communication management plan.

9.16 Waste

9.16.1 General

Disposal of spoil

Issue

A submitter questioned how spoil from the Quanda area would be disposed of, and how spoil reuse could be calculated without soil testing.

Response

The preliminary earthworks requirements for the proposal have been identified based on geotechnical investigations and soil testing in select locations. As described in section A8.10.2 of the EIS, it is estimated that there would be an excess of general fill along the full length of the proposal site. The earthworks requirements for the proposal would be subject to further refinement during detailed design and construction planning, and following detailed geotechnical investigations.

As described in chapter D2 of the EIS, the proposal would be designed, constructed and operated so that wastes are managed according to the waste minimisation hierarchy:

- ▶ Avoidance, where possible
- ▶ Treated as required, and reused onsite
- ▶ Recycled either within the proposal or offsite
- ▶ Where other alternatives are not possible, unavoidable waste would be disposed of at appropriately licensed waste management facilities.

There are a number of waste facilities in the region that could be used to dispose of unavoidable construction waste (depending on their existing approval and licensing arrangements), including those listed in section D2.2.4 of the EIS. The facilities that would be used, and the breakdown of estimated waste quantities that would be disposed of at those facilities, would be confirmed by the construction contractor, based on the suitability of waste and available capacity at relevant facilities. This would include consideration of existing approvals and licensed limits.

In accordance with mitigation measure WM1, detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes, and the reuse of material onsite.

Mitigation measure WM3 provides for a construction waste management plan to be prepared and implemented as part of the CEMP. Requirements in relation to the required contents of the waste management plan are provided in the outline CEMP in Appendix I of the EIS.

10. Response to community submissions—project evaluation

10.1 Project need and justification

Regional access to train line

Issue

Some submitters challenged the benefits for an inland rail that did not include stops in regional towns, such as Gilgandra, Coonamble and Dubbo. It was suggested that the railway needed to consider transport of agricultural goods from regional Australia and whether including passenger travel was possible. It was also suggested that increasing the trains' regional capacities would help mitigate costs to rural areas.

A submitter highlighted that the high volumes of grain and wool distributed through freights in NSW may be of higher importance for train transport than coal.

Response

As described in section A6.3.1 of the EIS, connectivity and interoperability are key characteristics of the Inland Rail program and its outcomes. Inland Rail is a strategic enhancement of the national freight supply chain, which allows connectivity for regional Australia. In accordance with that strategic intent, the following connectivity principles provide guidance for connecting Inland Rail to the existing rail network:

- ▶ ARTC is committed to working collaboratively with stakeholders to ensure their future connectivity requirements can be accommodated.
- ▶ Direct connectivity is only considered when no reasonably efficient connection is already available or will be available once Inland Rail is constructed.

It is acknowledged that connecting regional Australia is an important consideration for Inland Rail; however, the connections must also be genuinely needed, with enough existing or future rail traffic to ensure that the value for money criteria can also be demonstrated.

ARTC has consulted with Transport for NSW and other relevant stakeholders about the connectivity requirements between Inland Rail and the existing rail lines. The proposed connectivity with other rail lines is described in sections A7.3.5 and A7.3.6 of the EIS. The majority of the proposed junctions are possible future connections. Approval for these connections is sought as part of the proposal. The possible future connections would be constructed by ARTC as required.

ARTC notes complementary initiatives being led by the Australian Government, such as the \$44 million Inland Rail Interface Improvement Program, which may provide future opportunities for regional communities along the alignment to connect to Inland Rail.

Further information in response to issues raised about the benefits of the proposal is provided in section 9.13.2 of this report. Responses to issues raised about the alternatives and options considered are provided in sections 7.6 to 7.8 of this report.

ARTC has been tasked by the Australian Government to provide a freight rail service. Use of Inland Rail by passenger services (other than existing services on the existing rail lines that would form part of the Inland Rail route) is not proposed.

Project is not justified

Issue

Some submitters suggested that running the line through Narrabri was not justified. A submitter noted that the proposal has limited benefits to agricultural, fishery and forestry industries as it is more efficient for these industries to use road travel and, therefore, benefits claimed were not justified. It was also suggested that the proposal would not be useful if truck freighting costs decreased once fleets became electric. It was suggested that the proposal is not justified economically, environmentally or socially and was politically motivated.

Response

A summary of the key issues and demands relevant to the development of, and need for, Inland Rail (including the proposal) is provided in chapter B5 of the EIS. As described in the EIS, 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, potentially, 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, and provide linkages between Melbourne, Brisbane, Sydney, Adelaide and Perth. It will reduce freight transit times, reduce congestion on rail and road networks, and 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.

As described in chapter B5 of the EIS, Inland Rail is needed to respond to the growth in demand for freight transport and address existing freight capacity and infrastructure issues. The analysis of demands undertaken by ARTC indicated that there would be sufficient demand for Inland Rail.

Section D6.2 of the EIS provides the proposal justification for the purposes of the EIS and in accordance with the requirements of the SEARs.

Senate Inquiry

Issue

Concern was raised that ARTC is not using information from landholder submissions from the current Senate Inquiry into the Management of Inland Rail.

Response

On 17 September 2019, the Senate announced an inquiry into various aspects of Inland Rail. The matter was referred to the Rural and Regional Affairs and Transport References Committee to consider the management of the Inland Rail project by the Australian Rail Track Corporation and the Commonwealth Government.

The Department of Infrastructure, Transport, Regional Development and Communications and ARTC are cooperating fully with the inquiry and will support the Committee in its investigations, as outlined in the terms of reference. Parliamentary inquiries are an important part of Government business and the Committee reported on the outcome of this inquiry in August 2021.

The EIS and this report supports the approval process under NSW legislation (EP&A Act), which is governed by a State regulatory authority (DPE). Consideration of public submissions to the inquiry are not within the scope of the proposal, and it is outside the scope of this report to provide responses to these matters.

10.2 Costs and funding

Financial viability and validity of business case

Issue

A number of concerns were raised about the financial viability of the proposal. This included a concern that the proposal was not value for money or financially viable and that there was not the budget available to maintain the infrastructure. Concern was raised that the cost-benefit analysis was flawed as the costs were accrued locally and benefits were accrued elsewhere. Concern was also raised about the effect on communities if the proposal ran out of funding before it was completed. It asked if the government was aware of the proposal's financial situation and why it had to be confidential.

The validity of the business case and budget were questioned. A request was made for an updated, comprehensive, publicly available budget, business case and cost-benefit analysis. A submitter recommended a more rigorous assessment of external costs.

Response

ARTC prepared a business case for Inland Rail in 2015 at the request of the Australian Government (*Inland Rail Programme Business Case* (ARTC, 2015)). The purpose of the business case was to present an analysis of viability, benefits, costs and risks associated with Inland Rail to inform Australian Government decision making processes by:

- ▶ Identifying the problem and vision for the east coast corridor
- ▶ Confirming the scope, opportunities and costs
- ▶ Identifying a 10-year schedule of works that satisfies the service offering developed for freight customers
- ▶ Presenting estimates of market take up
- ▶ Analysing economic and financial implications
- ▶ Identifying governance arrangements to support effective delivery of Inland Rail.

The *Inland Rail Programme Business Case* was prepared to provide a justification for undertaking Inland Rail as a whole. It evaluated the benefit, cost and risk of alternative options and provided a rationale for the preferred solution. A cost-benefit assessment is not usually part of the assessment requirements for project approval in accordance with the EP&A Act. A proposal-specific cost-benefit assessment would not capture the full impact that is expected to be delivered upon completion of Inland Rail. While there are benefits that are only attributable to the completion of the overarching program, the approach adopted does assess both incremental user and non-user benefits as well as impacts on the broader economy.

Addressing detailed comments on the business case or financial viability of Inland Rail is not within the scope of this Response to Submissions report.

The EIS included an economic assessment, undertaken by KPMG (Technical Report 14). This assessment, which was undertaken in accordance with the SEARs, identifies potential economic benefits, and impacts on affected local and regional communities and businesses, and assesses the projected economic benefits of the proposal

Budget queries

Issue

Concern was raised about how a budget could be reliable before detailed design was completed. This included a concern that the full cost of investigations and compensation had not been assessed and were not included in the budget, and a query as to whether all the proposed infrastructure was included in the budget.

Response

The final cost would be determined as an outcome of detailed design. The proposal would be fully funded by the Australian Government.

10.3 Other issues/outside scope

10.3.1 Benefits

Benefits

Issue

Some submitters highlighted the benefits of the proposal. Comments included:

- ▶ An inland rail route would reduce road freight on the Newell Highway and so improve road safety.
- ▶ A dedicated line between Melbourne and Brisbane will save lives through a decrease in deaths due to road accidents.
- ▶ Inland Rail is going to mean a lot for regional communities in terms of jobs, boost to economy and being an asset to the people in the area.
- ▶ The proposal will bring employment opportunities to country towns that need it.
- ▶ I have lived in the North West for almost 60 years and observed first hand the increase in road traffic over the decades. I have ridden the train to Sydney dozens of times and have often wondered why we do not use trains more to transport goods, so I applaud this proposal.

- ▶ I believe the proposal will speed up transport of goods.
- ▶ The proposal will have economic benefits including lower transport costs and have economic benefits.

Response

ARTC acknowledges the support expressed for Inland Rail as a whole.

10.3.2 Issues relating to other Inland Rail Projects or Inland Rail as a whole

Issue

Some submitters raised concerns about other Inland Rail projects, including:

- ▶ Impacts on air quality from diesel emissions if Inland Rail were to enter Brisbane's airshed
- ▶ Introduction of trucks onto congested Brisbane roads.

10.3.2.1 Response

These issues are not within the scope of this proposal and it is outside the scope of this report to provide responses to these matters.

10.3.3 Other issues

Freight companies not proposed to use Inland Rail

Issue

A submitter raised concern that the Freight on Rail Group (FORG) would not use Inland Rail.

Response

As described in chapter A5 of the EIS, 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 potentially B-triples) along the Hume-Pacific and Newell highway corridors. Inland Rail is needed to respond to the growth in demand for freight transport and address existing freight capacity and infrastructure issues.

As described in section A 7.7.1 of the EIS, train services would be provided by a variety of operators. The Inland Rail trains would be a mix of grain, bulk freight and other general transport trains. Any accredited operator can run a train along the rail line once operational, subject to compliance with relevant laws and ARTC's access arrangements.

Conflict of interest

Issue

A submitter questioned if there is a conflict of interest that ARTC is advising on the Inland Rail Project when they wish to manage the building and operation of the proposal.

Response

The Australian Rail Track Corporation (ARTC) is a Government of Australia owned statutory corporation that manages most of Australia's interstate rail network. ARTC was created after the Australian and state governments agreed in 1997 to the formation of a 'one stop shop' for all operators seeking access to the national interstate rail network. ARTC manages more than 8,500 route kilometres of track in New South Wales, Queensland, South Australia, Victoria and Western Australia. Across its network, ARTC is responsible for:

- ▶ Selling access to train operators
- ▶ Developing new business
- ▶ Capital investment in the corridors
- ▶ Managing the network
- ▶ Infrastructure maintenance.

ARTC provides and maintains the infrastructure for train operators to run on. In accordance with this role, ARTC is the proponent for the development and operation of Inland Rail and is required to seek approval for projects in NSW in accordance with the EP&A Act. ARTC is not an approval body for the proposal and has no approval function in relation to it.

10.3.4 Issues beyond the scope of the EIS

Out-of-scope issues

Issue

A number of submitters raised concerns about issues beyond the scope of the EIS. Issues raised included:

- ▶ Section 25 of the *Dividing Fences Act 1991* (NSW) should be amended to enforce the NSW Government to build, repair and replace rail fences
- ▶ Whether councillors have declared pecuniary interests in a local quarry
- ▶ Funding of water and sewerage works for the expansion of Narrabri
- ▶ Suggested that an Australian company be given the tender for design and supply.

Response

These issues are not within the scope of this proposal and it outside the scope of this report to provide responses to these matters.

11. Conclusion

11.1 Concluding statement

The Inland Rail Narromine to Narrabri proposal is critical State significant infrastructure and is subject to assessment and approval in accordance with Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

An EIS was prepared to address the requirements of Division 5.2 of the EP&A Act, the SEARs and Schedule 2 of the EP&A Regulation. The EIS was placed on public exhibition by the (then) DPIE between 8 December 2020 and 7 February 2021, and submissions were invited.

This report documents and considers the issues raised in community, government agency, organisation and other submissions received by DPIE (now DPE) in accordance with section 5.17(6)(a) of the EP&A Act. ARTC has carefully considered the content of the submissions and has prepared responses to the issues raised, with the responses provided in this report. The report also describes the actions taken since the EIS was placed on public exhibition. Information about the need for, and justification of, the proposal as part of Inland Rail is provided in the EIS. This report provides further information, in the responses to submissions received, about how the proposal has developed and how the potential impacts would be managed.

The proposal is needed to support the development of Inland Rail. The proposal, as part of Inland Rail, is needed to respond to the growth in demand for freight transport, and address existing freight capacity and infrastructure issues. The proposal is a critical component of Inland Rail and is required to enable Inland Rail to operate.

A proposal of this scale would inevitably have some impacts on the local environment and community; particularly, during construction and as a result of establishing a new section of freight rail corridor. The proposal would incorporate environmental management and design features to ensure that potential impacts are managed and mitigated as far as practicable. The majority of the potential construction-related impacts would be effectively mitigated by implementing best-practice construction management measures, including the environmental management approaches described in section D5.2 of the EIS and the updated mitigation measures described below.

The biodiversity offset strategy would be finalised and implemented to address the residual impacts of the proposal on biodiversity values, according to the requirements for Division 5.2 projects under the EP&A Act, and to offset impacts on EPBC Act matters.

The detailed design for the proposal would be developed with the objective of minimising potential impacts on the local and regional environment and 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.

11.2 Updated mitigation measures

The EIS identified the proposed approach to environmental management and the mitigation measures that would be implemented to avoid or minimise the potential impacts of the project. These measures were described in chapter D5 of the EIS.

After consideration of the issues raised in the submissions and additional work undertaken since exhibition, the mitigation measures have been updated to:

- ▶ Make additional commitments to respond to issues raised in the submissions
- ▶ Modify the wording in some instances so that the intent of the measure is clearer
- ▶ Respond to the findings of further assessments (described in section 3.2 of this report) and the amendments described in the separate combined Preferred Infrastructure/Amendment Report.

Some new measures have been added, and the wording of some measures has been revised.

The full set of updated mitigation measures is provided in Table 11-1 to Table 11-3. The measures are broadly grouped according to the main stage of implementation and the relevant key issues and impacts mitigated. Table 11-1 provides the measures that would be implemented during the design phase and prior to construction. It includes measures to guide how the proposal would be designed and construction would be planned to minimise the construction and operational impacts of the proposal. Table 11-2 provides the measures relevant to the management of construction activities and the works proposed. Table 11-3 provides the measures relevant to operation that would be implemented during the operational stage to guide how the proposal is operated and maintained in the long-term. These tables supersede the mitigation measures originally presented in the EIS.

Appendix B shows how the mitigation measures provided in Table 11-1 to Table 11-3 have changed compared to those presented in the EIS. In Appendix B the new mitigation measures and additions to the mitigation measures included in the EIS are shown in **red bold** text, and where a measure or text has been deleted, it appears as strikethrough text.

TABLE 11-1: COMPILATION OF UPDATED MITIGATION MEASURES FOR DETAILED DESIGN/PRE-CONSTRUCTION

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
Biodiversity		
BD1	<i>Impacts on biodiversity</i>	Vegetation clearing would be limited to the minimum necessary to construct the proposal and allow for its effective operation.
BD2	<i>Impacts on biodiversity</i>	Where appropriate, facilities within the multi-function compounds and temporary workforce accommodation would be located to further minimise or avoid impacts on native vegetation, where practicable.
BD3	<i>Impacts on threatened species</i>	<p>Additional threatened flora surveys would be undertaken (where suitable climatic conditions occur) prior to clearing for the threatened species likely to be impacted by the proposal, including:</p> <ul style="list-style-type: none"> ▶ <i>Diuris tricolor</i> in the Pilliga forests ▶ <i>Pterostylis cobarimensis</i> in the Pilliga forests ▶ <i>Tylophora linearis</i> in the Pilliga forests. <p>Surveys would include seed collection where possible.</p> <p>The need for translocation options would be discussed with the Department of Planning and Environment (Biodiversity, Conservation and Science Directorate), should these be required.</p>
BD4	<i>Offsetting impacts on native vegetation and threatened species</i>	Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with the NSW Department of Planning and Environment (DPE) (Biodiversity, Conservation and Science Directorate). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance (MNES).
BD5	<i>Impacts on fish passage</i>	Watercourse crossing structures would meet Inland Rail design standards and be designed in accordance with <i>Why do fish need to cross the road? Fish passage requirements for waterway crossings</i> (Fairfull, S. and Witheridge, G., 2003).
BD6	<i>Impacts on fauna connectivity</i>	<p>A detailed fauna connectivity strategy would be prepared to guide detailed design based on the preliminary fauna connectivity framework provided in Appendix J of the updated biodiversity development assessment report. It would include investigation and design of:</p> <ul style="list-style-type: none"> ▶ Locations for fauna crossing structures in the Pilliga forests, including bridges and dedicated underpasses for threatened fauna (such as the koala and Pilliga mouse in areas of preferred habitat), canopy bridges at regular intervals, and wooden barrier poles at selected bridges ▶ The provision of localised fencing to direct fauna to crossing structures ▶ Fauna furniture to be included in the design of bridges and dedicated underpasses, where appropriate, to encourage crossings by koalas and other native fauna ▶ Landscaping of the rail corridor to encourage movement of fauna across the gap. <p>The detailed connectivity strategy would include threatened species management plans for key threatened species or groups identified in the preliminary fauna connectivity strategy, in addition to monitoring and reporting requirements in relation to the operational performance of the final measures.</p>
BD7	<i>Impacts on fauna connectivity</i>	The fauna connectivity structures listed in the register of proposed connectivity structures in Appendix J of the updated biodiversity development assessment report would be further developed in detailed design and constructed as proposed. If any changes occur to the proposed number, type or location of connectivity structures, an appropriate level of assessment would be conducted, in consultation with BCS, to confirm any changes to credit liabilities for the proposal.
Water resources		
WR1	<i>Construction and potable water supply</i>	<p>Construction water supply options would continue to be explored during detailed design and could include reuse of excess water from the Narrabri Gas Project or other suitable facilities in the area, or lease and/or purchase of existing water access licences (WALs) from surrounding landholders.</p> <p>Potable water supply options would continue to be explored during detailed design.</p> <p>Water quality testing would be undertaken to confirm that the water sourced is suitable for its intended use. Any required approvals/agreements would be obtained prior to use.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
WR2	Impacts on existing bores	Where existing licensed bores are located within the proposal site, they would be decommissioned in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (National Uniform Drillers Licensing Committee, 2020). Where bores are decommissioned, compensation would be provided, or alternative water supply arrangements made, as agreed with the landowner/landholder.
WR3	Impacts on existing bores	A bore census would be undertaken for existing licensed bores within 1 km of the proposal's bore fields, where landholders permit. The census would collect baseline groundwater level data and information on a given bore's typical usage and characteristics (including bore construction, pump depth, yield, water level during pumping and water level outside of pumping periods).
WR4	Impacts of extracting groundwater	Test bores would be installed during detailed design, and further investigation would be undertaken by a qualified hydrogeologist, to confirm the depth and location of the proposed bore field bores. The test bores and bore fields would consider the design considerations detailed in section 11.1 of Technical Report 4—Groundwater assessment, as well as the potential for unidentified faults and other geological structures to connect shallow and deep-water tables.
WR5	Impacts of extracting groundwater	Water volumes required to be extracted from groundwater bores for construction water and potable water (for the Narromine North and Baradine temporary workforce accommodation facilities) would be confirmed, and the appropriate approvals would be obtained, prior to extraction. Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded. Meters would be installed, and groundwater extraction recorded and reported, in accordance with the relevant requirements of the <i>Non-Urban Metering Policy</i> (DPIE, 2020f) and clause 21(6) of the <i>Water Management (General) Regulation 2018</i> .
WR-CI1	Groundwater drawdown impacts	Further investigation would be undertaken to determine the potential for the bores associated with the Narromine North and Baradine temporary workforce accommodation facilities to cause groundwater drawdown impacts. This would include ensuring any impacts to existing bores are below the <i>NSW Aquifer Interference Policy</i> (DPI, 2012b) minimal impact considerations.
WR-CI2	Suitability of groundwater	The quality of groundwater from the proposed bores at the Narromine North and Baradine facilities would be assessed for the suitability of its intended use. Where required, treatment systems would be designed, and a monitoring program established, to ensure water quality complies with relevant drinking water criteria from the <i>National Water Quality Management Strategy Australian Drinking Water Guidelines 6 2011</i> (National Health and Medical Research Council, 2017).
Flooding		
FH1	Flooding impacts	The design would continue to be refined, where practicable, to not worsen existing flooding characteristics for flood events up to and including the 1% AEP event. Detailed flood modelling would assess potential impacts to: <ul style="list-style-type: none"> ▶ Building and property inundation (including flood level surveys and consideration of existing inundation levels) ▶ Existing rail line, at rail connections ▶ Road flood levels and extent of flooding along roads ▶ Flood evacuation routes ▶ Overland flow paths and storage effects of construction and operational infrastructure. Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report. Flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and would be undertaken in consultation with the relevant local council and local emergency management committees, DPE, the NSW State Emergency Service and potentially impacted landholders.
FH2	Downstream watercourse stability	Further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection, and to confirm the extent and type of protection required.
Soils and contamination		
SC1	Structural integrity	Foundation and batter design would include engineering measures to minimise operational risks from shrink swell, dispersive and/or low strength soils.

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
SC2	Structural integrity	Soil salinity would be considered in the design of subsurface structures.
SC3	Acid sulfate soils	Prior to ground disturbance in high-probability acid sulfate areas, testing would be carried out to determine the presence of acid sulfate soils (ASS). If ASS are encountered, they would be managed in accordance with the <i>Acid Sulfate Soils Assessment Guidelines</i> (ASSMAC, 1998), and the <i>Waste Classification Guidelines — Part 4: Acid Sulfate Soils</i> (NSW EPA, 2014).
SC4	Contamination	Hazardous materials surveys would be undertaken during detailed design for all proposed demolition activities.
SC5	Contamination	An appropriately licensed asbestos removal contractor would be engaged to remove all asbestos identified at the illegal waste dump at which sample CS-21 was collected (easting 737305, northing 6617403) prior to works commencing. Asbestos would be removed in accordance with the requirements of applicable work health and safety legislation, and codes of practice.
SC6	Contamination	<p>Site investigations would be undertaken by a suitably qualified and experienced consultant, as defined in Schedule B9 of the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> (NEPC, 2013) to assess exposure risks to site workers and other receptors as a result of disturbances to the following areas considered to be at a higher risk of being contaminated:</p> <ul style="list-style-type: none"> ▶ Narromine West connection ▶ Parkes to Narromine connection ▶ Dubbo to Coonamble Line connection ▶ Narrabri to Walgett Line connection ▶ Narrabri to North Star connection ▶ Where the proposal site borders the Santos Narrabri Operations Centre (directly west of the Narrabri West multi-function compound). <p>The results of the site investigations would be assessed against the criteria contained within the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> to determine the need for any remediation.</p>
SC-CI1	Soils and water quality	The final approach to reusing wastewater from the Narromine North and Baradine temporary workforce accommodation facilities would be confirmed during detailed design.
SC-CI2	Soils and water quality	<p>Any irrigation areas would be designed and operated in accordance with the risk framework and management principles contained in the <i>National Guidelines on Water Recycling</i> (Environment Protection and Heritage Council, 2006) and the <i>Environmental guidelines: Use of effluent by irrigation</i> (Department of Environment and Conservation (DEC), 2004). This would include the following design requirements:</p> <ul style="list-style-type: none"> ▶ Irrigation area/s would be delineated based on the expected rate of irrigation and the drainage characteristics of the receiving soil ▶ The quality of treated water would be determined to prevent accumulation of contaminants, with reference to the relevant guidelines ▶ Irrigation area/s would be designed to include capacity to store treated water for the duration of typical wet weather events ▶ The rate of irrigation would be optimised to avoid waterlogging or ponding of reclaimed water ▶ Soil and groundwater conditions would be monitored to identify and correct trends in soil salinity or other potential effects of irrigation.
Water quality		
WQ1	Water quality	The design features listed in section B5.1.4 would continue to be refined and implemented to minimise the potential impacts on water quality.
Aboriginal heritage		
AH1	Avoiding and minimising impacts on Aboriginal heritage	<p>Detailed design and construction planning would avoid direct impacts on identified items/sites of Aboriginal heritage significance, as far as reasonably practicable.</p> <p>Construction compounds and associated access routes would not be located in areas of medium or high archaeological potential.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
AH2	Management of salvaged items	<p>A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10) to ensure any artefacts salvaged are managed in accordance with the requirements of the <i>National Parks and Wildlife Act 1974</i> (NSW).</p> <p>The methodology would include the process for consultation with Heritage NSW and Registered Aboriginal Parties (RAPs) in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010b) the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> (DECCW, 2010c), and the <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i> (OEH, 2011). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects.</p> <p>RAPs would be engaged to assist in the salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process.</p> <p>Detailed analysis and reporting of cultural material collected would be provided to DPE.</p>
AH3	Management of salvaged items	<p>Prior to construction, a targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation, including:</p> <ul style="list-style-type: none"> ▶ Wallaby Creek ▶ Ewenmar Creek ▶ Marthaguy Creek ▶ Castlereagh River ▶ Gulargambone Creek ▶ Tenandra Creek ▶ Baradine Creek ▶ Namoi River ▶ Mungery Creek ▶ Caleriwi Creek. <p>In addition, a targeted archaeological survey would be undertaken at the location of the Narromine North temporary workforce accommodation.</p> <p>The targeted survey would be undertaken with registered Aboriginal parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>.</p> <p>Additional mitigation and management measures would be developed, in consultation with the RAPs, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10).</p> <p>If additional sites or items are identified that cannot be avoided, salvage of artefacts would be undertaken prior to construction, in accordance with the salvage methodology (mitigation measure AH2).</p>
AH4	Management of salvaged items	<p>A pre-construction survey would be undertaken to confirm the locations of the previously listed AHIMS sites that could not be located during the site survey.</p> <p>Surveys would be undertaken with RAPs in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>.</p> <p>If the sites are located, impacts would be avoided, as far as practicable, and protection measures put in place in accordance with the Aboriginal cultural heritage management plan (mitigation measure AH10).</p> <p>Any sites with the potential to be impacted would be managed in accordance with the salvage methodology (mitigation measure AH2).</p>
AH5	Impacts on Potential Archaeological Deposits (PADs)	<p>Detailed archaeological investigations would be undertaken at the following six PADs that may be directly impacted by the proposal:</p> <ul style="list-style-type: none"> ▶ Ewenmar Creek 27-6-0036 ▶ Castlereagh River 28-4-0280 (and associated artefact scatter) ▶ Gulargambone Creek 28-1-0060 and 28-1-0090 (and associated artefact scatter) ▶ Calga and Looking Glass creeks 28-1-0059 (and associated artefact scatter) ▶ Baradine Creek 19-5-0230. <p>Sub-surface archaeological test excavations would be undertaken to confirm the nature (and extent, if verified) of any archaeological deposits. The test excavations would be carried out in accordance with the approved methodology prepared for the proposal.</p> <p>If test excavation confirms that the PAD has heritage significance and has the potential to be impacted by the proposal, the site would be managed in consultation with Heritage NSW and RAPs. If salvage is required it would be managed in accordance with the agreed salvage methodology (mitigation measure AH2).</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
AH6	Impacts on modified trees	<p>Field validation of the following modified trees would be undertaken prior to construction, in accordance with <i>Aboriginal scarred trees in New South Wales: A field manual</i> (DEC, 2005):</p> <ul style="list-style-type: none"> ▶ Backwater Cowal 35-3-0175 ▶ Ewenmar Creek 27-6-0035 ▶ Boothaguy Creek 27-6-0042 ▶ Baronne Creek 28-1-0062, 28-1-0063 and 28-1-0064 ▶ Mungery Creek 28-1-0083, 28-1-0084, 28-1-0086 and 28-1-0087. <p>Impacts on those trees confirmed to be scarred trees would be avoided, as far as practicable.</p> <p>If impacts are unavoidable, the tree would be photographed and catalogued prior to removal, in consultation with the RAPs, by an appropriately qualified archaeologist.</p> <p>The salvaged artefacts would be managed in accordance with the salvage methodology.</p>
AH7	Impacts on modified trees	<p>The following modified trees would be protected insitu:</p> <ul style="list-style-type: none"> ▶ BCST6 (35-3-0270) ▶ Berida Road ST1 (28-4-0283). <p>During detailed design, ARTC would identify opportunities to reduce or remove the need for drainage protection works in the vicinity of these trees.</p>
AH8	Impacts on artefact scatters	<p>Surface collection (salvage) of the following artefact scatters would occur prior to construction, in accordance with the approved salvage methodology:</p> <ul style="list-style-type: none"> ▶ Macquarie River 35-3-0276 ▶ Castlereagh River 28-4-0280 ▶ Gulargambone Creek 28-1-0090 and 28-1-0060 ▶ Calga and Looking Glass Creek 28-1-0059 and 28-1-0095 ▶ Noonbar Creek 28-1-0096 ▶ Baradine Creek 19-5-0226 ▶ Bohena Creek 19-6-0180. <p>Artefacts located outside the proposal site would not be salvaged and would remain in situ.</p>
AH9	Aboriginal heritage survey of biodiversity offset sites	<p>Once biodiversity offset sites are secured (in accordance with mitigation measure BD4) an Aboriginal heritage survey of representative locations within the offset sites would be undertaken. The survey would record any evidence of Aboriginal land use occupation and identify appropriate management strategies.</p> <p>The approach to the survey, including selection of representative survey locations and reporting, would be determined in consultation with the RAPs.</p>
Non-Aboriginal heritage		
NAH1	Impacts on non-Aboriginal heritage	<p>Detailed design and construction planning would avoid direct impacts on identified items/sites of non-Aboriginal heritage significance, as far as reasonably practicable. This would include small sections of the following listed items that overlap with the proposal site:</p> <ul style="list-style-type: none"> ▶ Curban Inn site ▶ Convict Road, Baradine. <p>The location of construction compounds and associated access routes would be reviewed to ensure, as far as practicable, they are not located in areas of medium or high archaeological potential.</p>
NAH2	Impacts on non-Aboriginal heritage	<p>The location of the graves at the Woodvale Park Private Cemetery listed item would be confirmed by an appropriately qualified archaeologist. Once confirmed, the location would be marked on plans, fenced onsite and avoided during construction.</p>
NAH3	Impacts on non-Aboriginal heritage	<p>In the event that the following items are unable to be avoided, an archaeological assessment, research design and methodology would be prepared. Test excavation would be undertaken by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria:</p> <ul style="list-style-type: none"> ▶ Curban Inn site ▶ Convict Road, Baradine. <p>The archaeological assessment would be prepared in consultation with relevant stakeholders, including the local council and Heritage NSW.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
NAH4	Heritage interpretation	<p>A Heritage Interpretation Strategy for non-Aboriginal heritage would be prepared in consultation with the relevant local council and key stakeholders. This would provide a framework for interpreting the heritage items (listed and potential) impacted by the proposal, set out the key interpretative themes and identify communication strategies. The strategy would include interpretation requirements for specific parts of the proposal; particularly, where heritage items are proposed to be removed or archaeological sites are proposed to be excavated. These may include approaches such as interpretive signage at heritage items that have been removed or excavated, historical/artefact displays at local museums or visitor centres, and online media about heritage items and history in the vicinity of the proposal.</p> <p>The strategy would be prepared with regard to <i>Interpreting Heritage Places and Items: Guidelines</i> (NSW Heritage Office, 2005), and the NSW Heritage Council's Heritage Interpretation Policy.</p>
NAH5	Archival recording	<p>Archival photographic recording of buildings to be removed would be carried out prior to removal, in accordance with <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (Heritage Council of NSW, 2006) and <i>How to prepare archival records of heritage items</i> (NSW Heritage Office, 1998a) at the following sites:</p> <ul style="list-style-type: none"> ▶ Drinane Public School (former) ▶ Corrugated iron hut with chimney ▶ Two-storey barn/shed.
NAH6	Visual impacts at heritage items	<p>The urban design and landscape plan would include vegetation screening, where practicable, to minimise visual impacts on homesteads identified as potential heritage items—'Kickabil' homestead and woolshed, 'Allandale' homestead and 'Digilah' homestead.</p>
Noise and vibration		
CNV1	Construction noise and vibration impacts	<p>Location and activity specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, and detailed reviews of local receivers, as required.</p> <p>The statements would confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures (such as shielding plant and equipment, temporary noise barriers or provision of temporary alternative accommodation). The statements would also confirm noise and vibration auditing and monitoring requirements.</p>
CNV2	Construction vibration (structural) impacts	<p>Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure.</p>
ONV1	Operation noise and vibration impacts	<p>An operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts, and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design.</p>
ONV2	Operation noise and vibration impacts	<p>Feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy.</p> <p>Where at-property noise treatments are identified as the preferred mitigation option, these would be developed and implemented in consultation with individual property owners.</p>
ONV3	Operation structural vibration impacts	<p>If the operational noise and vibration review indicates that vibration levels are predicted to exceed the screening criteria at sensitive receivers, a more detailed assessment of the structure would be carried out.</p> <p>For any heritage items with the potential to be affected, the detailed assessment would determine any specific sensitivities, in consultation with a heritage specialist, to ensure risks are adequately managed. If a heritage structure is found to be structurally unsound following inspection, a more conservative cosmetic damage objective (e.g. 2.5 mm/s peak component particle velocity for long-term vibration) would be considered.</p>
Traffic and transport		
TT1	Impacts on existing infrastructure transport and access	<p>Detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
TT2	<i>Impacts on existing infrastructure transport and access</i>	Input would be sought from relevant stakeholders (including local councils and TfNSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.
TT3	<i>Road user safety at changes to the road network</i>	Road safety audits would be undertaken where changes to the road network are required, in accordance with relevant Austroads guidelines, to ensure the safety of all road users is considered in the design process.
TT4	<i>Road user safety at level crossings</i>	Level crossings would be designed in accordance with relevant guidelines and standards, including AS 1742.7:2016 <i>Manual of uniform traffic control devices, Part 7: Railway crossings</i> (Standards Australia, 2016), <i>Guide to Road Design Part 4: Intersections and Crossings</i> (Austroads, 2021a), <i>Guideline: Lighting for railway crossings</i> (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls. Public level crossings with active controls would include boom gates and flashing lights. Where level crossings would provide access for travelling stock routes (TSRs), consultation would be undertaken with Crown lands and Local Land Services (LLS) to determine appropriate controls.
TT5	Road user safety at level crossings	A level crossing treatment report would be prepared to document the level crossing design and assessment process that has been undertaken. The report would be developed in consultation with TfNSW and the relevant councils. The report would provide an assessment of road risks consistent with the guideline <i>Establishing a Railway Crossing Safety Management Plan</i> (Roads and Traffic Authority, 2011). Justification would be provided where no works are proposed on existing level crossings.
Land use and property		
LP1	<i>Land use and property impacts, including severance and other impacts on operations</i>	The design and construction planning would continue to be refined, to minimise potential impacts on land uses and properties, as far as reasonably practicable. Consultation with landholders would be ongoing, to identify feasible and reasonable measures to minimise impacts on their operations/properties.
LP2	<i>Acquisition and property impacts</i>	All property acquisitions would be undertaken in consultation with landowners/landholders and in accordance with the requirements of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW). In line with the <i>Land Acquisition Act (Just Terms Compensation) Act</i> , ARTC's preference is for acquisition by agreement, where practicable.

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
LP3	<i>Acquisition and property impacts</i>	<p>During the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties.</p> <p>Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes.</p> <p>The agreements may include:</p> <ul style="list-style-type: none"> ▶ Measures to minimise property impacts, including impacts on agricultural operations (mitigation measure LP5) ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery, are able to be maintained as efficiently as possible (mitigation measure LP7) ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (mitigation measure LP6) such as new or adjusted accesses to the public road network or internal access networks, divestment or amalgamation opportunities ▶ Required adjustments to and/or replacement of affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use. <p>Where land is acquired, compensation would be assessed in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW) and the NSW Property Acquisition Process https://www.nsw.gov.au/housing-and-construction/property-acquisition.</p> <p>Depending on the individual circumstances of each land/business owner and the proposed impacts on the land and to operations, compensation may take the form of money or land/works—as agreed by the parties.</p>
LP4	<i>Acquisition and property impacts</i>	<p>Property owners and occupants would be consulted in accordance with the communication management plan (mitigation measure SE1), to ensure that owners/occupants are informed about:</p> <ul style="list-style-type: none"> ▶ The timing and scope of activities in their area ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services or farm operational arrangements ▶ Activities that have the potential to impact on livestock.
LP5	Impacts of construction on private properties	<p>Where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.</p>
LP6	<i>Maintaining permanent access to properties</i>	<p>Where the proposal affects access to and from a public road, input would be sought from relevant landholders regarding alternative access arrangements prior to finalising the detailed design.</p> <p>Where any legal access to a property is permanently affected and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and reasonable.</p> <p>Where an alternative access is not feasible or reasonable, and a property or part of a property is left with no access to a public road, consideration would be given to acquisition of the property or part of the property in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW). In accordance with the Land Acquisition Act, ARTC's preference is for acquisition by agreement, where practicable.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
LP7	<i>Internal access arrangements</i>	<p>Where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design.</p> <p>Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties.</p> <p>Impacts and any proposed mitigations would be taken into account at the time compensation is assessed in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW).</p>
LP8	<i>Impacts on Crown land</i>	The acquisition of Crown land would be undertaken in consultation with DPE, and in accordance with the requirements of the <i>Crown Lands Management Act 2016</i> (NSW) and the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW).
LP9	<i>Impacts on livestock</i>	The need for additional stock management infrastructure on either side of level crossings, such as forcing yards and holding pens, would be identified in consultation with the relevant landholders.
LP10	Impacts on livestock	Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
LP11	<i>Maintenance of fencing</i>	Maintenance agreements would be established for fencing along the rail corridor where it adjoins private properties. The agreements would include protocols for reporting damage and arranging repairs of shared boundary fencing.
LP12	<i>Minimising impacts on travelling stock reserves</i>	LLS would continue to be consulted during detailed design to confirm how impacts on TSRs would be minimised during construction and operation. Alternative access arrangements would be made, as required, subject to maintaining rail safety.
LP13	<i>Impacts on services and utilities</i>	The location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, would be confirmed prior to construction. This would include (as required), undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers, in accordance with the utilities management framework provided in Appendix J of the EIS.
LP14	<i>Impacts on, and construction within, State forests</i>	<p>The Forestry Corporation of NSW would continue to be consulted in relation to:</p> <ul style="list-style-type: none"> ▶ Those aspects of construction planning, programming, and work methodologies with the potential to affect forestry management practices ▶ Measures to minimise the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required ▶ Opportunities for beneficial reuse of forest products that would be removed during construction.
LP15	Impacts on, and construction within, State forests	Appropriate management measures and communication requirements for users of state forests in the vicinity of the proposal site would be defined in consultation with the Forestry Corporation of NSW and forest users.
Visual amenity		
LV1	<i>Minimising the potential for visual and landscape impacts</i>	Detailed design and construction planning would seek to minimise the construction and operation footprints, and avoid impacts on mature native vegetation, as far as reasonably practicable.

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
LV2	<i>Minimising the potential for visual and landscape impacts</i>	<p>An urban design and landscape plan would be prepared to provide a consistent approach to design and landscaping. The urban design and landscape plan would include:</p> <ul style="list-style-type: none"> ▶ Vegetation screening in strategic locations to visually mitigate impacts from new structures and rail operations, including around bridges and locations where the proposal would be visible from sensitive receivers, where the presence of screening does not impact safe rail operations ▶ Appropriate species that respond to the existing landscape character setting and environmental conditions ▶ Design guidelines to minimise the visual impacts of bridges, with consideration of the existing landscape and visual context and with regard to <i>Bridge aesthetics: design guidelines to improve the appearance of bridges in NSW</i> (Roads and Maritime Services, 2019). <p>Detailed design would be undertaken in accordance with the urban design objectives developed for the design, and the urban design and landscape plan.</p>
LV3	<i>Batter slopes in contrast with the existing landform</i>	<p>Batter slopes would be integrated into the surrounding landscape, as far as practicable. Appropriate slope stabilisation would be integrated into batter design to ensure successful rehabilitation and stabilisation.</p>
LV4	<i>Minimising light spill</i>	<p>Temporary and any permanent lighting would be designed and sited in accordance with <i>AS/NZS 4282 2019 Control of the Obtrusive Effects of Outdoor Lighting and Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring</i> (DPE, 2016), and in consultation with the Siding Spring Observatory Dark Sky Planning Committee.</p>
Socio-economic impacts		
SE1	<i>Social impacts, communication and engagement</i>	<p>ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy.</p> <p>A proposal-specific communication management plan would be developed, in accordance with the Inland Rail Communications and Engagement Strategy, and implemented prior to and during construction, to ensure that:</p> <ul style="list-style-type: none"> ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties ▶ Enquiries and complaints are managed, and a timely response is provided for concerns raised ▶ Accurate and accessible information is made available ▶ Feedback from the community is encouraged. <p>The communication management plan would define the requirements for the complaints management system to be implemented during construction.</p>
SE2	<i>Social impacts, communication and engagement</i>	<p>The communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings, and changes to access routes and road conditions.</p>
SE3	<i>Social impacts, communication and engagement</i>	<p>A detailed Aboriginal community and stakeholder engagement strategy and action plan would be prepared and implemented at the commencement of the detailed design phase, to require that:</p> <ul style="list-style-type: none"> ▶ Information about the proposal is shared with Aboriginal stakeholders and communities in a timely manner ▶ Strong relationships between ARTC and Aboriginal stakeholders and communities are built and maintained ▶ Local Aboriginal cultural and community values are identified and understood ▶ Opportunities to reflect Aboriginal community and cultural values in infrastructure or other outcomes of the proposal are identified and implemented.

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
SE4	<i>Socio-economic impacts</i>	A social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction.
SE5	<i>Socio-economic impacts</i>	<p>Prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce.</p> <p>ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.</p>
SE6	<i>Economic benefits and impacts on regional industries and businesses</i>	ARTC would continue to support local employment in accordance with the <i>Australian Jobs Act 2013</i> (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy; to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.
SE7	<i>Economic benefits and impacts on regional industries and businesses</i>	<p>A proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the <i>Australian Jobs Act 2013</i> (Cth), the Australian Industry Participation National Framework, and the <i>Inland Rail Indigenous Participation Plan</i> (ARTC, 2020c).</p> <p>The industry participation plan would identify appropriate measures to achieve the objectives of the <i>Australian Jobs Act 2013</i> (Cth) and the Inland Rail Indigenous Participation Plan, including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.</p>
SE8	<i>Impacts on the Narrabri Dirt Bike Club</i>	<p>ARTC would continue to consult with the Narrabri Dirt Bike Club, Narrabri Council and the DPE (Crown Lands) in relation to:</p> <ul style="list-style-type: none"> ▶ The temporary and permanent land requirements at the club site ▶ The potential impacts on the club's facilities ▶ Measures to address the identified impacts.
SE-C11	<i>Impacts on the Baradine Showground</i>	ARTC would continue to consult with the Baradine Showground Trust to manage access and temporary land requirements at the showground.
SE-C12	<i>Temporary workforce accommodation</i>	<p>A temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and the following overarching principles:</p> <ul style="list-style-type: none"> ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity. <p>The plan would define:</p> <ul style="list-style-type: none"> ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy) ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping as required ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment ▶ Location, design, service and amenity requirements for mobile accommodation facilities, including amenities for workers ▶ Provision of adequate parking onsite ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal. <p>The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.</p>

Ref	Issue/impact	Mitigation measures—detailed design/pre-construction
Waste management		
WM1	<i>Excess waste generation</i>	Detailed design would include measures to minimise spoil generation. This would include a focus on optimising the design to minimise spoil volumes and the reuse of material onsite.
WM2	<i>Management of spoil</i>	<p>A spoil management strategy would be developed to define the preferred approach to managing spoil, including the use of spoil to rehabilitate borrow pits. The strategy would include:</p> <ul style="list-style-type: none"> ▶ Confirming spoil quantities ▶ Undertaking appropriate investigations and surveys, including geotechnical investigations ▶ Consideration of the approvals and land application of waste exemptions required, associated lead time, and any associated sampling and reporting obligations ▶ Consultation with landholders on where borrow pits are located ▶ Defining the preferred option for reusing and/or disposing of any spoil not able to be reused at borrow pits. <p>The outcomes of the strategy would inform the construction waste management plan.</p>
Sustainability		
SU1	<i>Achieving the target sustainability rating</i>	<p>A sustainability management plan would be developed to guide the proposal to achieve an 'excellent' design rating according to ISCA's Infrastructure Sustainability rating scheme.</p> <p>The sustainability management plan would incorporate sustainability objectives and targets consistent with the Inland Rail program sustainability objectives and targets, roles and responsibilities, strategies for achieving the 'excellent' design rating, and review and reporting requirements.</p>
SU2	<i>Sustainable procurement</i>	Procurement would be undertaken in accordance with the <i>Inland Rail Sustainable Procurement Policy</i> (ARTC, 2020d).
SU3	<i>Reporting</i>	Monthly sustainability reporting (and corrective action, where required) would be undertaken during detailed design in accordance with the sustainability management plan.
Climate change		
CC1	<i>Climate change risk management</i>	<p>The climate change risk assessment would continue to be refined as the design of the proposal progresses.</p> <p>The adaptation measures identified for the proposal would be reviewed and final measures would be incorporated into the design, where practicable.</p>

TABLE 11-2: COMPILATION OF UPDATED MITIGATION MEASURES FOR CONSTRUCTION

Ref	Issue/impact	Mitigation measures—construction
Biodiversity		
BD8	<i>Biodiversity impacts</i>	<p>A biodiversity management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to protect biodiversity and minimise the potential for impacts during construction. The plan would be prepared in accordance with relevant legislation, guidelines and standards. The plan would include but not be limited to:</p> <ul style="list-style-type: none"> ▶ Locations and requirements for pre-clearing surveys ▶ Establishing protocols for the staged clearing of vegetation, and safe tree felling and log removal, to reduce the risk of fauna mortality ▶ Measures to avoid and minimise clearing of hollow-bearing trees, where practicable ▶ Measures relating to the provision and management of nest boxes, including reuse of hollows and monitoring protocols ▶ An unexpected finds protocol ▶ Measures to manage biosecurity risks in accordance with the Biosecurity Act 2015 (NSW) ▶ Measures to reduce the risk of aquatic fauna mortality/injury.
BD9	Biodiversity impacts	<p>Pre-clearing surveys would be undertaken, prior to construction, by a suitably qualified ecologist in accordance with the biodiversity management plan. Specific surveys would include:</p> <ul style="list-style-type: none"> ▶ Surveys for roosting microbats and birds in structures and habitats that are proposed to be removed, including telegraph poles, buildings, hollow trees and bark fissures ▶ Searches for nest trees ▶ Identification of hollow-bearing trees and logs requiring fauna rescue, relocation or other management during removal ▶ Surveys for koalas, which may include trained detection dogs or other appropriate survey techniques ▶ Aquatic fauna salvage in watercourses or residual pools within 50 metres of the construction footprint, and in areas that would be enclosed by silt curtains (e.g. piling locations).
BD10	<i>Biodiversity impacts</i>	<p>Compounds and stockpile sites would be located an appropriate distance from riparian habitat to avoid indirect impacts on aquatic habitat. This includes, where practicable, a minimum of 100 metres (m) for Type 1, Class 1 watercourses, 50 m for Type 2, Class 2 and 3 watercourses, and 10 to 50 m for Type 3, Class 2 to 4 watercourses.</p> <p>Direct impacts on in-stream vegetation and native vegetation on the banks of watercourses would be avoided, as far as practicable.</p>
BD11	Biodiversity impacts	<p>Exclusion areas would be established and maintained around native vegetation to be retained; particularly areas of high biodiversity value adjoining the proposal site (e.g. threatened ecological communities, known threatened plant populations etc) that are located in close proximity to work areas.</p>
BD12	<i>Rehabilitation of vegetation subject to temporary disturbance</i>	<p>A rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of the operational footprint (such as compounds and temporary workforce accommodation).</p> <p>The strategy would include clear objectives for rehabilitation of native vegetation in temporary disturbances areas.</p>
BD13	<i>Habitat linkages</i>	<p>To improve fauna connectivity across the rail corridor, habitat linkages would be included in the rail corridor where practicable and consistent with the safe operation and maintenance of Inland Rail. Linkages would involve retaining or rehabilitating groundcovers and low shrubs, with a focus on those areas of the rail corridor within the Pilliga forests and other areas of connected vegetation.</p> <p>Rehabilitation or revegetation is to occur as soon as possible to minimise the lag between impact and mitigation.</p> <p>As part of construction planning, opportunities to minimise construction clearing within the rail corridor would be investigated for high value connectivity areas.</p>

Ref	Issue/impact	Mitigation measures—construction
Water resources		
WR6	<i>Sedimentation and erosion management</i>	A soil and water management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts, including impacts to groundwater, during construction.
WR7	<i>Monitoring groundwater drawdown and quality</i>	<p>A groundwater monitoring program would be developed in consultation with DPE Water and implemented, as part of the soil and water management plan, to monitor potential groundwater impacts. The program would define the following in accordance with chapter 10 of Technical Report 4—Groundwater assessment:</p> <ul style="list-style-type: none"> ▶ Monitoring parameters ▶ Monitoring locations ▶ Frequency and duration of monitoring. <p>The monitoring program would include baseline monitoring to determine the water quality of groundwater from the proposed bore field bores.</p> <p>Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions.</p> <p>A review would be undertaken six months and one year after the completion of groundwater pumping to assess the recovery rates and determine if further mitigation is required.</p>
WR8	<i>Bore field groundwater quality</i>	The quality of groundwater obtained from the proposed bore field bores would be assessed for the suitability of its intended use. Where required, treatment systems would be designed to ensure water quality is consistent with the relevant water quality criteria from the <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> (ANZG, 2018).
WR9	<i>Impacts on existing bores</i>	Where groundwater monitoring identifies the potential for groundwater drawdown in existing bores to exceed the NSW Aquifer Interference Policy minimal impact considerations, make-good provisions would be triggered for those bores, in consultation with the relevant landholders and DPE Water.
WR10	<i>Proposal bore construction</i>	All bores required for the proposal would be constructed by appropriately licensed drillers in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (National Uniform Drillers Licensing Committee, 2020) and the relevant requirements of each Water Sharing Plan.
WR11	<i>Works within watercourses</i>	Works within or near watercourses would be undertaken with consideration of the <i>Guidelines for watercourse crossings on waterfront land</i> (DPI, 2012a) and <i>Guidelines for controlled activities on waterfront land – Riparian corridors</i> (NRAR, 2018).
WR12	<i>Unforeseen water table penetration by bulk earthworks</i>	If bulk excavations unexpectedly intersect the water table, works would be halted while the potential impacts are assessed by a hydrogeologist and adaptive mitigation measures implemented, as required.
WR13	<i>Proposal bore fields</i>	<p>Where there is benefit to the local community, the potential for retaining bores post-construction would be considered in consultation with relevant stakeholders (e.g. local councils).</p> <p>Any approvals, operating costs and maintenance associated with retaining and using these bores would be the responsibility of the party that takes ownership.</p>
WR14	<i>Proposal bore construction</i>	<p>A bore field extraction plan would be prepared as part of the soil and water management plan and provided to DPE Water prior to construction of the proposed bore field bores. The plan would include information about the locations, water source, depth and proposed volumes of water take per year for the proposed bore field bores, as well as any measures proposed to minimise the potential for impacts of extracting groundwater for use as construction water.</p> <p>The plan would also provide confirmation that any applicable water sharing plan rules have been met.</p>
WR-CI3	<i>Unforeseen water table penetration by borrow pits</i>	If excavations at borrow pits B, C and/or borrow pit D intersect the water table, works would be halted while the potential impacts are assessed by a hydrogeologist and additional management measures implemented as required.
WR-CI4	<i>Groundwater inflow rate (borrow pits)</i>	<p>If the groundwater inflow rate at borrow pit A is higher than one mega litre per year, the inflow rate and implications would be assessed by a hydrogeologist and additional management measures implemented, as required.</p> <p>If the groundwater inflow rate at borrow pit A has the potential to exceed 3 mega litres per year, sufficient entitlement would be obtained prior to any extraction or interception.</p>

Ref	Issue/impact	Mitigation measures—construction
Flooding		
FH3	<i>Flooding impacts</i>	Construction planning and the layout of construction work sites and compounds would be undertaken with consideration of overland flow paths and flood risk, avoiding flood liable land and flood events where practicable.
FH4	<i>Flooding impacts</i>	<p>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. It would also include measures to manage flood risks during construction and address flood recovery during construction.</p> <p>The plan would be developed in consultation with Transport for NSW, local councils, emergency services and key affected landholders/managers (including Forestry Corporation of NSW).</p>
FH5	<i>Downstream watercourse stability</i>	<p>A geomorphology monitoring program would be implemented in accordance with the soil and water management plan (mitigation measure WR6). The monitoring would observe changes in the geomorphological stability of watercourses that may be attributable to the proposal, and inform appropriate management responses.</p> <p>The monitoring program would be developed in consultation with the Department of Planning and Environment and with reference to the <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> (ANZG, 2018).</p>
FH-C11	<i>Flooding impacts (temporary accommodation facilities)</i>	The Narromine South and Narrabri West temporary workforce accommodation facilities would incorporate appropriate flood protection measures, such as elevating buildings on stilts and storing hazardous materials above the flood levels that inundate these sites.
Soils and contamination		
SC7	<i>General soil and erosion management</i>	The soil and water management plan (mitigation measure WR6) would include erosion and sediment controls appropriate for dispersive soils.
SC8	<i>Contamination</i>	A contamination and hazardous materials plan would be prepared and implemented as part of the CEMP. It would include measures, processes and responsibilities to minimise the potential for contamination impacts on the local community, workers and environment, and procedures for incident management and managing unexpected contamination finds (an unexpected finds protocol).
SC9	<i>Rehabilitation</i>	Disturbed areas would be rehabilitated following construction, in accordance with the rehabilitation strategy (mitigation measure BD12).
Water quality		
WQ2	<i>Discharge to surface water</i>	Discharge to surface water would be undertaken in accordance with the environment protection licence for construction of the proposal and would consider the hydrological attributes of the receiving waterbody.
WQ3	<i>Surface water monitoring</i>	<p>A surface water monitoring framework would be developed and implemented as part of the soil and water management plan in the CEMP. It would identify:</p> <ul style="list-style-type: none"> ▶ Monitoring locations at discharge points and selected watercourses where works are being undertaken ▶ Monitoring parameters ▶ Frequency and duration of monitoring. <p>The monitoring framework would include the relevant water quality objectives, parameters and criteria from Technical Report 5. It would be developed in consultation with the Department of Planning and Environment, and the NSW EPA.</p>
WQ4	<i>Dewatering of farm dams that require relocation and/or decommissioning</i>	<p>A dam dewatering protocol would be developed as part of the soil and water management plan. It would consider:</p> <ul style="list-style-type: none"> ▶ Options for reuse of water in the dam ▶ Licensing and approval requirements, where relevant ▶ The quality and quantity of the water to be released and the location of potential discharge points of the water into watercourses, where relevant ▶ Strategies to minimise impacts on native, threatened or protected species ▶ Strategies to minimise spread of pest flora and fauna species.

Ref	Issue/impact	Mitigation measures—construction
Aboriginal heritage		
AH10	<i>Protecting Aboriginal heritage and minimising impacts during construction</i>	<p>An Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage, including:</p> <ul style="list-style-type: none"> ▶ A salvage methodology (mitigation measure AH2) ▶ An unexpected finds procedure (mitigation measure AH12) ▶ Plans and installation procedures for fencing and protective coverings ▶ Induction package for construction workers and supervisors (mitigation measure AH11) ▶ Measures to protect sites close to the proposal site from inadvertent impacts ▶ Outcomes of further investigations (mitigation measures AH3 and AH4) ▶ Erosion and sediment controls in accordance with <i>Managing Urban Stormwater: Soils and construction – Volume 1</i> (Landcom, 2004) to minimise the potential for erosion impacts to Aboriginal sites located close to watercourses/drainage lines ▶ Measures to manage the potential for impacts to potential Aboriginal heritage items (including burial sites) located in sensitive landscapes (such as alluvium landscapes) ▶ Measures to minimise and mitigate potential impacts to plant species that hold medicinal and food value (guided by a cultural plant survey). <p>The plan would be prepared in consultation with registered Aboriginal parties and Heritage NSW.</p>
AH11	Protecting Aboriginal heritage and minimising impacts during construction	A requirement for cultural and historic heritage awareness training would be included in the Aboriginal cultural heritage management plan. Cultural heritage awareness training would be provided by an Aboriginal representative at the commencement of substantial works for the proposal.
AH12	<i>Unexpected finds</i>	An unexpected finds procedure would be developed and included in the Aboriginal cultural heritage management plan (mitigation measure AH10) to provide a consistent method for managing any unexpected Aboriginal heritage items discovered during construction, including potential heritage items or objects, and human skeletal remains. The procedure would define the requirements for managing any human skeletal remains discovered during construction in accordance with mitigation measure NAH8.
AH13	<i>Impacts on Aboriginal cultural values at Etoo Creek 19-5-0239</i>	<p>Prior to construction commencing, and once rehabilitation is complete, a smoking ceremony would be undertaken at the location of Etoo Creek 19-5-0239.</p> <p>Prior to construction commencing, the age of the culturally modified (scarred) tree would be verified by an arborist.</p>
Non-Aboriginal heritage		
NAH7	<i>Protecting non-Aboriginal heritage and minimising impacts during construction</i>	<p>A heritage management plan would be prepared and implemented as part of the CEMP. It would include measures to manage non-Aboriginal heritage and minimise the potential for impacts during construction.</p> <p>The plan would be prepared in consultation with the relevant heritage agencies (local councils) and take into account the outcomes of further investigations and surveys during detailed design.</p> <p>The heritage management plan would define a requirement for non-Aboriginal historical heritage awareness training for site workers prior to commencement of construction works. The awareness training would promote an understanding of heritage items that may be impacted during the works and the requirements of the unexpected finds procedure.</p>

Ref	Issue/impact	Mitigation measures—construction
NAH8	<i>Unexpected finds including human skeletal remains</i>	<p>An unexpected finds procedure would be developed and included in the heritage management plan to provide a consistent method for managing any unexpected heritage or archaeological items and unexpected human skeletal remains.</p> <p>The procedure would define the requirements for managing any human skeletal remains discovered during construction, in accordance with relevant legislation and guidelines, including the Public Health Regulation 2012 (NSW), <i>Heritage Act 1977</i> (NSW), <i>National Parks and Wildlife Act 1974</i> (NSW), <i>Work Health and Safety Act 2011</i> (NSW), <i>Coroners Act 2009</i> (NSW), <i>NSW Health Procedures Exhumation of human remains</i> (NSW Health, 2013), and <i>Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977</i> (NSW Heritage Office, 1998b).</p> <p>Any human skeletal remains discovered during construction would be managed in accordance with the <i>Policy Directive – Exhumation of Human Remains</i> (NSW Health, 2013) and <i>Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977</i> (NSW Heritage Office, 1998b).</p>
NAH9	<i>Avoiding impacts on heritage items</i>	<p>The following heritage items would be fenced and marked on site plans within the CEMP as areas to be avoided during construction:</p> <ul style="list-style-type: none"> ▶ Graves within the Woodvale Park Private Cemetery ▶ Curban Inn site ▶ ‘Kickabil’ homestead and woolshed ▶ ‘Allandale’ homestead ▶ ‘Digilah’ homestead ▶ Convict road, Baradine ▶ Rocky Creek Mill site ▶ Graves within ‘The Aloes’ homestead ▶ Graves of the Dingwell children.
Noise and vibration		
CNV3	<i>Noise and vibration impacts</i>	<p>A construction noise and vibration management plan would be prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.</p>
CNV4	Noise and vibration impacts	<p>The Inland Rail NSW Construction Noise and Vibration Management Framework would be implemented, and the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the noise and vibration assessment.</p> <p>All feasible and reasonable noise and vibration measures would be implemented.</p> <p>Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan, and the construction noise and vibration impact statements.</p> <p>Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.</p>
CNV5	Impacts of out-of-hours work	<p>An out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels.</p> <p>All work outside the primary proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the out-of-hours work protocol.</p> <p>The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders, including the NSW EPA and the community with the potential to be impacted, and incorporated into the construction noise and vibration management plan.</p>

Ref	Issue/impact	Mitigation measures—construction
CNV6	Construction vibration (structural) impacts	If vibration-generating activities are conducted within 18 m of a residence, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. For piling, this distance is increased to 100 m. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.
CNV7	Construction vibration (structural) impacts	Building condition surveys would be completed before and after construction works where buildings or structures are within the minimum vibration working distances for cosmetic damage.
CNV8	Construction vibration (structural) impacts on heritage items	<p>Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential for damage, alternative methods that generate less vibration would be investigated and substituted, where practicable.</p> <p>Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity.</p> <p>Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.</p>
CNV-CI1	Impacts of blasting at borrow pits	<p>A blast management strategy would be prepared in accordance with relevant guidelines and in consultation with the NSW EPA. The strategy would form part of the construction noise and vibration management plan and would include:</p> <ul style="list-style-type: none"> ▶ Sequencing and review of trial blasting to inform blasting ▶ Regularity of blasting ▶ Intensity of blasting ▶ Periods of relief ▶ Blasting program.
CNV-CI2	Impacts of blasting at borrow pits	Blasting would be undertaken during the recommended standard hours for blasting. Management measures defined by the blasting management strategy would be implemented.
Air quality		
AQ1	General air quality impacts	An air quality management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction.
AQ2	Construction activities and earthworks that may cause dust impacts	Where sensitive receivers are located within the separation distances determined for each key activity, or visible dust is generated from vehicles using unsealed access roads, road watering and/or other stabilising approaches would be implemented.
AQ-CI1	Impacts of blasting at borrow pits	Blasting would be avoided when winds in excess of 5 metres per second could carry dust towards a sensitive receiver.
Traffic and transport		
TT6	General impacts of construction on traffic, transport, access, pedestrians and cyclists.	<p>A traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction.</p> <p>The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.</p> <p>The plan would include, as appropriate, additional reasonable and feasible measures identified as an outcome of consultation (in accordance with mitigation measure TT7).</p>

Ref	Issue/impact	Mitigation measures—construction
TT7		<p>Consultation with relevant stakeholders would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. Stakeholders would include the relevant local council/s, bus operators, Transport for NSW, emergency services, the Forestry Corporation of NSW (in relation to access within State forests), Crown Land, Local Land Services and other affected property owners/occupants.</p> <p>Additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders, where practicable.</p>
TT8	Access impacts	The community would be notified in advance of any proposed road and pedestrian network changes through signage, the local media, and other appropriate forms of communication.
TT9	Emergency vehicle access	Emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.
TT10	Heavy vehicles damaging local roads	<p>A dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority.</p> <p>Pavement condition monitoring would be carried out during works, as required.</p> <p>Rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.</p>
TT-C11	Construction traffic impacts (temporary workforce accommodation)	The traffic, transport and access management plan would include measures to manage potential traffic impacts at and near temporary workforce accommodation facilities. The plan would include approved access routes and any restrictions on the use of residential streets.
Land use and property		
LP16	Biosecurity	The biodiversity management plan included in the CEMP (mitigation measure BD8) would include measures to minimise the potential for biosecurity risks during construction in accordance with the <i>Biosecurity Act 2015</i> (NSW).
LP17	Access to properties	<p>Access to individual residences, services and businesses, and for livestock, pedestrians and machinery across the rail corridor, would be maintained during construction. The traffic, transport and access plan included in the CEMP (mitigation measure TT6) would include measures to ensure that access to properties would be maintained at all times during construction.</p> <p>Where alternative access arrangements need to be made, these would be developed in consultation with affected property owners/occupants, and Local Land Services for travelling stock reserves.</p>
LP18	Access within State forests	The traffic, transport and access plan included in the CEMP (mitigation measure TT6) would include measures to ensure that access within State forests is retained to enable forestry operations to continue during construction.
LP19	Rehabilitation	<p>The rehabilitation strategy (mitigation measure BD12) would include measures to restore disturbed sites that do not form part of the operational footprint (such as compounds, temporary workforce accommodation) as close as practicable to the pre-construction condition or as agreed with the landholder.</p> <p>Rehabilitation of disturbed areas would be undertaken progressively, consistent with the rehabilitation strategy and property-level design requirements (where relevant).</p>
LP20	Water supplies for farm operations	Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
LP21	Bushfire risk in forest areas	The flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks.

Ref	Issue/impact	Mitigation measures—construction
Visual amenity		
LV5	<i>Visual impacts of construction compounds</i>	Construction compounds would be located, as far as practicable, within cleared areas and away from sensitive receivers. Compounds would be designed and orientated to minimise visual impacts. This would include locating areas of low visual amenity away from sensitive receivers, and erecting boundary screening around compounds, where appropriate.
LV6	<i>Protection of trees</i>	Trees to be retained would be protected, prior to the commencement of construction, in accordance with <i>AS4970-2009 Protection of trees on development sites</i> (Standards Australia, 2009).
LV7	<i>Landscape character and visual impacts</i>	Rehabilitation of disturbed areas would be undertaken progressively in accordance with the rehabilitation strategy (mitigation measure BD12) and individual property agreements (mitigation measure LP3) (where relevant).
LV8	<i>Minimising light spill</i>	Lighting of work areas, compounds, and work sites would be designed and sited in accordance with mitigation measure LV4, and oriented to minimise glare and light spill impact on adjacent receivers.
LV-C11	<i>Landscape character and visual impacts associated with (borrow pits)</i>	The borrow pits would be rehabilitated in accordance with the borrow pit rehabilitation strategy provided in Appendix K of the EIS.
LV-C12	<i>Visual impact from construction activities (temporary accommodation facilities)</i>	The temporary workforce accommodation plan (mitigation measure SE-C12) would include requirements for the design and visual screening of facilities, to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.
Socio-economic impacts		
SE9	<i>Social impacts, communication and engagement</i>	Key stakeholders (including local councils, emergency service providers, public transport providers, the general community and surrounding landowners/occupants) would continue to be consulted in accordance with the communication management plan. Local residents, landholders, landowners, businesses, affected social and recreation facilities and other relevant stakeholders would be notified before work starts, in accordance with the communication management plan, and be regularly informed of construction activities.
SE10	<i>Social impacts, communication and engagement</i>	Complaints during construction would be managed in accordance with the complaints management system defined by the communication management plan. The complaints management system would be maintained throughout the construction period and for a minimum of 12 months after construction finishes.
SE11	<i>Workforce management</i>	A workforce management plan would be developed and implemented during construction to manage: <ul style="list-style-type: none"> ▶ Potential impacts of the non-resident construction workforce ▶ Local business and employment opportunities ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services. The plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.
SE12	<i>Local employment and training opportunities</i>	The workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to: <ul style="list-style-type: none"> ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets ▶ How the contractor would work with regional stakeholders to upskill local residents.

Ref	Issue/impact	Mitigation measures—construction
SE13	<i>Impacts of non-resident workforce on local communities</i>	<p>The workforce management plan would include measures to manage potential impacts of the non-resident construction workforce on local and regional communities, including:</p> <ul style="list-style-type: none"> ▶ A code of conduct for workers, including a zero-tolerance policy relating to anti-social behaviour ▶ Strategies to promote wellbeing of the workforce ▶ A monitoring mechanism for use of local tourist accommodation and rental housing by workers ▶ Processes for managing potential increased demands due to the non-resident workforce.
SE14	<i>Temporary land requirements at the Narrabri Dirt Bike Club</i>	The area of land within the Narrabri Dirt Bike Club site, which is required during construction only, would be restored and returned to (as a minimum) the pre-existing condition.
Waste management		
WM3	<i>Construction waste management</i>	A construction waste management plan would be prepared and implemented as part of the CEMP. The plan would adopt the waste hierarchy principles contained in the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW), and detail processes, responsibilities and measures to manage waste and minimise the potential for impacts during construction.
WM4	<i>Construction waste and spoil management</i>	All waste generated would be classified in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA, 2014) and disposed of in accordance with the relevant requirements of the Protection of the Environment Operations (Waste) Regulation 2014.
Sustainability		
SU4	<i>Achieving the target sustainability rating</i>	<p>A sustainability management plan would be developed to define the measures required to be implemented achieve an 'excellent' as built rating according to the ISCA's Infrastructure Sustainability scheme.</p> <p>The sustainability management plan would incorporate Inland Rail program-aligned sustainability objectives and targets, roles and responsibilities, strategies for achieving the 'excellent' as built rating, and review and reporting requirements.</p>
SU5	<i>Reporting</i>	Monthly sustainability reporting (and corrective action where required) would be undertaken during construction, in accordance with the sustainability management plan.
Climate change		
CC2	<i>Climate change risk management</i>	The adaptation measures identified for the proposal would be reviewed, and final measures would be implemented during construction, as far as practicable.

TABLE 11-3: COMPILATION OF UPDATED MITIGATION MEASURES FOR OPERATION

Ref	Issue/impact	Mitigation measures—operation
Biodiversity		
BD14	<i>Weed management</i>	Weed inspections would be undertaken and weed management would occur, in accordance with ARTC's standard operating procedures, to meet its obligations under the <i>Biosecurity Act 2015</i> (NSW).
BD15	<i>Fauna connectivity</i>	<p>The operational performance of fauna connectivity measures, including impacts on fauna as a result of train operations and maintenance activities, would be monitored in accordance with the fauna connectivity strategy. This would include recording of wildlife collisions with trains. ARTC would also monitor the use of crossing structures by target species (including the Pilliga mouse, squirrel glider, koala, rufous bettong and eastern pygmy-possum) and feral predators.</p> <p>The threatened species management plans (BD6) would include appropriate adaptive management measures to address situations where fauna connectivity and population impact thresholds are exceeded.</p>
BD16	<i>Aquatic ecology</i>	Culverts that provide for the flow of watercourses would be inspected and maintained, in accordance with ARTC's standard operating procedures, to address any issues that may contribute to the blockage of fish passage.
Soils and contamination		
SC10	<i>Soil erosion and sedimentation</i>	During any maintenance work where soils are exposed, sediment and erosion control devices would be installed in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> , Volume 1 (Landcom, 2004).
SC11	<i>Contamination</i>	ARTC's existing spill response procedures would be reviewed to determine applicability and suitability during operation. The adopted procedure would include measures to minimise the potential for impacts on the local community and the environment as a result of any leaks and spills.
Water quality		
WQ5	<i>General water quality management</i>	The proposal would be managed in accordance with the water quality management requirements specified in the environment protection licence.
Noise and vibration		
ONV4	<i>Operational noise and vibration</i>	The proposal would be operated with the aim of achieving the operational noise and vibration criteria identified by the operational noise and vibration review, the requirements of the conditions of approval, and the environment protection licence for Inland Rail.
ONV5	<i>Operational noise and vibration</i>	<p>Operational noise and vibration compliance monitoring would be undertaken, once Inland Rail has commenced operation, at representative locations, to compare actual noise performance against that predicted by the operational noise and vibration review.</p> <p>Compliance monitoring requirements would be defined by the operational noise and vibration review.</p> <p>The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.</p>
Air quality		
AQ3	<i>Locomotive emissions</i>	Locomotive emissions would be managed in accordance with the air quality management requirements specified in the rollingstock operator's environment protection licence.
AQ4	<i>Impacts during track maintenance</i>	Maintenance service vehicles and equipment would be maintained and operated in accordance with the manufacturer's specifications.
Traffic and transport		
TT11	<i>Road user safety at level crossings</i>	<p>The operation of all level crossings constructed on classified roads as part of the proposal would be reviewed after Inland Rail commences operation to confirm that the:</p> <ul style="list-style-type: none"> ▶ Level of protection is appropriate ▶ Proposed infrastructure is appropriate for the traffic conditions.
TT12	<i>Road user safety at level crossings</i>	In accordance with National and State Rail Safety Law requirements, public road crossings would be subject to an Interface Agreement with the relevant road manager to ensure that safety risks are identified and minimised, as far as practicable, during operations.

Ref	Issue/impact	Mitigation measures—operation
Land use and property		
LP22	<i>Safe scheduling</i>	ARTC would develop a 'Call Train Control' process to enable landowners to use level crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.
Visual amenity		
LV9	<i>Landscape character and visual impacts</i>	Vegetation provided in accordance with the rehabilitation strategy (mitigation measure BD12), and urban design and landscape plan (mitigation measure LV2) would be subject to ongoing monitoring and maintenance in accordance with ARTC's standard operating procedures.
Socio-economic impacts		
SE15	<i>Increased safety risks due to new level crossings</i>	A rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.
Waste management		
WM5	<i>Operational waste management</i>	Operational waste, including general litter clean up, would be managed in accordance with ARTC's existing operational maintenance requirements and the waste hierarchy principles in the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW).
Sustainability		
SU6	<i>Sustainability</i>	Prior to operation commencing, a sustainability handover plan would be prepared, and relevant initiatives would be maintained and implemented, through operational management and maintenance procedures.
Climate change		
CC3	<i>Climate change risk management</i>	Operational management and maintenance procedures would address potential climate change risks and adaptation measures.

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APPENDIX

A

Where issues raised in community submissions are addressed

NARROMINE TO NARRABRI PROJECT RESPONSE TO SUBMISSIONS



Table A.1 provides a list of the community submissions (by submission identification (ID) number) and identifies where responses to the issues raised can be found in sections 7 to 10 of the report. The submission and submitter ID numbers were provided to submitters upon providing their submission to DPIE (now DPE).

A number of submissions only registered an objection to the proposal rather than raising specific issues. In this case submitters are directed to section 8.1 which describes the assessment and approval process of the proposal.

TABLE A-1: SUBMISSION ID TABLE

Submission ID	Submitter ID	Section where issues raised in submission are addressed
SE-12721928	S-12721927	9.13.2, 8.4.1
SE-13011055	S-13011054	9.7.1, 7.5.1
SE-13315461	S-13315460	9.8.4, 9.12.2, 9.11.8, 9.11.9
SE-13363958	S-13363957	9.8.1, 9.11.9, 9.12.2
SE-13538247	S-13538246	9.1.3, 8.2, 9.5.2, 8.4.1, 9.1.1
SE-13643005	S-13643004	9.11.6, 9.11.8, 9.13.3, 9.11.11, 9.8.4, 9.9.1, 9.11.9
SE-13733271	S-13733270	7.2.2, 9.14.1, 10.2, 8.3, 10.3.1, 7.2.1, 7.2.4, 10.3.1
SE-13851888	S-13851887	9.13.3, 9.8.2, 9.8.5, 8.3, 9.11.9, 9.2.2, 9.11.10, 9.11.6, 7.2.5, 9.11.4, 9.11.3, 9.3.4, 7.7.3
SE-14123332	S-14123331	7.8
SE-14123372	S-14123371	7.8, 8.4.1, 9.11.7, 9.3.2, 9.11.9, 8.4.2
SE-14119693	S-14119692	7.8
SE-14123389	S-14123388	7.8, 9.13.2
SE-14142213	S-14142212	7.8
SE-14141962	S-14141961	7.8
SE-14143228	S-14143227	7.8
SE-14142265	S-14142264	9.11.6, 7.7
SE-14144011	S-14144010	7.8
SE-14143240	S-14143239	7.8, 10.1, 9.13.2, 9.3.2, 7.7.1
SE-13853595	S-13853594	9.11.9, 9.3.3, 7.3.2, 8.3, 7.8, 9.11.4, 8.4.1, 9.2.1, 9.11.6, 9.13.3, 9.8.3, 9.12.2, 7.6, 10.2
SE-14044538	S-14044537	9.13.3, 9.15.1, 9.13.2, 8.4.1, 9.13.2, 9.11.8
SE-14100787	S-14100786	9.1.2, 7.8
SE-14144026	S-14144025	7.8, 9.11.6
SE-14143258	S-14143257	7.8
SE-14144082	S-14144081	8.1
SE-14144237	S-14144236	9.8.1, 9.8.3, 9.13.2, 9.12.2, 7.8, 9.3.2
SE-14122923	S-14122922	9.3.2, 9.13.2, 7.7.1, 7.7.2
SE-14122943	S-14122942	7.7.1, 9.8.3, 9.11.9, 9.15.2, 9.13.2, 8.3.2, 8.4.1
SE-14142059	S-14142058	7.8, 8.4.1
SE-14146545	S-14146544	7.8, 9.8.1, 9.12.2, 9.3.2, 8.4.1
SE-14147520	S-14147519	7.8
SE-14147555	S-14147554	7.8
SE-14142113	S-14142112	9.13.3, 7.8, 9.15.2
SE-14142415	S-14142414	7.8
SE-14151215	S-14151214	7.8
SE-14151034	S-14151033	8.4.1, 10.3.1, 7.8, 9.11.1, 9.15.2
SE-14142977	S-14142976	7.8
SE-14144363	S-14144362	7.8
SE-14151293	S-14151292	9.15.2, 7.8, 9.3.2
SE-13926724	S-13926723	9.10.1, 9.8.3, 9.13.3, 8.4.1, 9.11.9, 9.13.2, 9.9.1, 7.3.2, 9.7.2

Submission ID	Submitter ID	Section where issues raised in submission are addressed
SE-13959764	S-13959763	9.8.1, 7.8, 10.1, 8.4.1, 9.12.2, 9.11.6, 9.10.2, 9.3.2, 10.3
SE-14017623	S-14017622	9.2.1, 9.11.4, 9.10.2, 8.2, 9.11.2, 9.1.3
SE-14143174	S-14123331	8.4.1, 7.7.2, 7.8
SE-14165277	S-14165276	9.8.1, 9.8.3, 9.3.2, 8.3.3
SE-14165297	S-14165296	7.8, 9.11.9, 9.8.1, 9.8.3, 9.10.1, 9.7.1, 9.9.1, 9.15.1
SE-14156288	S-14156287	8.4.1, 7.7.1, 9.13.3, 9.15.2, 9.11.9
SE-14144428	S-14144427	7.8
SE-14161647	S-14161646	9.10.1, 9.11.9, 9.9.1, 9.7.1, 9.12.2, 9.11.4, 9.3.5, 9.8.3, 7.8
SE-14167621	S-14167620	7.8, 9.1.2, 9.15.2, 10.2, 10.1
SE-14169263	S-14169262	7.8
SE-14170219	S-14170218	8.1
SE-14169734	S-14169733	9.15.2, 9.1.2
SE-14102036	S-14102035	9.10.1, 9.11.9, 9.11.3, 9.3.5, 9.15.2, 9.1.3, 9.4.2, 9.8.5, 9.9.1, 9.13.2, 9.10.3, 9.11.4, 9.12.2, 9.11.7, 9.11.8, 9.7.2, 8.2, 7.8, 9.8.2, 9.13.3, 9.12.3, 9.11.6
SE-14169355	S-14169354	8.4.1, 8.2, 10.1
SE-14080676	S-14080675	7.7.1, 9.8.5, 8.3, 9.7.1, 9.13.2, 9.6.1, 9.8.3, 9.11.4, 9.11.6, 9.12.2, 9.8.3, 9.11.8, 7.8, 9.3.4, 9.15.2, 7.2.5, 9.11.9, 8.2, 9.9.1, 9.8.2, 9.10.1
SE-14082334	S-14082333	7.8, 8.4.2, 10.1, 9.13.2, 9.1.3, 9.13.1, 9.2.1, 8.3, 10.3.2, 9.15.2, 7.3.3, 9.11.10, 9.11.8, 9.10.3, 9.11.3, 9.15.1, 9.2.2, 9.12.2, 9.11.2, 9.11.2
SE-14085148	S-14085147	9.11.8, 10.3.4, 7.2.5, 9.11.4
SE-14115363	S-14115362	9.2.1, 10.1, 9.11.3, 9.13.2, 9.2.1, 9.2.2, 8.3, 10.1, 9.11.2, 7.6, 9.11.7, 9.11.8, 9.11.9, 7.2.3, 7.5.2, 7.3.3, 9.11.1, 9.11.4, 7.2.1, 8.4.1, 9.8.5
SE-14168039	S-14168038	9.3.2, 9.10.2, 7.7.1, 9.13.2, 8.3
SE-14169549	S-14169548	9.11.9, 9.8.1, 9.13.2, 9.8.2, 7.8, 9.13.3, 9.8.2, 8.4.2, 9.11.4, 9.11.8
SE-14172268	S-14172267	9.10.2, 7.8, 9.3.2, 9.8.1, 8.4.1
SE-14313773	S-14313772	10.3.4, 7.8, 9.4.2, 7.7.1, 7.6, 7.2.4, 7.2.3, 9.15.1, 9.1.1, 7.2.5, 8.4.1, 9.11.2
SE-14318210	S-14318209	8.3.1, 7.8, 9.11.6, 9.1.2, 9.5.1
SE-13920139	S-13920138	9.7.1, 7.3.1, 7.4.2, 9.10.1, 7.4.2, 9.10.2, 9.9.1, 8.4.2, 9.15.1
SE-14119500	S-14119499	10.1, 9.11.10, 9.15.1, 9.15.2, 8.3, 9.9.1, 9.13.2, 9.11.6, 10.3.3, 7.7.1, 9.13.3, 8.4.1, 9.2.1, 9.11.4, 7.2.5
SE-14144158	S-14144157	8.2, 10.2, 8.1, 8.4.2, 9.9.2, 10.3.2, 7.8, 7.6
SE-14142147	S-14142146	8.4.1, 9.8.5, 8.3.2, 9.10.2, 9.3.4, 9.9.1, 9.7.2, 7.8
SE-14379676	S-14379675	9.1.2, 8.3, 9.3.5, 9.1.1, 9.4.2, 9.3.4, 9.3.3
SE-14381029	S-14381028	7.7.2, 9.8.5, 9.8.4, 9.8.1
SE-14525722	S-14525721	8.3, 9.11.4, 9.4.3, 9.3.3, 9.4.2, 9.11.6, 7.8, 9.13.2, 9.13.3, 7.2.3, 9.8.4, 9.3.5, 9.11.8, 9.12.2, 8.4.1
SE-14169768	S-14169767	7.7.1, 7.8, 9.11.7, 10.2, 10.3.4, 8.3, 8.2, 9.11.9, 9.3.1, 9.1.1, 9.5.1, 9.13.2
SE-14169456	S-14165205	9.11.4, 9.11.8, 9.8.4, 9.7.1, 7.8, 9.11.13, 7.2.5, 9.11.2, 9.11.9, 9.2.2, 9.11.5, 9.8.3, 9.11.11
SE-14167996	S-14167995	9.8.3, 9.11.4, 8.4.1, 9.12.2, 9.3.2, 7.2.3, 9.11.6
SE-14156363	S-14156362	9.11.8, 9.13.2, 10.3.4, 9.11.9, 9.3.2, 9.8.3, 7.8, 9.11.3, 7.8, 9.12.2, 7.6, 8.3, 8.3.3, 9.3.5, 9.11.10
SE-14156425	S-14156424	8.3, 7.8, 8.2, 9.10.1, 9.10.2, 9.13.2, 9.12.2, 9.1.1
SE-14169469	S-14169468	8.4.1, 8.2, 8.3, 7.7.1, 9.11.6, 9.11.9, 9.3.3, 7.8
SE-14172016	S-14172015	9.2.1, 9.11.11, 9.2.2, 7.2.5, 8.4.1, 9.3.3, 9.1.1, 9.11.2, 9.11.3, 9.4.1, 9.3.1, 7.7.1, 8.3, 8.1, 7.2.3
SE-14169602	S-14169601	10.1, 8.4.1, 9.11.2, 9.11.4, 8.4.1
SE-14308140	S-14308139	9.3.2, 9.8.1, 9.10.2, 9.11.4, 9.11.9, 8.3, 7.8
SE-14326776	S-14326775	9.11.8, 9.13.2, 9.13.3, 8.2, 9.15.2, 8.4.1, 7.7.1, 9.8.5, 9.11.9, 8.2, 9.11.4, 8.3, 9.11.6

Submission ID	Submitter ID	Section where issues raised in submission are addressed
SE-14173973	S-14173972	9.11.10, 8.3, 9.8.2, 9.1.2, 9.8.5, 9.3.5, 8.2, 9.11.8, 9.11.4, 7.2.3, 9.4.1, 8.1, 10.1, 7.8, 8.4.1, 10.2, 10.3.3, 9.12.2
SE-14165257	S-14165256	8.3, 8.4.1, 7.7.1, 9.15.2, 8.2
SE-14142180	S-14142179	8.3, 9.2.2, 7.4.1, 9.2.1, 9.8.3, 10.1, 9.4.1, 8, 9.16.1, 9.11.8, 7.2.5, 7.4.2, 9.10.1, 9.6.2, 9.12.2, 9.13.1, 9.12.1, 9.12.3, 9.3.6, 7.2.3, 9.4.2, 10.1, 9.11.10, 10.2, 9.11.4, 9.11.1, 7.5.2, 9.13.2, 9.4.2, 10.3.2, 7.4.2, 9.10.1, 9.15.2, 8.4.2, 9.3.2, 9.11.2, 9.11.9, 8.2, 8.4.1, 9.1.1, 9.13.3, 9.1.3, 9.1.2, 9.15.1, 9.8.1, 9.11.6, 9.11.3
SE-14169308	S-14169307	8.3, 8.2, 7.8, 7.7.1, 10.2
SE-14172025	S-14172024	8.4.1, 8.4.2, 7.8, 10.3.4, 8.1, 10.3.2, 10.2, 9.13.2, 8.3, 9.11.8, 8.2, 9.11.4, 9.11.11, 9.15.2, 7.7.1, 7.7.2
SE-14142232	S-14142231	9.13.3, 9.1.2, 9.12.2, 9.7.1, 9.8.5, 9.11.9, 9.8.2
SE-14103799	S-14103798	9.8.2, 9.12.2, 8.3.3, 9.8.5, 9.7.2, 9.11.4, 8.4.1, 7.2.2, 9.11.2
SE-14147581	S-14147580	7.7.1, 8.3, 9.11.4, 8.1
SE-12564493	S-12564492	9.11.4

APPENDIX

B

Changes to mitigation measures compared to the EIS

NARROMINE TO NARRABRI PROJECT RESPONSE TO SUBMISSIONS



B.1 Updated mitigation measures

The full set of updated mitigation measures is provided in Table B-1 to Table B-3. These tables supersede the measures presented in the EIS.

New mitigation measures or additions to mitigation measures included in the EIS are shown in **red bold** text. Where a measure has been deleted or text has been deleted, it appears as ~~strikethrough~~ text. The measures are broadly grouped according to the main stage of implementation and the relevant key issues and impacts mitigated.

Table B.1 provides those measures that would be implemented during the design phase and prior to construction. It includes measures to guide how the proposal would be designed and measures relating to construction planning, including development of the strategies and plans that would be implemented during construction. Table B.2 provides those measures relevant to construction activities and the works proposed. Table B.3 provides those measures relevant to operation, which would be implemented during the operational stage to guide how the proposal is operated and maintained in the long term.

TABLE B-1: COMPILATION OF MITIGATION MEASURES FOR DETAILED DESIGN/PRE-CONSTRUCTION

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
Biodiversity		
BD1	<i>Impacts on biodiversity</i>	<p>Vegetation clearing would be limited to the minimum necessary to construct the proposal and allow for its effective operation.</p> <p>Detailed design and construction planning would avoid or minimise the need to remove and/or disturb native vegetation and fauna habitat as far as reasonably practicable.</p>
BD2	<i>Impacts on biodiversity</i>	<p>Vegetation clearing would be limited to the minimum necessary to construct the proposal and allow for its effective operation.</p> <p>Where appropriate, facilities within the multi-function compounds and temporary workforce accommodation would be located to further minimise or avoid impacts on native vegetation, where practicable.</p>
BD3	<i>Impacts on threatened species</i>	<p>Additional threatened flora surveys would be undertaken (where suitable climatic conditions occur) prior to clearing for the threatened species likely to be impacted by the proposal, including:</p> <ul style="list-style-type: none"> ▶ <i>Diuris tricolor</i> in the Pilliga forests ▶ <i>Pterostylis cobariensis</i> in the Pilliga forests ▶ <i>Tylophora linearis</i> in the Pilliga forests. ▶ <i>Lepidium monoplacoides</i> ▶ <i>Tylophora linearis</i> ▶ <i>Commersonia procumbens</i> ▶ <i>Bertya opposens</i> <p>Surveys would include seed collection where possible.</p> <p>The need for translocation options would be discussed with the Department of Planning, Industry and Environment (Biodiversity, Conservation and Science Directorate), should these be required.</p>
BD4	<i>Offsetting impacts on native vegetation and threatened species</i>	<p>Biodiversity offsets would be finalised in accordance with the NSW Biodiversity Offsets Scheme and in consultation with the NSW Department of Planning and Environment (Biodiversity, Conservation and Science Directorate) requirements of the Biodiversity Assessment Method (OEH, 2017). This would include retirement of like-for-like offsets for impacts on matters of national environmental significance.</p>
BD5	<i>Impacts on fish passage</i>	<p>Watercourse crossing structures would meet Inland Rail design standards and be designed in accordance with <i>Why do fish need to cross the road? Fish passage requirements for waterway crossings</i> (Fairfull, S. and Witheridge, G., 2003).</p>
BD6	<i>Impacts on fauna connectivity</i>	<p>A detailed fauna connectivity strategy would be prepared to guide detailed design based on the preliminary fauna connectivity framework provided in Appendix J of the updated biodiversity development assessment report. It would include investigation and design of:</p> <ul style="list-style-type: none"> ▶ Locations for fauna crossing structures in the Pilliga East State forests, including bridges and dedicated underpasses culverts for threatened fauna (such as the koala and Pilliga mouse in areas of preferred habitat), canopy glider poles bridges at regular intervals, and wooden barrier poles at selected bridges ▶ The provision of localised fencing to direct fauna to crossing structures

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
		<p>► Fauna furniture to be included in the design of bridges and dedicated underpasses culverts, where appropriate, to encourage crossings by koalas and other native fauna</p> <p>► Landscaping of the rail corridor to encourage movement of fauna across the gap.</p> <p>The detailed connectivity strategy would include threatened species management plans for key threatened species or groups identified in the preliminary fauna connectivity strategy, in addition to monitoring and reporting requirements in relation to the operational performance of the final measures.</p>
BD7	Impacts on fauna connectivity	The fauna connectivity structures listed in the register of proposed connectivity structures in Appendix J of the updated biodiversity development assessment report would be further developed in detailed design and constructed as proposed. If any changes occur to the proposed number, type or location of connectivity structures, an appropriate level of assessment would be conducted, in consultation with BCS, to confirm any changes to credit liabilities for the proposal.
Water resources		
WR1	<i>Construction and potable water supply</i>	<p>Construction water supply options would continue to be explored during detailed design and could include reuse of excess water from the Narrabri Gas Project or other suitable facilities in the area, or lease and/or purchase of existing water access licences from surrounding landholders.</p> <p>Potable water supply options would continue to be explored during detailed design.</p> <p>Water quality testing would be undertaken to confirm that the water sourced is suitable for its intended use. Any required approvals/agreements would be obtained prior to use.</p>
WR2	<i>Impacts on existing bores</i>	<p>Where existing licensed bores are located within the proposal site, they would be decommissioned in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (National Uniform Drillers Licensing Committee, 2020).</p> <p>Where bores are decommissioned, compensation would be provided, or alternative water supply arrangements made, as agreed with the landowner/landholder.</p>
WR3	<i>Impacts on existing bores</i>	A bore census would be undertaken for existing licensed bores within 1 kilometre of the proposal's bore fields, where landholders permit. The census would collect baseline groundwater level data and information on a given bore's typical usage and characteristics (including bore construction, pump depth, yield, water level during pumping and water level outside of pumping periods).
WR4	<i>Impacts of extracting groundwater</i>	<p>Test bores would be installed during detailed design, and further investigation would be undertaken by a qualified hydrogeologist, to confirm the depth and location of the proposed bore field bores.</p> <p>The test bores and bore fields would consider the bore field design considerations detailed in section 11.1 of Technical Report 4—Groundwater assessment, as well as the potential for unidentified faults and other geological structures to connect shallow and deep-water tables.</p>
WR5	<i>Impacts of extracting groundwater</i>	<p>Water volumes required to be extracted from groundwater bores for construction water and potable water (for the Narromine North and Baradine temporary workforce accommodation facilities) would be confirmed, and the appropriate approvals would be obtained, prior to extraction.</p> <p>Monitoring would be undertaken during extraction to ensure volumes stipulated by licence requirements are not exceeded.</p> <p>Meters would be installed, and groundwater extraction recorded and reported, in accordance with the relevant requirements of the Non-Urban Metering Policy (DPIE, 2020f) and clause 21(6) of the Water Management (General) Regulation 2018.</p>
WR-CI1	<i>Groundwater drawdown impacts</i>	Further investigation would be undertaken to determine the potential for the bores associated with the Narromine North and Baradine temporary workforce accommodation facilities to cause groundwater drawdown impacts. This would include ensuring any impacts to existing bores are below the <i>NSW Aquifer Interference Policy</i> minimal impact considerations.

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
WR-CI2	<i>Suitability of groundwater</i>	The quality of groundwater from the proposed bores at the Narromine North and Baradine facilities would be assessed for the suitability of its intended use. Where required, treatment systems would be designed, and a monitoring program established, to ensure water quality does not exceed complies with relevant drinking water criteria from the <i>National Water Quality Management Strategy Australian Drinking Water Guidelines 6 2011</i> (National Health and Medical Research Council, 2017).
Flooding		
FH1	<i>Flooding impacts</i>	<p>The design would continue to be refined, where practicable, to not worsen existing flooding characteristics at sensitive buildings for flood events up to and including the 1% AEP event.</p> <p>Detailed flood modelling would assess consider potential impacts changes to:</p> <ul style="list-style-type: none"> ▶ Building and property inundation (including flood level surveys and consideration of existing inundation levels) ▶ Existing rail line, at rail connections ▶ Road flood levels and extent of flooding along roads ▶ Flood evacuation routes ▶ Overland flow paths and storage effects of construction and operational infrastructure. <p>Flood modelling would have regard to the guidelines listed in section B3.1.1 of the EIS, and the revised quantitative design limits provided in the updated flooding and hydrology assessment report.</p> <p>Flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and would be undertaken in consultation with the relevant local council and local emergency management committees, the Department of Planning, Industry and Environment, the NSW State Emergency Service and potentially impacted landholders.</p>
FH2	<i>Downstream watercourse stability</i>	Further modelling and site-specific assessments would be undertaken during detailed design to confirm the locations downstream of culverts and within drainage control areas that require erosion protection, and to confirm the extent and type of protection required.
Soils and contamination		
SC1	<i>Structural integrity</i>	Foundation and batter design would include engineering measures to minimise operational risks from shrink swell, dispersive and/or low strength soils.
SC2	<i>Structural integrity</i>	Soil salinity would be considered in the design of subsurface structures.
SC3	<i>Acid sulfate soils</i>	Prior to ground disturbance in high-probability acid sulfate areas, testing would be carried out to determine the presence of acid sulfate soils. If acid sulfate soils are encountered, they would be managed in accordance with the <i>Acid Sulfate Soils Assessment Guidelines</i> (ASSMAC, 1998), and the <i>Waste Classification Guidelines—Part 4: Acid Sulfate Soils</i> (NSW EPA, 2014).
SC4	<i>Contamination</i>	Hazardous materials surveys would be undertaken during detailed design for all proposed demolition activities.
SC5	<i>Contamination</i>	An appropriately licensed asbestos removal contractor would be engaged to remove all asbestos identified at the illegal waste dump at which sample CS-21 was collected (easting 737305, northing 6617403) prior to works commencing. Asbestos would be removed in accordance with the requirements of applicable work health and safety legislation and codes of practice.
SC6	<i>Contamination</i>	<p>Site investigations would be undertaken by a suitably qualified and experienced consultant, as defined in Schedule B9 of the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> (NEPC, 2013) to assess exposure risks to site workers and other receptors as a result of disturbances to the following areas considered to be at a higher risk of being contaminated:</p> <ul style="list-style-type: none"> ▶ Narromine West connection ▶ Parkes to Narromine connection ▶ Dubbo to Coonamble Line connection ▶ Narrabri to Walgett Line connection ▶ Narrabri to North Star connection ▶ Where the proposal site borders the Santos Narrabri Operations Centre (directly west of the Narrabri West multi-function compound).

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
		The results of the site investigations would be assessed against the criteria contained within the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> (NEPC, 2013) to determine the need for any remediation.
SC-CI1	Soils and water quality	The final approach to reusing wastewater from the Narromine North and Baradine temporary workforce accommodation facilities would be confirmed during detailed design.
SC-CI2	Soils and water quality	<p>Any irrigation areas would be designed and operated in accordance with the risk framework and management principles contained in the <i>National Guidelines on Water Recycling</i> (Environment Protection and Heritage Council, 2006) and the <i>Environmental guidelines: Use of effluent by irrigation</i> (DEC, 2004). This would include the following design requirements:</p> <ul style="list-style-type: none"> ▶ Irrigation area/s would be delineated based on the expected rate of irrigation and the drainage characteristics of the receiving soil ▶ The quality of treated water would be determined to prevent accumulation of contaminants, with reference to the relevant guidelines ▶ Irrigation area/s would be designed to include capacity to store treated water for the duration of typical wet weather events ▶ The rate of irrigation would be optimised to avoid waterlogging or ponding of reclaimed water <p>Soil and groundwater conditions would be monitored to identify and correct trends in soil salinity or other potential effects of irrigation.</p>
Water quality		
WQ1	Water quality	The design features listed in section B5.1.4 would continue to be refined and implemented to minimise the potential impacts on water quality.
Aboriginal heritage		
AH1	Avoiding and minimising impacts on Aboriginal heritage	<p>Detailed design and construction planning would avoid direct impacts on identified items/sites of Aboriginal heritage significance, as far as reasonably practicable. The location of Construction compounds and associated access routes would be reviewed to ensure, as far as practicable, that they are not located in areas of medium or high archaeological potential.</p>
AH2	Management of salvaged items	<p>A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10) to ensure any artefacts salvaged are managed in accordance with the requirements of the <i>National Parks and Wildlife Act 1974</i> (NSW). The methodology would include the process for consultation with Heritage NSW the Department of Planning, Industry and Environment and registered Aboriginal Parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010b) the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> (DECCW, 2010a), and the <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i> (OEH, 2011). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects.</p> <p>Registered Aboriginal parties would be engaged to assist in the salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process.</p> <p>Detailed analysis and reporting of cultural material collected would be provided to the Department of Planning, Industry and Environment.</p>
AH3	Management of salvaged items	<p>Prior to construction, a targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation, including:</p> <ul style="list-style-type: none"> ▶ Wallaby Creek ▶ Ewenmar Creek ▶ Marthaguy Creek ▶ Castlereagh River ▶ Gulargambone Creek ▶ Tenandra Creek ▶ Baradine Creek ▶ Namoi River ▶ Mungery Creek ▶ Caleriwi Creek. <p>In addition, a targeted archaeological survey would be undertaken at the location of the Narromine North temporary workforce accommodation.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
		<p>The targeted survey would be undertaken with registered Aboriginal parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW, 2010b).</p> <p>Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH10).</p> <p>If additional sites or items are identified that cannot be avoided, salvage of artefacts would be undertaken prior to construction, in accordance with the salvage methodology (mitigation measure AH2).</p>
AH4	Management of salvaged items	<p>A pre-construction survey would be undertaken to confirm the locations of the previously listed AHIMS sites that could not be located during the site survey.</p> <p>Surveys would be undertaken with registered Aboriginal parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW, 2010b).</p> <p>If the sites are located, impacts would be avoided, as far as practicable, and protection measures put in place in accordance with the Aboriginal cultural heritage management plan (mitigation measure AH10).</p> <p>Any sites with the potential to be impacted would be managed in accordance with the salvage methodology (mitigation measure AH2).</p>
AH5	Impacts on PADs	<p>Detailed archaeological investigations would be undertaken at the following six PADs that may be directly impacted by the proposal:</p> <ul style="list-style-type: none"> ▶ Ewenmar Creek 27-6-0036 ▶ Castlereagh River 28-4-0280 (and associated artefact scatter) ▶ Gulargambone Creek 28-1-0060 and 28-1-0090 (and associated artefact scatter) ▶ Calga and Looking Glass creeks 28-1-0059 (and associated artefact scatter) ▶ Baradine Creek 19-5-0230. <p>Sub-surface archaeological test excavations would be undertaken to confirm the nature (and extent, if verified) of any archaeological deposits. The test excavations would be carried out in accordance with the approved methodology prepared for the proposal.</p> <p>If test excavation confirms that the PAD has heritage significance and has the potential to be impacted by the proposal, the site would be managed in consultation with Heritage NSW DPIE and registered Aboriginal parties. If salvage is required it would be managed in accordance with the agreed salvage methodology (mitigation measure AH2).</p>
AH6	Impacts on modified trees	<p>Field validation of the following modified trees would be undertaken prior to construction, in accordance with <i>Aboriginal scarred trees in New South Wales: A field manual</i> (DEC, 2005):</p> <ul style="list-style-type: none"> ▶ Backwater Cowal 35-3-0175 ▶ Ewenmar Creek 27-6-0035 ▶ Boothaguy Creek 27-6-0042, 27-6-0037 and 27-6-0041 ▶ Baronne Creek 28-1-0062, 28-1-0063 and 28-1-0064 ▶ Mungery Creek 28-1-0083, 28-1-0084, 28-1-0086 and 28-1-0087. <p>Impacts on the following modified trees those trees confirmed to be scarred trees would be avoided, as far as practicable.</p> <p>If impacts are unavoidable, the tree would be photographed and catalogued prior to removal, in consultation with the registered Aboriginal parties, by an appropriately qualified archaeologist.</p> <p>The salvaged artefacts would be managed in accordance with the salvage methodology.</p>
AH7	Impacts on modified trees	<p>The following modified trees would be protected in situ:</p> <ul style="list-style-type: none"> ▶ BCST6 (35-3-0270) ▶ Berida Road ST1 (28-4-0283). <p>During detailed design ARTC would identify opportunities to reduce or remove the need for drainage protection works in the vicinity of these trees.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
AH8	<i>Impacts on artefact scatters</i>	<p>Surface collection (salvage) of the following artefact scatters would occur prior to construction, in accordance with the approved salvage methodology:</p> <ul style="list-style-type: none"> ▶ Macquarie River 35-3-0276 ▶ Castlereagh River 28-4-0280 ▶ Gulargambone Creek 28-1-0090 and 28-1-0060 ▶ Calga and Looking Glass Creek 28-1-0059 and 28-1-0095 ▶ Noonbar Creek 28-1-0096 ▶ Baradine Creek 19-5-0226 ▶ Bohena Creek 19-6-0180. <p>Artefacts located outside the proposal site would not be salvaged and would remain in-situ.</p>
AH9	Aboriginal heritage survey of biodiversity offset sites	<p>Once biodiversity offset sites are secured (in accordance with mitigation measure BD4) an Aboriginal heritage survey of representative locations within the offset sites would be undertaken. The survey would record any evidence of Aboriginal land use occupation and identify appropriate management strategies.</p> <p>The approach to the survey, including selection of representative survey locations and reporting, would be determined in consultation with the registered Aboriginal parties.</p>
Non-Aboriginal heritage		
NAH1	<i>Impacts on non-Aboriginal heritage</i>	<p>Detailed design and construction planning would avoid direct impacts on identified items/sites of non-Aboriginal heritage significance, as far as reasonably practicable. This would include small sections of the following listed items that overlap with the proposal site:</p> <ul style="list-style-type: none"> ▶ Curban Inn site ▶ Convict Road, Baradine. <p>The location of construction compounds and associated access routes would be reviewed to ensure, as far as practicable, they are not located in areas of medium or high archaeological potential.</p>
NAH2	<i>Impacts on non-Aboriginal heritage</i>	<p>The location of the graves at the Woodvale Park Private Cemetery listed item would be confirmed by an appropriately qualified archaeologist. Once confirmed, the location would be marked on plans, fenced onsite and avoided during construction.</p>
NAH3	<i>Impacts on non-Aboriginal heritage</i>	<p>In the event that the following items are unable to be avoided, an archaeological assessment, research design and methodology would be prepared. Test excavation would be undertaken by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria:</p> <ul style="list-style-type: none"> ▶ Curban Inn site ▶ Convict Road, Baradine. <p>The archaeological assessment would be prepared in consultation with relevant stakeholders, including the local council and Heritage NSW.</p>
NAH4	<i>Heritage interpretation</i>	<p>A Heritage Interpretation Strategy for non-Aboriginal heritage would be prepared in consultation with the relevant local council and key stakeholders. This would provide a framework for interpreting the heritage items (listed and potential) impacted by the proposal, set out the key interpretative themes and identify communication strategies.</p> <p>The strategy would include interpretation requirements for specific parts of the proposal; particularly, where heritage items are proposed to be removed or archaeological sites are proposed to be excavated. These may include approaches such as interpretive signage at heritage items that have been removed or excavated, historical/artefact displays at local museums or visitor centres, and online media about heritage items and history in the vicinity of the proposal.</p> <p>The strategy would be prepared with regard to <i>Interpreting Heritage Places and Items: Guidelines</i> (NSW Heritage Office, 2005), and the NSW Heritage Council's <i>Heritage Interpretation Policy</i>.</p>
NAH5	<i>Archival recording</i>	<p>Archival photographic recording of buildings to be removed would be carried out prior to removal, in accordance with <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (Heritage Council of NSW, 2006) and <i>How to prepare archival records of heritage items</i> (NSW Heritage Office, 1998) at the following sites:</p> <ul style="list-style-type: none"> ▶ Drinane Public School (former) ▶ Corrugated iron hut with chimney <p>Two-storey barn/shed.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
NAH6	<i>Graves of the Dingwell children</i>	<p>Graves and human skeletal remains at the graves of the Dingwell children would be managed in accordance with the requirements of relevant legislation and guidelines, including the <i>Public Health Regulation 2012 (NSW)</i>, <i>Heritage Act 1977 (NSW)</i>, <i>Work Health and Safety Act 2011 (NSW)</i>, <i>NSW Health Procedures—Exhumation of human remains (NSW Health, 2013)</i>, and <i>Skeletal Remains—Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office, 1998b)</i>.</p> <p>A plan of management for exhuming and re-interring the graves would be developed in accordance with these requirements and included in the heritage management plan (mitigation measure NAH8).</p> <p>Approval for exhuming the graves would be sought in accordance with the requirements of Division 4 of Part 8 of the <i>Public Health Regulation 2012</i>. The exhumation and re-interment process would be undertaken in accordance with the terms of the approval and the exhumation plan of management.</p> <p>The exhumation plan of management would also include:</p> <p>An archaeological assessment, research design and methodology to undertake archaeological investigation during removal of the graves. The methodology would be developed and implemented by an appropriately qualified Excavation Director, in accordance with the NSW Heritage Council's Excavation Director criteria.</p> <p>Strategies for appropriate reburial, memorialisation and interpretation signage developed in consultation with appropriate stakeholders, including Heritage NSW (Department of Premier and Cabinet), Narrabri and District Historical Society, Goonabarabran History Group, Narrabri Shire Council, NSW National Parks and Wildlife Service, and direct descendants of the Dingwell family.</p>
NAH6	<i>Visual impacts at heritage items</i>	<p>The urban design and landscape plan would include vegetation screening, where practicable, to minimise visual impacts on homesteads identified as potential heritage items — ‘Kickabil’ homestead and woolshed, ‘Allandale’ homestead and ‘Digilah’ homestead.</p> <p>Opportunities to include plantings to screen the visual outlook from potential heritage homesteads would be considered during development of the urban design and landscape plan.</p>
Noise and vibration		
CNV1	<i>Construction noise and vibration impacts</i>	<p>Location and activity specific construction noise and vibration impact statements would be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, duration and timing of works, and detailed reviews of local receivers, as required.</p> <p>The statements would confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures (such as shielding plant and equipment, temporary noise barriers or provision of temporary alternative accommodation). The statements would also confirm noise and vibration auditing and monitoring requirements.</p>
CNV2	<i>Construction vibration (structural) impacts</i>	<p>Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and vibration monitoring would be carried out in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework, to ensure vibration levels remain below appropriate limits for that structure.</p>
ONV1	<i>Operation noise and vibration impacts</i>	<p>An operational noise and vibration review would be undertaken during detailed design to review the potential for operational impacts and guide the approach to identifying feasible and reasonable mitigation measures to be incorporated in the detailed design.</p>
ONV2	<i>Operation noise and vibration impacts</i>	<p>Feasible and reasonable mitigation measures would be identified where exceedances of operational noise and vibration criteria are confirmed. Measures would be identified in accordance with the outcome of the operational noise and vibration review and the Inland Rail Noise and Vibration Strategy.</p> <p>Where at-property noise treatments are identified as the preferred mitigation option, these would be developed and implemented in consultation with individual property owners.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
ONV3	<i>Operation structural vibration impacts</i>	<p>If the operational noise and vibration review indicates that vibration levels are predicted to exceed the screening criteria at sensitive receivers, a more detailed assessment of the structure would be carried out.</p> <p>For any heritage items with the potential to be affected, the detailed assessment would determine any specific sensitivities, in consultation with a heritage specialist, to ensure risks are adequately managed. If a heritage structure is found to be structurally unsound following inspection, a more conservative cosmetic damage objective (e.g. 2.5 mm/s peak component particle velocity for long-term vibration) would be considered.</p>
Traffic and transport		
TT1	<i>Impacts on existing infrastructure transport and access</i>	Detailed design and construction planning would avoid or minimise the potential for impacts on the surrounding road and transport network, and property accesses, as far as reasonably practicable.
TT2	<i>Impacts on existing infrastructure transport and access</i>	Input would be sought from relevant stakeholders (including local councils and Transport for NSW) prior to finalising the detailed design of those aspects of the proposal that affect the operation of road and other transport infrastructure under the management of these stakeholders. This would include confirming ongoing operation and maintenance arrangements for those assets under the control of other stakeholders.
TT3	<i>Road user safety at changes to the road network</i>	Road safety audits would be undertaken where changes to the road network are required, in accordance with relevant Austroads guidelines, to ensure the safety of all road users is considered in the design process.
TT4	<i>Road user safety at level crossings</i>	<p>Public Level crossings would be designed in accordance with relevant guidelines and standards, including AS 1742.7:2016 <i>Manual of uniform traffic control devices, Part 7: Railway crossings</i> and (Standards Australia, 2016), <i>Guide to Road Design Part 4: Intersections and Crossings</i> (Austroads, 2021a), Guideline: Lighting for railway crossings (Roads and Maritime Services, 2013b) and ARTC standards, including provision of warning signage, line marking and other relevant controls.</p> <p>Public level crossings with active controls would include boom gates and flashing lights.</p> <p>Where level crossings would provide access for travelling stock routes, consultation would be undertaken with Crown Lands and Local Land Services to determine appropriate controls.</p>
TT5	Road user safety at level crossings	<p>A level crossing treatment report would be prepared to document the level crossing design and assessment process that has been undertaken. The report would be developed in consultation with Transport for NSW and the relevant councils.</p> <p>The report would provide an assessment of road risks consistent with the guideline <i>Establishing a Railway Crossing Safety Management Plan</i> (Roads and Traffic Authority, 2011).</p> <p>Justification would be provided where no works are proposed on existing level crossings.</p>
Land use and property		
LP1	<i>Land use and property impacts, including severance and other impacts on operations</i>	<p>The design and construction planning would continue to be refined, to minimise potential impacts on land uses and properties, as far as reasonably practicable.</p> <p>Consultation with landholders would be ongoing to identify feasible and reasonable measures to minimise impacts on their operations/properties where practicable.</p>
LP2	<i>Acquisition and property impacts</i>	All property acquisitions would be undertaken in consultation with landowners/ landholders and in accordance with the requirements of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW). In line with the <i>Land Acquisition Act (Just Terms Compensation) Act</i> , ARTC's preference is for acquisition by agreement, where practicable.

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
LP3	<i>Acquisition and property impacts</i>	<p>During the property acquisition process, ARTC would seek to secure agreement with affected landholders, to guide property-level design requirements and the management of construction on, or immediately adjacent to, private properties.</p> <p>Each impacted property owner would be consulted to identify and understand the operational needs of their property and the activities conducted upon it, with tailored agreements prepared to document the agreed outcomes.</p> <p>The agreements may include:</p> <ul style="list-style-type: none"> ▶ Measures to minimise property impacts, including impacts on agricultural operations (mitigation measure LP5) ▶ Specific requirements to ensure that operations, including the movement of livestock and farm machinery, are able to be maintained as efficiently as possible (mitigation measure LP7) ▶ Measures to manage severance impacts as they relate to each property, where practicable, including appropriate movement arrangements (mitigation measure LP6) such as new or adjusted accesses to the public road network or internal access networks, divestment or access solutions and amalgamation opportunities ▶ Required adjustments to and/or replacement of to affected structures, such as livestock handling yards, fencing, silos, holding pens, barns, etc ▶ Assistance to reconfigure farming operations to accommodate the alteration in land use. <p>Where land is acquired, compensation would be assessed in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW) and Determination of compensation following the acquisition of a business (NSW Government, undated) and the NSW Property Acquisition Process https://www.nsw.gov.au/housing-and-construction/property-acquisition.</p> <p>Depending on the individual circumstances of each land/business owner and the proposed impacts on the land and to operations, compensation may take the form of money or land/works—as agreed by the parties.</p>
LP4	<i>Acquisition and property impacts</i>	<p>Property owners and occupants would be consulted in accordance with the communication management plan (mitigation measure SE1), to ensure that owners/occupants are informed about:</p> <ul style="list-style-type: none"> ▶ The timing and scope of activities in their area ▶ Any potential property impacts/changes, particularly in relation to potential impacts on access, services or farm operational arrangements ▶ Activities that have the potential to impact on livestock. <p>Feasible and reasonable property-specific measures would be identified in consultation with landholders, and implemented during construction, where construction is located on or immediately adjacent to private properties and has the potential to affect farm operational arrangements.</p>
LP5	<i>Impacts of construction on private properties</i>	<p>Where construction is located on, or immediately adjacent to, private properties and has the potential to affect farm operational arrangements/properties, property-specific measures would be identified and implemented, in consultation with landholders, to address identified issues where feasible and reasonable. The measures would include, as appropriate, arrangements in terms of works timing and practices; any required adjustments to fencing, access, and farm infrastructure; and relocation or compensation for any impacted structures or improvements.</p>
LP6	<i>Maintaining permanent access to properties</i>	<p>Where the proposal affects access to and from a public road, input would be sought from relevant landholders regarding alternative access arrangements prior to finalising the detailed design.</p> <p>Where any legal access to a property is permanently affected and a property has no other legal means of access, alternative access to and from a public road would be provided to an equivalent standard, where feasible and reasonable.</p> <p>Where an alternative access is not feasible or reasonable, and a property or part of a property is left with no access to a public road, consideration would be given to acquisition of the property or part of the property in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW). In accordance with the Land Acquisition Act, ARTC's preference is for acquisition by agreement, where practicable.</p> <p>Where changes to access arrangements are required for individual properties, ARTC would advise relevant property owners/occupants and consult with them in advance regarding alternative access arrangements.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
LP7	Internal access arrangements	Where the proposal affects internal property access arrangements, input would be sought from relevant landholders prior to finalising the detailed design. Where changes to internal property access arrangements are required, ARTC would consult with relevant property owners/occupants regarding alternative access arrangements and identify feasible and reasonable measures to minimise impacts on existing operational arrangements/properties. Impacts and any proposed mitigations would be taken into account at the time compensation is assessed in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991 (NSW)</i>.
LP8	<i>Impacts on Crown land</i>	The acquisition of Crown land would be undertaken in consultation with the Department of Planning, Industry and Environment, and in accordance with the requirements of the <i>Crown Lands Management Act 2016 (NSW)</i> and the <i>Land Acquisition (Just Terms Compensation) Act 1991 (NSW)</i> .
LP9	<i>Impacts on livestock</i>	The need for additional stock management infrastructure on either side of level crossings, such as forcing yards and holding pens, would be identified in consultation with the relevant landholders.
LP10	<i>Impacts on livestock</i>	Livestock fencing would be provided in agricultural areas (as required) to minimise the risk of livestock–train collisions. The preferred fencing arrangements would be confirmed in consultation with landholders.
LP11	<i>Maintenance of fencing</i>	Maintenance agreements would be established for fencing along the rail corridor where it adjoins located within private properties. The agreements would include protocols for reporting damage and arranging repairs of shared boundary fencing.
LP12	<i>Minimising impacts on travelling stock reserves</i>	Local Land Services would continue to be consulted during detailed design to confirm how impacts on travelling stock reserves would be minimised during construction and operation. Alternative access arrangements would be made, as required, subject to maintaining rail safety.
LP12		Opportunities to refine the design to avoid construction footprint impacts on travelling stock reserve R9489 “Narrabri West” would be investigated.
LP13	<i>Impacts on services and utilities</i>	The location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, would be confirmed prior to construction. This would include (as required), undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers, in accordance with the utilities management framework provided in Appendix J of the EIS .
LP14	<i>Impacts on, and construction within, State forests</i>	The Forestry Corporation of NSW would continue to be consulted in relation to: <ul style="list-style-type: none"> ▶ Those aspects of construction planning, programming, and work methodologies with the potential to affect forestry management practices ▶ Measures to minimise minimising the potential impacts on forestry management practices, including the need for exclusion zones in specific areas, where required Opportunities for beneficial reuse of forest products that would be removed during construction.
LP15	<i>Impacts on, and construction within, State forests</i>	Appropriate management measures and communication requirements for users of State forests in the vicinity of the proposal site would be defined in consultation with the Forestry Corporation of NSW and forest users.
Visual amenity		
LV1	<i>Minimising the potential for visual and landscape impacts</i>	Detailed design and construction planning would seek to minimise the construction and operation footprints, and avoid impacts on mature native vegetation, as far as reasonably practicable.

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
LV2	<i>Minimising the potential for visual and landscape impacts</i>	<p>An urban design and landscape plan would be prepared to provide a consistent approach to design and landscaping. The urban design and landscape plan would include:</p> <ul style="list-style-type: none"> ▶ Vegetation screening in strategic locations to visually mitigate impacts from new structures and rail operations, including around bridges and locations where the proposal would be visible from sensitive receivers, where the presence of screening does not impact safe rail operations ▶ Appropriate species that respond to the existing landscape character setting and environmental conditions ▶ Design guidelines to minimise the visual impacts of bridges, with consideration of the existing landscape and visual context and with regard to <i>Bridge aesthetics: design guidelines to improve the appearance of bridges in NSW</i> (Roads and Maritime Services, 2012). <p>Detailed design would be undertaken in accordance with the urban design objectives developed for the design, and the urban design and landscape plan.</p>
LV3	<i>Batter slopes in contrast with the existing landform</i>	<p>Batter slopes would be integrated into the surrounding landscape, as far as practicable.</p> <p>Appropriate slope stabilisation would be integrated into batter design to ensure successful rehabilitation and stabilisation.</p>
LV4	<i>Minimising light spill</i>	<p>Temporary and any permanent lighting would be designed and sited in accordance with AS/NZS 4282-1997 2019 Control of the Obtrusive Effects of Outdoor Lighting and Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring (Department of Planning and Environment, 2016), and in consultation with the Siding Spring Observatory Dark Sky Planning Committee.</p>
Socio-economic impacts		
SE1	<i>Social impacts, communication and engagement</i>	<p>ARTC would continue to manage and deliver program-wide community and stakeholder engagement for Inland Rail in accordance with the Inland Rail Communications and Engagement Strategy.</p> <p>A proposal-specific communication management plan would be developed, in accordance with the Inland Rail Communications and Engagement Strategy, and implemented prior to and during construction, to ensure that:</p> <ul style="list-style-type: none"> ▶ The community and key stakeholders are provided opportunities for input to the design and construction planning, where appropriate ▶ Landowners/landholders and community members with the potential to be affected by construction activities are notified in a timely manner about the timing of activities and potential for impacts, and the measures (developed in accordance with mitigation measure LP5) that would be implemented to minimise the potential for impacts on individual properties ▶ Enquiries and complaints are managed and a timely response is provided for concerns raised ▶ Accurate and accessible information is made available ▶ Feedback from the community is encouraged. ▶ opportunities for input are provided where appropriate. <p>The communication management plan would define the requirements for the complaints management system to be implemented during construction.</p>
SE2	<i>Social impacts, communication and engagement</i>	<p>The communication management plan would include measures to ensure ongoing consultation with local emergency services providers, to inform providers about the locations of level crossings, and changes to access routes and road conditions.</p>
SE3	Social impacts, communication and engagement	<p>A detailed Aboriginal community and stakeholder engagement strategy and action plan would be prepared and implemented at the commencement of the detailed design phase to require that:</p> <ul style="list-style-type: none"> ▶ Information about the proposal is shared with Aboriginal stakeholders and communities in a timely manner ▶ Strong relationships between ARTC and Aboriginal stakeholders and communities are built and maintained ▶ Local Aboriginal cultural and community values are identified and understood <p>Opportunities to reflect Aboriginal community and cultural values in infrastructure or other outcomes of the proposal are identified and implemented.</p>

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
SE4	Socio-economic impacts	A social impact management plan (SIMP) would be prepared to manage the implementation of the proposed socio-economic mitigation measures, and to detail the specific management actions and targets that would be developed in response to these measures. The SIMP would define specific actions, roles and responsibilities, and a monitoring, reporting and adaptive management framework for construction.
SE5	Socio-economic impacts	Prior to construction, ARTC would confirm workforce requirements and the associated requirements for, and availability of, support services (including health, wellbeing and emergency services) to meet the needs of the non-resident construction workforce. ARTC would develop strategies and measures to meet these needs, as far as practicable, with minimal potential impacts on the local community. The measures would be developed in consultation with local councils and service providers (including health and emergency service providers), where relevant, and would be detailed in the workforce management plan.
SE6	<i>Economic benefits and impacts on regional industries and businesses</i>	ARTC would continue to support local employment in accordance with the <i>Australian Jobs Act 2013</i> (Cth) and Australian Industry Participation National Framework, and through the Inland Rail Academy, to leverage training programs, upskill local residents and young people, and connect businesses with Inland Rail opportunities and key regional industries.
SE7	<i>Economic benefits and impacts on regional industries and businesses</i>	A proposal-specific industry participation plan would be developed and implemented to manage the potential employment and regional economic benefits of the proposal. The plan would address the requirements of the <i>Australian Jobs Act 2013</i> (Cth), the Australian Industry Participation National Framework, and the <i>Inland Rail Indigenous Participation Plan</i> (ARTC, 2019a 2020c). The industry participation plan would identify appropriate measures to achieve the objectives of the <i>Australian Jobs Act 2013</i> (Cth) and the <i>Inland Rail Indigenous Participation Plan</i> , including an achievable list of goods and services that could be subcontracted, as well as targets for local and Indigenous business participation.
SE8	<i>Impacts on the Narrabri Dirt Bike Club</i>	ARTC would continue to consult with the Narrabri Dirt Bike Club, Narrabri Council and the Department of Planning, Industry and Environment (Crown Lands) in relation to: <ul style="list-style-type: none"> ▶ The temporary and permanent land requirements at the club site ▶ The potential impacts on the club's facilities Measures to address the identified impacts.
SE-CI1	<i>Impacts on the Baradine Showground</i>	ARTC would continue to consult with the Baradine Showground Trust to manage access and temporary land requirements at the showground.
SE-CI2	<i>Temporary workforce accommodation</i>	A temporary workforce accommodation plan would be prepared to guide the design and provision of temporary accommodation. The plan would be developed in accordance with ARTC's Inland Rail Program Accommodation Principles, relevant council development codes and guidelines, and the following overarching principles: <ul style="list-style-type: none"> ▶ Temporary workforce accommodation is designed to be integrated into, and minimise the impacts on, the existing communities ▶ Temporary workforce accommodation adequately provides for occupants and has a high level of onsite amenity. ▶ The plan would define: <ul style="list-style-type: none"> ▶ The arrangement and layout of facilities to minimise amenity impacts on surrounding sensitive receivers (including noise, visual amenity, lighting and privacy) ▶ Proposed built-form heights to ensure heights are appropriate within their surrounding context ▶ Opportunities for retention of screening vegetation (where present) and provision of additional landscaping as required ▶ How services (such as water, waste, stormwater, wastewater) would be provided and managed to ensure consistency with relevant codes and guidelines, and minimise potential impacts on local infrastructure networks and the environment ▶ Location, design, service and amenity requirements for mobile accommodation facilities, including amenities for workers ▶ Provision of adequate parking onsite ▶ How sites would be decommissioned and rehabilitated consistent with the rehabilitation strategy for the proposal. The plan would be developed in consultation with relevant key stakeholders, including the relevant local council.

REF	Issue/impact	Mitigation measures—detailed design/pre-construction
Waste management		
WM1	<i>Excess waste generation</i>	Detailed design would include measures to minimise spoil generation. This would include a focus on optimising the design to minimise spoil volumes and the reuse of material onsite.
WM2	<i>Management of spoil</i>	<p>A spoil management strategy would be developed to define the preferred approach to managing spoil, including the use of spoil to rehabilitate borrow pits. The strategy would include:</p> <ul style="list-style-type: none"> ▶ Confirming spoil quantities ▶ Undertaking appropriate investigations and surveys, including geotechnical investigations ▶ Consideration of the approvals and land application of waste exemptions required, associated lead time, and any associated sampling and reporting obligations ▶ Consultation with landholders on which borrow pits are located ▶ Defining the preferred option for reusing and/or disposing of any spoil not able to be reused at borrow pits. <p>The outcomes of the strategy would inform the construction waste management plan.</p>
Sustainability		
SU1	<i>Achieving the target sustainability rating</i>	<p>A sustainability management plan would be developed to guide the proposal to achieve an 'excellent' design rating according to ISCA's Infrastructure Sustainability rating scheme.</p> <p>The sustainability management plan would incorporate sustainability objectives and targets consistent with Inland Rail program sustainability objectives and targets, roles and responsibilities, strategies for achieving the 'excellent' design rating, and review and reporting requirements.</p>
SU2	<i>Sustainable procurement</i>	Procurement would be undertaken in accordance with the <i>Inland Rail Sustainable Procurement Policy</i> (ARTC, 2020 de).
SU3	<i>Reporting</i>	Monthly sustainability reporting (and corrective action, where required) would be undertaken during detailed design in accordance with the sustainability management plan.
Climate change		
CC1	<i>Climate change risk management</i>	<p>The climate change risk assessment would continue to be refined as the design of the proposal progresses.</p> <p>The adaptation measures identified for the proposal would be reviewed and final measures would be incorporated into the design, where practicable.</p>

TABLE B-2: COMPILATION OF MITIGATION MEASURES FOR CONSTRUCTION

REF	Issue/impact	Mitigation measures—construction
Biodiversity		
BD7 BD8	<i>Biodiversity impacts</i>	<p>A biodiversity management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to protect manage biodiversity and minimise the potential for impacts during construction. The plan would be prepared in accordance with relevant legislation, guidelines and standards. The plan would include but not be limited to:</p> <ul style="list-style-type: none"> ▶ Locations and requirements for pre-clearing surveys ▶ Establishing protocols for the staged clearing of vegetation, and safe tree felling and log removal, to reduce the risk of fauna mortality ▶ Measures to avoid and minimise clearing of hollow-bearing trees, where practicable ▶ Measures relating to the provision and management of nest boxes, including reuse of hollows and monitoring protocols ▶ An unexpected finds protocol ▶ Measures to manage biosecurity risks in accordance with the <i>Biosecurity Act 2015</i> (NSW) ▶ Measures to reduce the risk of aquatic fauna mortality/injury.
BD8 BD9	<i>Biodiversity impacts</i>	<p>Pre-clearing surveys would be undertaken, prior to construction, by a suitably qualified ecologist in accordance with the biodiversity management plan. Specific surveys would include:</p> <ul style="list-style-type: none"> ▶ Surveys for roosting microbats and birds in structures and habitats that are proposed to be removed, including telegraph poles, buildings, hollow trees and bark fissures ▶ Searches for nest trees ▶ Identification of hollow-bearing trees and logs requiring fauna rescue, relocation or other management during removal ▶ Surveys for koalas, which may include trained detection dogs or other appropriate survey techniques ▶ Aquatic fauna salvage in watercourses or residual pools within 50 metres of the construction footprint, and in areas that would be enclosed by silt curtains (e.g. piling locations).
BD9 BD10	<i>Biodiversity impacts</i>	<p>Compounds and stockpile sites would be located an appropriate distance from riparian habitat to avoid indirect impacts on aquatic habitat. This includes, where practicable, a minimum of 100 metres (m) for Type 1, Class 1 watercourses, 50 m for Type 2, Class 2 and 3 watercourses, and 10 to 50 m for Type 3, Class 2 to 4 watercourses.</p> <p>Direct impacts on in-stream vegetation and native vegetation on the banks of watercourses would be avoided, as far as practicable.</p>
BD10 BD11	<i>Biodiversity impacts</i>	<p>Exclusion areas would be established and maintained around native vegetation to be retained; particularly areas of high biodiversity value adjoining the proposal site (e.g. threatened ecological communities, known threatened plant populations etc) that are located in close proximity to work areas.</p>
BD11 BD12	<i>Rehabilitation of vegetation subject to temporary disturbance</i>	<p>A rehabilitation strategy would be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas within the construction footprint that are not required as part of outside the operational footprint (such as compounds and temporary workforce accommodation). The strategy would include clear objectives for rehabilitation of native vegetation in temporary disturbances areas.</p>
BD13	Habitat linkages	<p>To improve fauna connectivity across the rail corridor, habitat linkages would be included in the rail corridor where practicable and consistent with the safe operation and maintenance of Inland Rail. Linkages would involve retaining or rehabilitating groundcovers and low shrubs, with a focus on those areas of the rail corridor within the Pilliga forests and other areas of connected vegetation. Rehabilitation or revegetation is to occur as soon as possible to minimise the lag between impact and mitigation.</p> <p>As part of construction planning, opportunities to minimise construction clearing within the rail corridor would be investigated for high value connectivity areas.</p>

REF	Issue/impact	Mitigation measures—construction
Water resources		
WR6	<i>Sedimentation and erosion management</i>	A soil and water management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts, including impacts to groundwater , during construction.
WR7	<i>Monitoring groundwater drawdown and quality</i>	<p>A groundwater monitoring program would be developed in consultation with DPE Water and implemented, as part of the soil and water management plan, to monitor potential groundwater impacts. The program would define the following in accordance with chapter 10 of Technical Report 4—Groundwater assessment:</p> <ul style="list-style-type: none"> ▶ Monitoring parameters ▶ Monitoring locations ▶ Frequency and duration of monitoring. <p>The monitoring program would include baseline monitoring to determine the water quality of groundwater from the proposed bore field bores.</p> <p>Monitoring of groundwater levels would continue following the completion of groundwater pumping and extraction until water levels recover to baseline conditions.</p> <p>A review would be undertaken six months and one year after the completion of groundwater pumping to assess the recovery rates and determine if further mitigation is required.</p>
WR8	<i>Bore field groundwater quality</i>	The quality of groundwater obtained from the proposed bore field bores would be assessed for the suitability of its intended use. Where required, treatment systems would be designed to ensure water quality does not exceed is consistent with the relevant water quality criteria from the <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> (ANZG, 2018).
WR9	<i>Impacts on existing bores</i>	Where groundwater monitoring identifies the potential for groundwater drawdown in existing bores to exceed the <i>NSW Aquifer Interference Policy</i> minimal impact considerations, make-good provisions would be triggered for those bores, in consultation with the relevant landholders and DPE Water .
WR10	<i>Proposal bore construction</i>	All bores required for the proposal would be constructed by appropriately licensed drillers in accordance with the <i>Minimum Construction Requirements for Water Bores in Australia</i> (National Uniform Drillers Licensing Committee, 2020) and the relevant requirements of each Water Sharing Plan.
WR11	<i>Works within watercourses</i>	Works within or near watercourses would be undertaken with consideration of the <i>Guidelines for watercourse crossings on waterfront land</i> (DPI, 2012) and Guidelines for controlled activities on waterfront land—Riparian corridors (NRAR, 2018) .
WR12	<i>Unforeseen water table penetration by bulk earthworks</i>	If bulk excavations unexpectedly intersect the water table, works would be halted while the potential impacts would be are assessed by a hydrogeologist and adaptive mitigation measures implemented, as required.
WR13	<i>Proposal bore fields</i>	<p>Where there is benefit to the local community, the potential for retaining bores post-construction would be considered in consultation with relevant stakeholders (e.g. local councils).</p> <p>Any approvals, operating costs and maintenance associated with retaining and using these bores would be the responsibility of the party that takes ownership.</p>
WR14	Proposal bore construction	<p>A bore field extraction plan would be prepared as part of the soil and water management plan and provided to DPE Water prior to construction of the proposed bore field bores. The plan would include information about the locations, water source, depth and proposed volumes of water take per year for the proposed bore field bores, as well as any measures proposed to minimise the potential for impacts of extracting groundwater for use as construction water.</p> <p>The plan would also provide confirmation that any applicable water sharing plan rules have been met.</p>
WR-CI3	<i>Unforeseen water table penetration by borrow pits</i>	If excavations at borrow pits B, C and/or borrow pit D intersect the water table, works would be halted while the potential impacts would be are assessed by a hydrogeologist and additional management measures implemented as required.
WR-CI4	<i>Groundwater inflow rate (borrow pits)</i>	<p>If the groundwater inflow rate at borrow pit A is higher than one mega litre per year, the inflow rate and implications would be assessed by a hydrogeologist and additional management measures implemented, as required.</p> <p>If the groundwater inflow rate at borrow pit A has the potential to exceed 3 mega litres per year, sufficient entitlement would be obtained prior to any extraction or interception.</p>

REF	Issue/impact	Mitigation measures—construction
Flooding		
FH3	Flooding impacts	Construction planning and the layout of construction work sites and compounds would be undertaken with consideration of overland flow paths and flood risk, avoiding flood liable land and flood events where practicable.
FH4	Flooding impacts	<p>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. It would also include measures to manage flood risks during construction and address flood recovery during construction.</p> <p>The plan would be developed in consultation with Transport for NSW, local councils, emergency services and key affected landholders/managers (including Forestry Corporation of NSW).</p>
FH5	Downstream watercourse stability	<p>A geomorphology monitoring program would be implemented in accordance with the soil and water management plan (mitigation measure WR6). The monitoring would observe any changes in the geomorphological stability of watercourses that may be attributable to the proposal, and inform appropriate management responses.</p> <p>The monitoring program would be developed in consultation with the Department of Planning, Industry and Environment and with reference to the <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> (ANZG, 2018).</p>
FH-C11	Flooding impacts (temporary accommodation facilities)	The Narramine South and Narrabri West temporary workforce accommodation facilities would incorporate appropriate flood protection measures, such as elevating buildings on stilts and storing hazardous materials above the flood levels that inundate these sites.
Soils and contamination		
SC7	General soil and erosion management	The soil and water management plan (mitigation measure WR6) would include erosion and sediment controls appropriate for dispersive soils.
SC8	Contamination	A contamination and hazardous materials plan would be prepared and implemented as part of the CEMP. It would include measures, processes and responsibilities to minimise the potential for contamination impacts on the local community, workers and environment, and procedures for incident management and managing unexpected contamination finds (an unexpected finds protocol).
SC9	Rehabilitation	Disturbed areas would be rehabilitated following construction, in accordance with the rehabilitation strategy (mitigation measure BD44 BD12).
Water quality		
WQ2	Discharge to surface water	Discharge to surface water would be undertaken in accordance with the environment protection licence for construction of the proposal and would consider the hydrological attributes of the receiving waterbody.
WQ3	Surface water monitoring	<p>A surface water monitoring framework would be developed and implemented as part of the soil and water management plan in the CEMP. It would identify:</p> <ul style="list-style-type: none"> ▶ Monitoring locations at discharge points and selected watercourses where works are being undertaken ▶ Monitoring parameters ▶ Frequency and duration of monitoring. <p>The monitoring framework would include the relevant water quality objectives, parameters and criteria from Technical Report 5. It would be developed in consultation with the Department of Planning, Industry and Environment, and the NSW EPA.</p>
WQ4	Dewatering of farm dams that require relocation and/or decommissioning	<p>A dam dewatering protocol would be developed as part of the soil and water management plan. It would consider:</p> <ul style="list-style-type: none"> ▶ Options for reuse of water in the dam ▶ Licensing and approval requirements, where relevant ▶ The quality and quantity of the water to be released and the location of potential discharge points of the water into watercourses, where relevant ▶ Strategies to minimise impacts on native, threatened or protected species ▶ Strategies to minimise spread of pest nuisance flora and fauna species.

REF	Issue/impact	Mitigation measures—construction
Aboriginal heritage		
AH10	<i>Protecting Aboriginal heritage and minimising impacts during construction</i>	<p>An Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage, including:</p> <ul style="list-style-type: none"> ▶ A salvage methodology (mitigation measure AH2) ▶ An unexpected finds procedure (mitigation measure AH12) ▶ Plans and installation procedures for fencing and protective coverings ▶ Induction package for construction workers and supervisors (mitigation measure AH11) ▶ Measures to protect sites close to the proposal site from inadvertent impacts ▶ Outcomes of further investigations (mitigation measures AH3 and AH4) ▶ Erosion and sediment controls in accordance with <i>Managing Urban Stormwater: Soils and construction – Volume 1</i> (Landcom, 2004) to minimise the potential for erosion impacts to Aboriginal sites located close to watercourses/drainage lines ▶ Measures to manage the potential for impacts to potential Aboriginal heritage items (including burial sites) located in sensitive landscapes (such as alluvium landscapes) ▶ Measures to minimise and mitigate potential impacts to plant species that hold medicinal and food value (guided by a cultural plant survey). <p>The plan would be prepared in consultation with registered Aboriginal parties and Heritage NSW the Department of Planning, Industry and the Environment.</p>
AH11	<i>Protecting Aboriginal heritage and minimising impacts during construction</i>	A requirement for cultural and historic heritage awareness training would be included in the Aboriginal cultural heritage management plan. Cultural heritage awareness training would be provided by an Aboriginal representative at the commencement of substantial works for the proposal.
AH12	<i>Unexpected finds</i>	An unexpected finds procedure would be developed and included in the Aboriginal cultural heritage management plan (mitigation measure AH10) to provide a consistent method for managing any unexpected Aboriginal heritage items discovered during construction, including potential heritage items or objects, and human skeletal remains. The procedure would define the requirements for managing any human skeletal remains discovered during construction in accordance with mitigation measure NAH8.
AH13	<i>Impacts on Aboriginal cultural values at Etoo Creek 19-5-0239</i>	<p>Prior to construction commencing, and once rehabilitation is complete, a smoking ceremony would be undertaken at the location of Etoo Creek 19-5-0239.</p> <p>Prior to construction commencing, the age of the culturally modified (scarred) tree would be verified by an arborist.</p>
Non-Aboriginal heritage		
NAH7	<i>Protecting non-Aboriginal heritage and minimising impacts during construction</i>	<p>A heritage management plan would be prepared and implemented as part of the CEMP. It would include measures to manage non-Aboriginal heritage and minimise the potential for impacts during construction.</p> <p>The plan would be prepared in consultation with the relevant heritage agencies (local councils) and take into account the outcomes of further investigations and surveys during detailed design.</p> <p>The heritage management plan would define a requirement for non-Aboriginal historical heritage awareness training for site workers prior to commencement of construction works. The awareness training would promote an understanding of heritage items that may be impacted during the works and the requirements of the unexpected finds procedure.</p>

REF	Issue/impact	Mitigation measures—construction
NAH8	<i>Unexpected finds including human skeletal remains</i>	<p>An unexpected finds procedure would be developed and included in the heritage management plan to provide a consistent method for managing any unexpected heritage or archaeological items and unexpected human skeletal remains.</p> <p>The procedure would define the requirements for managing any human skeletal remains discovered during construction, in accordance with relevant legislation and guidelines, including the Public Health Regulation 2012 (NSW), <i>Heritage Act 1977</i> (NSW), <i>National Parks and Wildlife Act 1974</i> (NSW), <i>Work Health and Safety Act 2011</i> (NSW), <i>Coroners Act 2009</i> (NSW), <i>NSW Health Procedures Exhumation of human remains</i> (NSW Health, 2013), and <i>Skeletal Remains—Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977</i> (NSW Heritage Office, 1998b).</p> <p>Any human skeletal remains discovered during construction would be managed in accordance with the <i>Policy Directive—Exhumation of Human Remains</i> (NSW Health, 2013) and <i>Skeletal Remains—Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977</i> (NSW Heritage Office, 1998b).</p>
NAH9	<i>Avoiding impacts on heritage items</i>	<p>The following heritage items would be fenced and marked on site plans within the CEMP as areas to be avoided during construction:</p> <ul style="list-style-type: none"> ▶ Graves within the Woodvale Park Private Cemetery ▶ Curban Inn site ▶ ‘Kickabil’ homestead and woolshed ▶ ‘Allandale’ homestead ▶ ‘Digilah’ homestead ▶ Convict road, Baradine ▶ Rocky Creek Mill site ▶ Graves within ‘The Aloes’ homestead ▶ Graves of the Dingwell children.
Noise and vibration		
CNV3	<i>Noise and vibration impacts</i>	<p>A construction noise and vibration management plan would be prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan would include measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction.</p>
CNV4	Noise and vibration impacts	<p>The Inland Rail NSW Construction Noise and Vibration Management Framework would be implemented, and the proposal would be constructed, with the aim of achieving the construction noise management levels and vibration criteria identified by the noise and vibration assessment.</p> <p>All feasible and reasonable noise and vibration measures would be implemented.</p> <p>Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the noise and vibration management plan, and the construction noise and vibration impact statements.</p> <p>Notification of impacts would be undertaken in accordance with the communication management plan for the proposal.</p>
CNV5	<i>Impacts of out-of-hours work</i>	<p>An out-of-hours work protocol would be developed to define the process for considering, approving and managing out-of-hours work, including implementation of feasible and reasonable measures and communication requirements. Measures would be aimed at proactive communication and engagement with potentially affected receivers, provision of respite periods and/or alternative accommodation for defined exceedance levels.</p> <p>All work outside the primary proposal construction hours would be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the out-of-hours work protocol.</p> <p>The protocol would provide guidance for the preparation of out-of-hours work plans for each construction work location and for key works. Out-of-hours work plans would be prepared in consultation with key stakeholders, including the NSW EPA and the community with the potential to be impacted, and incorporated into the construction noise and vibration management plan.</p>

REF	Issue/impact	Mitigation measures—construction
CNV6	Construction vibration (structural) impacts	If vibration-generating activities are conducted within 18 m of a residence, attended vibration measurements would be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. For piling, this distance is increased to 100 m. Where vibration levels are found to be unacceptable, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels.
CNV7	Construction vibration (structural) impacts	Building condition surveys would be completed before and after construction works where buildings or structures are within the minimum vibration working distances for cosmetic damage.
CNV8	Construction vibration (structural) impacts on heritage items	<p>Prior to the commencement of vibration-intensive works within the minimum working distances for cosmetic damage for heritage items, the potential for damage to the item would be assessed. Where there is potential for damage, alternative methods that generate less vibration would be investigated and substituted, where practicable.</p> <p>Where residual cosmetic damage risks remain, condition surveys would be carried out and vibration monitoring with real-time notification of exceedance would occur during the activity.</p> <p>Site activities would be modified, where practicable, to avoid exceeding the cosmetic damage criteria. Any identified vibration-related damage to the items would be rectified.</p>
CNV-CI1	Impacts of blasting at borrow pits	<p>A blast management strategy would be prepared in accordance with relevant guidelines and in consultation with the NSW EPA. The strategy would form part of the construction noise and vibration management plan and would include:</p> <ul style="list-style-type: none"> ▶ Sequencing and review of trial blasting to inform blasting ▶ Regularity of blasting ▶ Intensity of blasting ▶ Periods of relief <p>Blasting program.</p>
CNV-CI2	Impacts of blasting at borrow pits	Blasting would be undertaken during the recommended standard hours for blasting. Management measures defined by the blasting management strategy would be implemented.
Air quality		
AQ1	General air quality impacts	An air quality management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for air quality impacts on the local community and environment during construction.
AQ2	Construction activities and earthworks that may cause dust impacts	Where sensitive receivers are located within the separation distances determined for each key activity, or visible dust is generated from vehicles using unsealed access roads, road watering and/or other stabilising approaches would be implemented.
AQ-CI1	Impacts of blasting at borrow pits	Blasting would be avoided when winds in excess of 5 metres per second could carry dust towards a sensitive receiver.
Traffic and transport		
TT6	General impacts of construction on traffic, transport, access, pedestrians and cyclists.	<p>A traffic, transport and access management plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for impacts on the community and the operation of the surrounding road and transport environment during construction.</p> <p>The plan would be developed in consultation with relevant stakeholders, including local councils, Transport for NSW, Forestry Corporation of NSW, emergency services and public transport/bus operators.</p> <p>The plan would include, as appropriate, additional reasonable and feasible measures identified as an outcome of consultation (in accordance with mitigation measure TT7).</p>

REF	Issue/impact	Mitigation measures—construction
TT7		<p>Consultation with relevant stakeholders would be undertaken regularly to facilitate the efficient delivery of the proposal and to minimise impacts on road users and landholders. Stakeholders would include the relevant local council/s, bus operators, Transport for NSW, emergency services, the Forestry Corporation of NSW (in relation to access within State forests), Crown Land, Local Land Services and other affected property owners/occupants.</p> <p>The community would be notified in advance of any proposed road and pedestrian network changes through signage, the local media, and other appropriate forms of communication.</p> <p>Any Additional measures identified as an outcome of consultation would be implemented during construction, where reasonable and feasible. This would include modifying work areas, activities and construction access arrangements to address traffic flow and access issues identified by key stakeholders, where practicable.</p>
TT8	Access impacts	The community would be notified in advance of any proposed road and pedestrian network changes through signage, the local media, and other appropriate forms of communication.
TT9	Emergency vehicle access	Emergency vehicle access routes that may be impacted by the proposal would be identified, and appropriate control measures would be implemented, in consultation with the relevant emergency services providers.
TT10	Heavy vehicles damaging local roads	<p>A dilapidation survey would be undertaken of the made public roads within the proposed haulage routes, prior to and following completion of construction, and provided to the relevant road authority.</p> <p>Pavement condition monitoring would be carried out during works, as required.</p> <p>Rectification measures would be implemented as needed, during and/or following completion of construction, to address any damage caused by construction.</p>
TT-C11	Construction traffic impacts (temporary workforce accommodation)	The traffic, transport and access management plan would include measures to manage potential traffic impacts at and near temporary workforce accommodation facilities. The plan would include approved access routes and any restrictions on the use of residential streets.
Land use and property		
LP16	Biosecurity	The biodiversity management plan included in the CEMP (mitigation measure BD7 BD8) would include measures to minimise the potential for biosecurity risks during construction in accordance with the <i>Biosecurity Act 2015</i> (NSW).
LP17	Access to properties	<p>Access to individual residences, services and businesses, and for livestock, pedestrians and machinery across the rail corridor, would be maintained during construction. The traffic, transport and access plan included in the CEMP (mitigation measure TT6) would include measures to ensure that access to properties would be maintained at all times during construction.</p> <p>Where alternative access arrangements need to be made, these would be developed in consultation with affected property owners/occupants, and Local Land Services for travelling stock reserves.</p>
LP18	Access within State forests	The traffic, transport and access plan included in the CEMP (mitigation measure TT6) would include measures to ensure that access within State forests is retained to enable forestry operations to continue during construction.
LP19	Rehabilitation	<p>The rehabilitation strategy (mitigation measure BD11 BD12) would include measures to restore disturbed sites that do not form part of the operational footprint (such as compounds, temporary workforce accommodation) as close as practicable to the pre-construction condition or as agreed with the landholder.</p> <p>Rehabilitation of disturbed areas would be undertaken progressively, consistent with the rehabilitation strategy and property-level design requirements (where relevant).</p>
LP20	Water supplies for farm operations	Farm water pipelines, dams and drainage channels would be replaced or reinstated in consultation with landowners/landholders to ensure continuity of stock and domestic water supplies prior to removal of existing impacted infrastructure.
LP21	Bushfire risk in forest areas	The flood and emergency response plan (mitigation measure FH4) would include measures to minimise the potential for bushfire risks.

REF	Issue/impact	Mitigation measures—construction
Visual amenity		
LV5	<i>Visual impacts of construction compounds</i>	Construction compounds would be located, as far as practicable, within cleared areas and away from sensitive receivers. Compounds would be designed and orientated to minimise visual impacts. This would include locating areas of low visual amenity away from sensitive receivers, and erecting boundary screening around compounds, where appropriate.
LV6	<i>Protection of trees</i>	Trees to be retained would be protected, prior to the commencement of construction, in accordance with <i>AS4970-2009 Protection of trees on development sites</i> (Standards Australia, 2009).
LV7	<i>Landscape character and visual impacts</i>	Rehabilitation of disturbed areas would be undertaken progressively in accordance with the rehabilitation strategy (mitigation measure BD44 BD12) and individual property agreements (mitigation measure LP3) (where relevant).
LV8	<i>Minimising light spill</i>	Lighting of work areas, compounds, and work sites would be designed and sited in accordance with mitigation measure LV4, and oriented to minimise glare and light spill impact on adjacent receivers.
LV-C11	<i>Landscape character and visual impacts associated with (borrow pits)</i>	The borrow pits would be rehabilitated in accordance with the borrow pit rehabilitation strategy provided in Appendix K of the EIS.
LV-C12	<i>Visual impact from construction activities (temporary accommodation facilities)</i>	The temporary workforce accommodation plan (mitigation measure SE-C12) would include requirements for the design and visual screening of facilities, to minimise the potential for visual impacts, particularly where facilities are visible from sensitive receivers.
Socio-economic impacts		
SE9	<i>Social impacts, communication and engagement</i>	Key stakeholders (including local councils, emergency service providers, public transport providers, the general community and surrounding landowners/occupants) would continue to be consulted in accordance with the communication management plan. Local residents, landholders, landowners, businesses, affected social and recreation facilities and other relevant stakeholders would be notified before work starts, in accordance with the communication management plan, and be regularly informed of construction activities.
SE10	<i>Social impacts, communication and engagement</i>	Complaints during construction would be managed in accordance with the complaints management system defined by the communication management plan. The complaints management system would be maintained throughout the construction period and for a minimum of 12 months after construction finishes.
SE11	<i>Workforce management</i>	A workforce management plan would be developed and implemented during construction to manage: <ul style="list-style-type: none"> ▶ Potential impacts of the non-resident construction workforce ▶ Local business and employment opportunities ▶ Health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services. The plan would be developed in consultation with local councils and service providers, including local and regional health and emergency services providers.
SE12	<i>Local employment and training opportunities</i>	The workforce management plan would include measures to manage local employment and procurement requirements, including but not limited to: <ul style="list-style-type: none"> ▶ Recruitment, skills and training measures, including identification of skills and qualifications required, and training targets ▶ How the contractor would work with regional stakeholders to upskill local residents.

REF	Issue/impact	Mitigation measures—construction
SE13	<i>Impacts of non-resident workforce on local communities</i>	<p>The workforce management plan would include measures to manage potential impacts of the non-resident construction workforce on local and regional communities, including:</p> <ul style="list-style-type: none"> ▶ A code of conduct for workers, including a zero-tolerance policy relating to anti-social behaviour ▶ Strategies to promote wellbeing of the workforce ▶ A monitoring mechanism for use of local tourist accommodation and rental housing by workers ▶ consultation with local health and emergency services to establish Processes for managing potential increased demands due to the non-resident workforce.
SE14	<i>Temporary land requirements at the Narrabri Dirt Bike Club</i>	The area of land within the Narrabri Dirt Bike Club site, which is required during construction only, would be restored and returned to (as a minimum) the pre-existing condition.
Waste management		
WM3	<i>Construction waste management</i>	A construction waste management plan would be prepared and implemented as part of the CEMP. The plan would adopt the waste hierarchy principles contained in the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW), and detail processes, responsibilities and measures to manage waste and minimise the potential for impacts during construction.
WM4	<i>Construction waste and spoil management</i>	All waste generated would be classified in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA, 2014) and disposed of in accordance with the relevant requirements of the Protection of the Environment Operations (Waste) Regulation 2014.
Sustainability		
SU4	<i>Achieving the target sustainability rating</i>	<p>A sustainability management plan would be developed to define the measures required to be implemented achieve an 'excellent' as built rating according to the ISCA's Infrastructure Sustainability scheme.</p> <p>The sustainability management plan would incorporate Inland Rail program-aligned sustainability objectives and targets, roles and responsibilities, strategies for achieving the 'excellent' as built rating, and review and reporting requirements.</p>
SU5	<i>Reporting</i>	Monthly sustainability reporting (and corrective action where required) would be undertaken during construction, in accordance with the sustainability management plan.
Climate change		
CC2	<i>Climate change risk management</i>	The adaptation measures identified for the proposal would be reviewed, and final measures would be implemented during construction, as far as practicable.

TABLE B-3: COMPILATION OF MITIGATION MEASURES FOR OPERATION

REF	Issue/impact	Mitigation measures—operation
Biodiversity		
BD13 BD14	Weed management	Weed inspections would be undertaken and weed management would occur, in accordance with ARTC's standard operating procedures, to meet its obligations under the <i>Biosecurity Act 2015</i> (NSW).
BD14 BD15	Fauna connectivity	The operational performance of fauna connectivity measures, including impacts on fauna as a result of train operations and maintenance activities , would be monitored in accordance with the fauna connectivity strategy. This would include recording of wildlife collisions with trains. ARTC would also and monitoring the use of crossing structures by target species (including the Pilliga mouse, squirrel glider, koala, rufous bettong and eastern pygmy-possum) and feral predators. The threatened species management plans (BD6) would include appropriate adaptive management measures to address situations where fauna connectivity and population impact thresholds are exceeded. The need for additional measures or modifications to existing measures would be identified to respond to any issues identified.
BD15 BD16	Aquatic ecology	Culverts that provide for the flow of watercourses would be inspected and maintained, in accordance with ARTC's standard operating procedures, to address any issues that may contribute to the blockage of fish passage.
Soils and contamination		
SC10	Soil erosion and sedimentation	During any maintenance work where soils are exposed, sediment and erosion control devices would be installed in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> , Volume 1 (Landcom, 2004).
SC11	Contamination	ARTC's existing spill response procedures would be reviewed to determine applicability and suitability during operation. The adopted procedure would include measures to minimise the potential for impacts on the local community and the environment as a result of any leaks and spills.
Water quality		
WQ5	General water quality management	The proposal would be managed in accordance with the water quality management requirements specified in the environment protection licence.
Noise and vibration		
ONV4	Operational noise and vibration	The proposal would be operated with the aim of achieving the operational noise and vibration criteria identified by the operational noise and vibration review, the requirements of the conditions of approval, and the environment protection licence for Inland Rail.
ONV5	Operational noise and vibration	Operational noise and vibration compliance monitoring would be undertaken, once Inland Rail has commenced operation, at representative locations, to compare actual noise performance against that predicted by the operational noise and vibration review. Compliance monitoring requirements would be defined by the operational noise and vibration review. The results of monitoring would be included in an operational noise and vibration compliance report, prepared in accordance with the conditions of approval. The need for any additional feasible and reasonable mitigation measures would be identified as an outcome of the monitoring.
Air quality		
AQ3	Locomotive emissions	Locomotive emissions would be managed in accordance with the air quality management requirements specified in the rollingstock operator's environment protection licence.
AQ4	Impacts during track maintenance	Maintenance service vehicles and equipment would be maintained and operated in accordance with the manufacturer's specifications.
Traffic and transport		
TT11	Road user safety at level crossings	The operation of all level crossings constructed on classified roads as part of the proposal would be reviewed after Inland Rail commences operation to confirm that the: <ul style="list-style-type: none"> ▶ Level of protection is appropriate ▶ Proposed infrastructure is appropriate for the traffic conditions.

REF	Issue/impact	Mitigation measures—operation
TT12	Road user safety at level crossings	In accordance with National and State Rail Safety Law requirements, public road crossings would be subject to an Interface Agreement with the relevant road manager to ensure that safety risks are identified and minimised, as far as practicable, during operations.
Land use and property		
LP22	Safe scheduling	Guidance would be provided to agricultural landholders, at the commencement of operation, regarding the frequency of train movements to assist with safe scheduling of routine agricultural activities. ARTC would develop a 'Call Train Control' process to enable landowners to use levels crossings as stock crossings. Details of the 'Call Train Control' process will be provided to agricultural landholders prior to the commencement of operations.
Visual amenity		
LV9	Landscape character and visual impacts	Vegetation provided in accordance with the rehabilitation strategy (mitigation measure BD11 BD12), and urban design and landscape plan (mitigation measure LV2) would be subject to ongoing monitoring and maintenance in accordance with ARTC's standard operating procedures.
Socio-economic impacts		
SE15	Increased safety risks due to new level crossings	A rail safety awareness program would be developed and implemented prior to the operation of Inland Rail to educate the community regarding safety around trains. This would include landholders with properties that are intersected by the proposal.
Waste management		
WM5	Operational waste management	Operational waste, including general litter clean up, would be managed in accordance with ARTC's existing operational maintenance requirements and the waste hierarchy principles in the <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW).
Sustainability		
SU6	Sustainability	Prior to operation commencing, a sustainability handover plan would be prepared, and relevant initiatives would be maintained and implemented, through operational management and maintenance procedures.
Climate change		
CC3	Climate change risk management	Operational management and maintenance procedures would address potential climate change risks and adaptation measures.

APPENDIX

C

Traffic calculations

NARROMINE TO NARRABRI PROJECT REPONSE TO SUBMISSIONS



Calculations for Castlereagh Highway Level Crossing Probabilistic Assessment

The below calculations demonstrate the process undertaken to determine the 95th percentile queue length at the proposed Castlereagh Highway level crossing. A number of scenarios have been investigated including the train speed, design year, and during a typical day and a peak period during harvest season.

Key information

Typical period

109/125 vehicle movements in peak hour period (2026 and 2040 volumes, respectively)

15 per cent heavy vehicle proportion

54 per cent peak directional flow (one-way)

Harvest period

153/176 vehicle movements in peak hour period (2026 and 2040 volumes, respectively)

31 per cent heavy vehicle proportion

56 per cent peak directional flow (one-way)

Assume light vehicle length of 10 m and heavy vehicle length of 25 m

80 km/h train calculations

Train passing time: $1800 \text{ m} @ 80 \frac{\text{km}}{\text{h}} \left(22.22 \frac{\text{m}}{\text{s}} \right) = \frac{1800 \text{ m}}{22.22 \text{ m/s}} = 81 \text{ seconds}$

Vehicle queuing time:

30s (pre train warning) + 10s(post train clearance) + 81s (train passing time) = 121 seconds

115 km/h train calculations

Train passing time: $1800 \text{ m} @ 115 \frac{\text{km}}{\text{h}} \left(31.94 \frac{\text{m}}{\text{s}} \right) = \frac{1800 \text{ m}}{31.94 \text{ m/s}} = 56 \text{ seconds}$

Vehicle queuing time:

30s (pre train warning) + 10s(post train clearance) + 56s (train passing time) = 96 seconds

Summary of Results

95 percentile Queues in vehicles and length (m)

	2025 Typical	2026 Typical	2040 Typical	2026 Harvest	2040 Harvest
80 km/h train		7 vehicles/ 46 m	8 vehicles/ 52 m	9 vehicles/ 74 m	10 vehicles/ 82 m
115 km/h train	6 vehicles/ 39 m	6 vehicles/ 39 m	7 vehicles/ 46 m	8 vehicles/ 66 m	9 vehicles/ 74 m

Typical Period @ 80 km/h train speed

2026 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$$(109/3600) \times 121 \text{ seconds} = 3.7 \text{ vehicles (mean number of vehicles arriving)}$$

Probability assessment to determine the 95th percentile queue length, utilising the mean (3.7 veh) and deviation

85th percentile queue = 6 vehicles

95th percentile queue = 7 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage))

$$\text{Queue length} = 7 \times 0.54 \times (25 \times 0.15) + 10 \times (1-0.15) = 46 \text{ metres}$$

2040 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$$(125/3600) \times 121 \text{ seconds} = 4.2 \text{ vehicles (mean number of vehicles arriving)}$$

Probability assessment to determine the 95th percentile queue length, utilising the mean (4.2 veh) and deviation

85th percentile queue = 6 vehicles

95th percentile queue = 8 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage))

$$\text{Queue length} = 8 \times 0.54 \times (25 \times 0.15) + 10 \times (1-0.15) = 52 \text{ metres}$$

Harvest Period @ 80 km/h train speed

2026 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(153/3600) \times 121 \text{ seconds} = 5.1 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (5.1 veh) and deviation

85th percentile queue = 7 vehicles

95th percentile queue = 9 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $9 \times 0.56 \times (25 \times 0.31) + 10 \times (1-0.31) = 74 \text{ metres}$

2040 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(176/3600) \times 121 \text{ seconds} = 5.9 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (5.9 veh) and deviation

85th percentile queue = 8 vehicles

95th percentile queue = 10 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $10 \times 0.56 \times (25 \times 0.31) + 10 \times (1-0.31) = 82 \text{ metres}$

Typical Period @ 115 km/h train speed

2026 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(109/3600) \times 96 \text{ seconds} = 2.9 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (3.7 veh) and deviation

85th percentile queue = 5 vehicles

95th percentile queue = 6 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $6 \times 0.54 \times (25 \times 0.15) + 10 \times (1-0.15) = 39 \text{ metres}$

2040 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(125/3600) \times 96 \text{ seconds} = 3.3 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (4.2 veh) and deviation

85th percentile queue = 5 vehicles

95th percentile queue = 7 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $7 \times 0.54 \times (25 \times 0.15) + 10 \times (1-0.15) = 46 \text{ metres}$

Harvest Period @ 115 km/h train speed

2026 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(153/3600) \times 96 \text{ seconds} = 4.1 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (5.1 veh) and deviation

85th percentile queue = 6 vehicles

95th percentile queue = 8 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $8 \times 0.56 \times (25 \times 0.31) + 10 \times (1-0.31) = 66 \text{ metres}$

2040 Analysis

Expected number of vehicles arriving = peak hour volume/ 3600 x boom gate down time:

$(176/3600) \times 96 \text{ seconds} = 4.7 \text{ vehicles (mean number of vehicles arriving)}$

Probability assessment to determine the 95th percentile queue length, utilising the mean (5.9 veh) and deviation

85th percentile queue = 7 vehicles

95th percentile queue = 9 vehicles

Queue length = 95th percentile queue x one-way direction percentage x (25 m x heavy vehicle percentage) x (10 m x (1- heavy vehicle percentage)

Queue length = $9 \times 0.56 \times (25 \times 0.31) + 10 \times (1-0.31) = 74 \text{ metres}$