CHAPTER 27

Approach to mitigation and management

ARTC | INLAND RAIL
An Australian Government Initiative

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This chapter, together with Chapter 28: Justification of the proposal, provides a synthesis of the EIS for the Albury to Illabo section of the Inland Rail program (the proposal). This chapter compiles the measures proposed to minimise, manage or offset the impacts identified in the EIS. It also provides a compilation of the performance outcomes of the proposal, proposal uncertainties and the proposed approach to design refinements during future stages.

27.1 Approach to environmental management

Inland Rail operates within the broader ARTC environmental management system. ARTC manages its environmental responsibilities and environmental performance by implementing an environmental management system that is consistent with the principles contained within the International Organization for Standardization's (ISO) ISO 14000 series and standards.

The *Inland Rail Environment and Sustainability Policy* (ARTC, 2018) guides the planning, design and implementation of the Inland Rail program. It outlines the organisation's commitment to effectively manage any risks that may lead to an impact on the environment during construction and operation of Inland Rail, including the proposal.

The approach to environmental mitigation and management for the proposal involves:

- Proposal design—as described in Chapter 6: Alternatives and proposal options and Chapter 7: Proposal features and operation, the proposal incorporates measures to avoid and minimise impacts.
- Mitigation measures—as an outcome of the environmental impact assessment described in Chapters 9 to 26 of the EIS, mitigation measures have been identified to reduce or avoid potential impacts of the proposal and are consolidated in section 27.2.
- ARTC's environmental management system—would be used to manage the construction and operation of Inland Rail, including the proposal. The management system would provide the framework for implementing the construction and operation environmental management plans described below, and any conditions of other approvals, licences or permits.
- ARTC's Construction Environmental Management Framework—developed to provide for a high standard of environmental performance during construction of all Inland Rail projects.
- Inland Rail NSW Construction Noise and Vibration Management Framework—describes how ARTC proposes to manage construction noise and vibration for Inland Rail in NSW as a whole, including management measures, processes, and the approach to additional surveys and investigations, where required.
- Proposal-specific construction environmental management plan (CEMP) and an operational environmental management framework (OEMF)—prepared to guide the approach to environmental management during construction and operation, as described in Section 27.1.1. The CEMP (including sub-plans) and OEMF would:
  - outline the environmental management practices and procedures to be followed
  - document processes for demonstrating compliance with the commitments made in this EIS, the Submissions Report (the Amendment Report or Preferred Infrastructure Report to be prepared if necessary), and relevant approval conditions
  - be prepared in consultation with relevant agencies and in accordance with the *Environmental Management Plan Guideline for Infrastructure Projects* (Department of Planning, Industry and Environment (DPIE), 2020c).
- Environmental performance outcomes—establishes the intended outcomes to be achieved by the proposal. The environmental performance outcomes are provided in Section 27.4.

27.1.1 Construction environmental management approach

ARTC has developed a Construction Environmental Management Framework (CEMF) to provide for a high standard of environmental performance during construction of all Inland Rail projects. In accordance with the CEMF, a CEMP is required to be prepared for construction of the proposal. The construction environmental management approach would be staged to allow for tailoring to address specific impacts during the enabling works and main construction works associated with the proposal (refer to Figure 27-1). An overarching community and stakeholder engagement plan would be implemented to manage community and stakeholder engagement during all phases of construction.

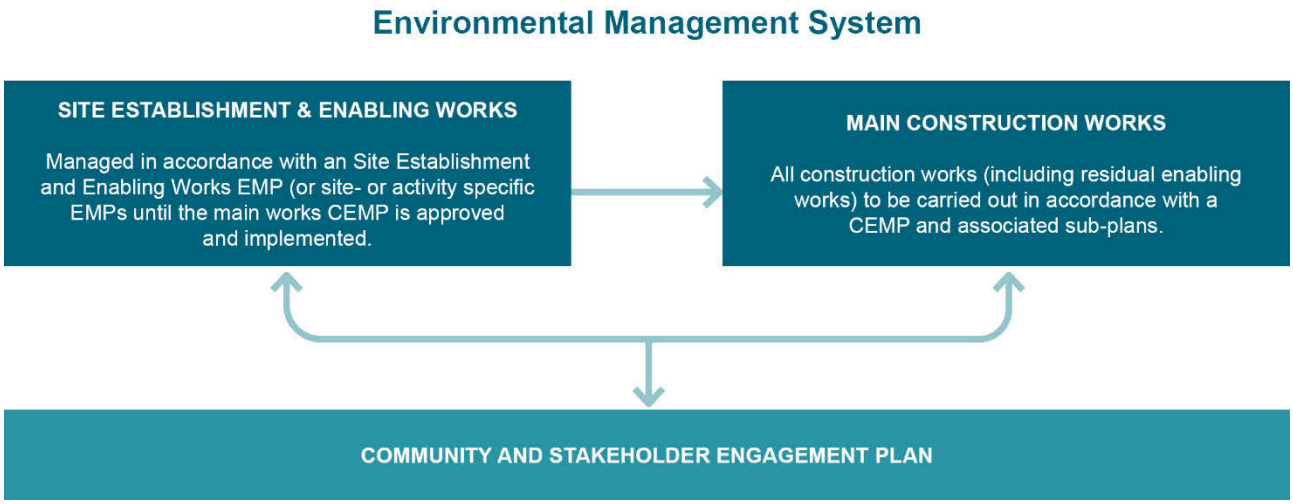

FIGURE 27-1 APPROACH TO CONSTRUCTION ENVIRONMENTAL MANAGEMENT

Site establishment and enabling works

An environmental management plan (EMP) would be prepared for site establishment and enabling works (as either site-specific or activity specific EMPs) and would be the primary management plan for these works prior to the finalisation and approval of the CEMP. Following approval of the CEMP, all works would then be undertaken in accordance with the CEMP.

The EMPs would guide the approach to environmental management during the enabling works. The enabling works EMPs would:

- detail key project information relevant to the enabling works being undertaken
- provide reference to all relevant statutory and other obligations, including consents, licences, approvals and voluntary agreements applicable to the proposal
- detail key environmental risk issues, specific mitigation measures and specific environmental performance outcomes that would apply to the enabling works as identified in the EIS
- show (using a graphical tool) where environmental controls will be located and how they will be used
- detail processes for managing incidents and non-compliance (including corrective and preventative actions)
- document processes for environmental monitoring and inspections, and compliance monitoring
- provide procedures for complaints handling and ongoing communication with the community
- identify roles and responsibilities for all personnel and contractors, and site inductions.

The site establishment and enabling works EMPs would be regularly reviewed, in response to changes, such as activities and environmental conditions, to ensure ongoing environmental management.

Main construction works

The management of environmental impacts during the main construction works would be documented in the CEMP, to be prepared by the construction contractors in collaboration with ARTC. The CEMP would provide a centralised mechanism through which all potential construction-related environmental impacts will 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.

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 for Infrastructure Projects* and the Inland Rail Construction Environmental Management Framework. The CEMP would include:

- ARTC's environmental policy, objectives, and performance targets for construction
- reference to all relevant statutory and other obligations, including consents, licences, approvals and voluntary agreements required
- management policies, procedures and review processes to assess the implementation of environmental management practices and the environmental performance of the proposal against the objective and targets
- requirements and guidelines for management in accordance with:
  - the conditions of approval for the proposal

- the mitigation measures and performance outcomes specified in this EIS
- relevant construction management guidelines
- requirements in relation to incorporating environmental protection measures and instructions in all relevant standard operating procedures and emergency response procedures
- roles and responsibilities of all personnel and contractors to be employed onsite
- incident and contingency management procedures
- processes for demonstrating compliance with the commitments made in this EIS, the submissions/preferred infrastructure report (to be prepared), and relevant approval conditions
- procedures for complaints handling and ongoing communication with the community
- a monitoring and auditing program, as defined by this EIS, and the conditions of the approval.

The CEMP would comprise a main CEMP document, issue-specific sub-plans, activity-specific procedures and strategies, and site-based control maps. The CEMP, issue-specific sub-plans, and strategies and plans proposed to manage the impacts identified in the EIS (in accordance with the mitigation measures) are shown in Figure 27-2.

An outline of the CEMP, including the required sub-plans and a guide to the general construction management measures required in each, is in Appendix H.

FIGURE 27-2 CEMP SUB-PLANS AND KEY RELATED STRATEGIES AND PLANS

27.1.2 Operational Environmental Management Framework

The OEMF for operation for the proposal would:

- describe desired outcomes and processes for the prevention and management of environmental impacts resulting from the operation of the standard-gauge ARTC network
- set out the responsibilities and accountabilities within ARTC and others in this regard
- identify key management systems that support the delivery of environmental compliance across the ARTC network.

The OEMF would include:

- a description of activities to be undertaken during operation
- an environmental risk analysis to identify the key performance issues against the environmental outcomes associated with the operation phase (see Section 27.4, noting these outcomes will be developed and adapted once the proposal is operational)
- statutory and other obligations that the proponent is required to fulfil during operation, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies
- a description of the links with ARTC's Environmental Management System, and the environment protection licence (EPL) relevant to the proposal
- overall environmental policies, guidelines and principles to be applied to operation
- roles and responsibilities for relevant employees involved in operation, including relevant environmental training and induction requirements
- incident and contingency management procedures
- details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions would be taken to address identified potential adverse environmental impacts.

27.2 Compilation of mitigation measures

Table 27-1 provide a compilation of the measures proposed to mitigate and manage the potential impacts of the proposal, as detailed in this EIS.

The measures listed may be revised in response to submissions raised during public exhibition of the EIS and/or any design changes made following exhibition. The final list of mitigation measures would be provided in the Submissions Report or Preferred Infrastructure Report, if required to be prepared. If the proposal is approved, the conditions of approval, which would include reference to the finalised mitigation measures, would guide subsequent phases of the proposal. The works would be undertaken in accordance with the conditions of approval and the final list of mitigation measures.

TABLE 27-1 COMPILATION OF MITIGATION MEASURES

Phase	Ref	Issue/impact	Mitigation measures
Detailed design/ pre-construction	TT1	Road operations	Early consultation will be undertaken with road authorities (local councils and Transport for NSW (TfNSW)) and public transport service providers for aspects of the proposal that may require changes to the road network. This includes consideration of temporary changes to signal phasing at intersections along the traffic diversion routes in Wagga Wagga during the Edmondson Road bridge closure.
Detailed design/ pre-construction	TT2	Bus services	Changes to bus routes and bus stops to mitigate impacts to bus services, including establishing temporary stops, would need to be planned in consultation with TfNSW, bus operators, and other key stakeholders, such as schools, to minimise the impact on community, public transport users and service providers.
Detailed design/ pre-construction	TT3	Emergency services	Consultation will be undertaken with emergency services to plan alternative routes that avoid the heaviest impacted areas of the road network during the Edmondson Street bridge and Kemp Street bridge closures and associated diversions to minimise travel time delay experienced by emergency service vehicles. Consultation will also be undertaken with emergency services regarding the disruption to access on the Murray River.
Detailed design/ pre-construction	TT4	Stock movements	Prior to the commencement of works, Local Land Services (LLS) will be notified of increased vehicle movements along the travelling stock reserves (TSRs) and temporary closures of any level crossings during the construction phase so that stock handlers, including walking permit holders, can be notified of the impacts to stock movements.
Detailed design/ pre-construction	TT5	Water-based transport	Restrictions on navigation of the Murray River beneath and in the vicinity of the Murray River bridge site, as result of the construction, will be planned prior to commencing construction and handled in accordance with the *Marine Safety Act 1998* (NSW). TfNSW will be notified of the proposed works and will be consulted in regard to Navigational marks, signage and marine notices.

Phase	Ref	Issue/impact	Mitigation measures
Detailed design/ pre-construction	TT6	Impacts on existing roads	Consultation with Junee Shire Council will be undertaken regarding the potential for preventative road works, prior to road diversions in Junee on Joffre Street and Pretoria Avenue, to offset impacts from higher than typical traffic and heavy vehicle movements on some local roads due to diverted traffic.
Detailed design/ pre-construction	TT7	Road safety	Development of road safety audits (RSAs) and risk assessments, prior to commencement of construction, for each enhancement site where changes to the road network are required or where increased traffic movements or diversions during the construction phase may present an increased crash risk. These will be undertaken by the contractor, and developed in accordance with the Austroads guidelines, to provide for safe movements of construction vehicles on public roads and will consider the safety of all road users. A safe system approach will be adopted to minimise harm caused to all road users through the use of appropriate road design features and speeds.
Pre-construction/ construction	TT8	Active transport connectivity	Construction staging will be planned to account for continued active transport connectivity during construction.
Pre-construction/ construction	TT9	Impacts on existing roads	Appropriate signage and warnings, including variable messaging signs, will be considered in the Construction Traffic Transport and Access Management Plans. These will be deployed as considered appropriate in the vicinity of the enhancement sites to provide early warning for road users of disruptions due to construction activities and road closures.
Construction	TT10	Road pavement	A Road Dilapidation Report will be prepared for all haul routes within each precinct. Should damage to the road occur as a result of construction, the damage will be rectified to restore the road to the pre-work condition as identified in the road dilapidation report or as otherwise agreed with the relevant road authority. Joffre Street and Pretoria Avenue will be monitored for damage during construction and any necessary repairs attended to as soon as possible.
Construction	TT11	Impacts on existing roads	Heavy vehicle diversionary signage will be implemented to encourage the diversion of heavy vehicle traffic outside of Junee on the existing heavy vehicle routes via Goldfields Way and Old Junee Road during closure of the Kemp Street bridge.
Construction	TT12	Access	Communication with relevant stakeholders will be undertaken regularly to minimise congestion and inconvenience to road users in areas affected by diversions, such as during the works for the replacement of the Edmondson Street bridge in Wagga Wagga and Kemp Street bridge in Junee, or level crossing closures (including full or partial closure). Stakeholders will include the relevant local council, bus operators, state government departments, emergency services and affected property owners/occupants. The community will be notified in advance of pedestrian bridge closures and any proposed road or pedestrian network closures and diversions through signage, the local media and other appropriate forms of communication. Appropriate wayfinding signage for road and pedestrian diversions will be provided, clearly articulating alternative routes. Consultation would also discuss opportunities for broader diversions away from congested roads. Additional measures identified as an outcome of consultation will be implemented during construction, where practicable.
Pre-construction /construction	TT13	Road operations	The construction access off Cheshire Street to the Pearson bridge enhancement site and Chaston Street to Wagga Wagga Station and surrounds will be designated a left in, left out turning movement only, to limit any performance or safety impacts to the surrounding road network.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction /construction	TT14	Access	Where changes to access arrangements to businesses and residences are required as part of the proposal construction activities, ARTC will advise property owners/occupants and consult with them in advance regarding temporary disruption to existing accesses. Temporary changes to access arrangements during construction will include (but not be limited to): ▸ Edmondson Street bridge ▸ Wagga Wagga Station and surrounds ▸ Kemp Street bridge.
Pre-construction /construction	TT15	Seasonal/agricultural impacts	Special consideration would be given to enhancement sites that are located on land with agricultural storage or transportation infrastructure, such as grain silos, due to the high localised seasonal freight movements accessing them. Detailed assessment of the site accesses will be undertaken as part of the RSAs and appropriate Construction Traffic Transport and Access Management Plans will be developed by the contractor, in consultation with the site operator, prior to commencement of construction activities on site to moderate any potential safety issues.
Detailed design/pre-construction/construction	TT16	Active transport integration	ARTC will continue to work with Wagga Wagga City Council on the integration of the new Cassidy Parade pedestrian bridge to align and minimise impacts to the Wagga Wagga Active Travel Plan. Further work with Wagga Wagga City Council and Junee Shire Council will pursue and adopt an alternative design that will provide DDA-compliant access for pedestrians at Edmondson Street bridge and Kemp Street bridge.
Operation	TT17	Level crossing safety	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 in order to identify and minimise safety risks as far as practicable during operations.
Operation	TT18	Level crossing safety	Opportunities to consolidate low-use level crossings will be progressed with key stakeholders as per the TfNSW Level crossing closures policy (TfNSW, n.d.) where appropriate. Any closures will be progressed in accordance with the requirements of the Transport Administration Act 1988 (NSW).
Operation	TT19	Parking	All parking impacted by the construction phase will be re-instated and lines remarked to previous condition or better, where necessary, with the exception of Albury Station pedestrian bridge enhancement site and Wagga Wagga Station pedestrian bridge enhancement site. At the Albury Station pedestrian bridge enhancement site, two parking spaces will not be re-instated after construction. These parking spaces will make way for a new DDA-compliant ramp. Engagement with TfNSW will be ongoing through subsequent design stages to investigate opportunities to ameliorate residual impacts to parking. At the Wagga Wagga Station pedestrian bridge enhancement site, three private parking spaces will not be re-instated after construction. Opportunities to reinstate the three parking spaces under the ramp would be investigated during detailed design.
Pre-construction, construction	AH1	Avoiding inadvertent impacts	A2I-1 and A2I-2 will be marked on the environmental control maps, site plans, and avoided. Prior to the commencement of construction, the location of A21-2 will be inspected by a suitability qualified person to reconfirm location and to demarcate the exclusion measures (such as fencing).
Pre-construction, construction	AH2	Avoiding inadvertent impacts	Grading of the section of Townsend Street will be limited to the existing disturbed area of the unformed road. Controls will be implemented to exclude use of areas adjacent to the unformed road. Prior to the commencement of construction at the Murray River bridge enhancement site, the section of Townsend Street that requires grading will be inspected by a suitably qualified person, and the A2I Registered Aboriginal Parties (RAP) to confirm the absence of Aboriginal objects. If any Aboriginal objects are found, the heritage unexpected finds protocol will be implemented.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction, construction	AH3	Avoiding inadvertent impacts	Cultural and historic heritage awareness training will be carried out for all personnel working on the proposal. This training will provide information on known heritage site and places, along with specific requirements to avoid impacts and the heritage unexpected finds protocol (UFP).
Construction	AH4	Unexpected finds	In the event of an unexpected find, the following protocol will apply: ▸ all ground disturbance work in the vicinity of the find must cease immediately ▸ the project manager must contact a suitably qualified heritage specialist to inspect the find, and to determine the need for further investigation or management ▸ if the find is an Aboriginal object, the project manager and/or heritage specialist will contact the RAPs to attend the site to inspect the find and to determine, in consultation, the next steps for management ▸ the project manager and/or heritage specialist will also contact Heritage NSW to confirm the next steps for management ▸ ground disturbance work in the vicinity of the find can only continue under supervision of a suitably qualified heritage specialist, having regard to any advice from Heritage NSW and RAPs. In the event that the unexpected find Is human skeletal material: ▸ all ground disturbance work in the vicinity of the find must cease immediately ▸ the project manager must contact NSW Police ▸ if the skeletal materials are found to be Aboriginal and historical in nature, the project manager should contact a suitably qualified heritage specialist, the RAPs and Heritage NSW to inspect the find and to confirm a course of action for ongoing management. The heritage unexpected finds protocol will be included in the heritage sub-plan of the CEMP.
Detailed design	NAH1	Alteration of heritage items	The condition of the original top bracing framework of the Albury rail bridge over the Murray River (SHR 01020) would be investigated during detailed design to determine if this material can be re-purposed in the modified structure. If this cannot be re-purposed, a suitably qualified heritage professional would be consulted concerning the design and installation of the new bracing framework, to ensure that it is appropriate to the existing fabric and style of the bridge.
Detailed design	NAH2	Demolition or alteration of heritage items	The relocation of signal box 1a in the Albury Railway Station and Yard (SHR 01073) would be investigated during detailed design and documented through a Statement of Heritage Impact (SOHI). If practicable, the new location will be identified in consultation with a heritage specialist and positioned in the yard so that it maintains its proximity and visual relationship with the Albury Railway Station, signal box 1b, and tracks.
Pre-construction	NAH3	Demolition or alteration of heritage items	Where possible, the gifting of elements of the following items for the purpose of reuse elsewhere would be investigated with the relevant council prior to removal: ▸ pedestrian bridge at Culcairn Railway Station and Yard Group (SHR 01126) ▸ pedestrian bridge at Junee Railway Station, Yard and Locomotive Depot Group pedestrian bridge (SHR 01173). The gifting will be subject to the relevant council making appropriate arrangements to receive and site the elements of the pedestrian bridge
Detailed design	NAH4	Demolition or alteration of heritage items	The re-purposing of salvaged materials within the design of new road bridges for the following unregistered potential heritage items would be investigated during detailed design: ▸ Edmondson Street bridge—red brick ▸ Kemp Street bridge—red brick and street lights.

Phase	Ref	Issue/impact	Mitigation measures
Detailed design	NAH5	Demolition or alteration of heritage items	Detailed design and construction planning will seek to identify refinements that further minimise impacts on heritage items and areas of archaeological potential as far as reasonably practicable. This includes: ▸ remnant broad-gauge railway track archaeological sites in the Albury Railway Station and Yard Group (SHR 01073) ▸ the Yerong Creek Railway Station archaeological site.
Detailed design	NAH6	Heritage interpretation	A heritage interpretation strategy for non-Aboriginal heritage will be prepared. This will provide a framework for interpreting the heritage items (listed and unregistered potential heritage items) impacted by the proposal, set out the key interpretative themes and identify communication strategies. The strategy will include interpretation requirements for specific parts of the proposal, and incorporation into the urban design of the new structures, particularly where heritage items are proposed to be removed or archaeological sites are proposed to be excavated. This includes: ▸ new structural components at the Albury rail bridge over the Murray River (SHR 01020) ▸ new pedestrian bridge in the Albury Railway Station and Yard Group (SHR 01073) ▸ removed pedestrian bridge in the Culcairn Railway Station and Yard Group (SHR 01126) ▸ new pedestrian bridge at the Cassidy Parade and Brookong Avenue site ▸ new Edmondson Street bridge ▸ new pedestrian bridge in the Wagga Wagga Railway Station and Yard Group (SHR 01173) ▸ new Kemp Street bridge ▸ removed pedestrian bridge in the Junee Railway Station, Yard and Locomotive Depot Group (SHR 01173). 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. The strategy will be prepared with regard to *Interpreting Heritage Places and Items: Guidelines* (NSW Heritage Office, 2005a), and the NSW Heritage Council's *Heritage Interpretation Policy* (NSW Heritage Office, 2005b).

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction	NAH7	Demolition or alteration of heritage items	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, 1998a) at the following sites: ▸ Murray River bridge (known as Albury rail bridge over the Murray River (SHR 01020)) (SHR 01020) ▸ external lever system adjacent to the North Signal Hut in the Albury Railway Station and Yard Group (SHR 01073) ▸ pedestrian bridge in the Albury Railway Station and Yard Group (SHR 01073) ▸ signal box 1a in Albury Railway Station and Yard Group (SHR 01073) ▸ slewed track in the Albury Railway Station and Yard Group (SHR 01073) ▸ pedestrian bridge in the Culcairn Railway Station and Yard Group (SHR 01126) ▸ slewed track in the Culcairn Railway Station and Yard Group (SHR 01126) ▸ slewed track in the Henty Railway Station and Yard Group (SHR 01169) ▸ Cassidy Parade and Brookong Avenue footbridge (ARTC s170 ID 4280661) ▸ Edmondson Street bridge in the Wagga Wagga conservation area (Wagga Wagga LEP 2010) ▸ Wagga Wagga (mothers) footbridge in the Wagga Wagga Railway Station and Yard Group (SHR 01173) ▸ slewed track in the Wagga Wagga Railway Station and Yard Group (SHR 01173) ▸ slewed track in the Bomen Railway Station (SHR 01093) ▸ Kemp Street bridge ▸ pedestrian bridge in the Junee Railway Station, Yard, and Locomotive Depot (SHR 01173).
Pre-construction	NAH8	Disturbance of archaeological material	Where impacts cannot be avoided on areas of archaeological potential, test excavation will be carried out prior to the commencement of works that disturb these areas, in accordance with the archaeological research design. Test excavation will be carried out by an appropriately qualified excavation director, in accordance with the NSW Heritage Council's excavation director criteria. This applies to: ▸ remnant broad-gauge railway track archaeological sites in the Albury Railway Station and Yard Group (SHR 01073) ▸ the Yerong Creek Railway Station archaeological site. If the remains are found to be extensive and/or highly significant, they would be salvaged through further excavation.
Construction	NAH9	Impact to built heritage	The temporary work platforms will be attached to the Murray River bridge in a manner that avoids permanent damage to the fabric of the structure, following the removal of the platforms.
Construction	NAH10	Accidental impact	Exclusion zones for retained heritage items or structures within the proposal site will be marked on the environmental control maps, site plans, and avoided. Prior to the commencement of construction, retained heritage items will be inspected by a suitably qualified person to demarcate the exclusion measures (such as fencing). Items vulnerable to vibration or damage associated with the Junee Railway Station Moveable Relics (SHR 01172) would be temporarily relocated, or alternative measures implemented, to avoid impact. Exclusion measures would be inspected regularly during construction to ensure protection of these heritage items.

Phase	Ref	Issue/impact	Mitigation measures
Construction	NAH11	Unexpected finds	If at any time during the proposed works, any items of potential historical heritage significance or human remains are discovered they will be managed in accordance with the heritage unexpected finds protocol. The heritage unexpected finds protocol will be included in the heritage sub-plan of the CEMP and would detail notification obligations to the NSW Police and Heritage NSW according to the nature of the unexpected find.
Detailed design/ pre-construction	LP1	Land use and property impacts, including impacts on operations	Final property requirements for the proposal will be confirmed during design and construction planning. The final temporary or permanent footprint will be refined to minimise potential impacts on land uses and properties as far as reasonably practicable. Consultation with landowners will be ongoing to identify opportunities to minimise impacts on their operations, where practicable.
Detailed design/ pre-construction	LP2	Property impacts	Wherever possible, the occupation of private land will be by negotiated agreement—consistent with the objectives of the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW). Where agreement cannot be reached, the compulsory land acquisition process will be followed. Any compulsory acquisition process will not commence until after making a genuine attempt to reach an agreement with each private landowner for a minimum of six months (post issue of the opening letter).
Pre-construction /construction	LP3	Property impacts	ARTC (or the appointed construction contractor) will enter into a lease or other secure agreement with landowners where temporary use of private property is required. This will guide the management of construction on private properties. This may include agreements on measures to minimise property impacts or adjoining operations, required adjustments to structures, or restoration requirements.
Pre-construction /construction	LP4	Property impacts	Property landowners and occupants will be consulted in accordance with the communication management plan to ensure these parties are informed about: ▸ timing and scope of activities in the area ▸ potential property impacts/changes, particularly in relation to impacts on access, fencing or services ▸ activities that have the potential to impact the use of the property.
Pre-construction /construction	LP5	Access impacts	Where temporary changes to access arrangements or where adjustments to internal access roads are required for individual properties, ARTC will advise relevant property owners/occupants and consult with them in advance regarding alternative access arrangements.
Detailed design/ pre-construction	LP6	Impacts on services and utilities	The location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, will be confirmed prior to construction. This will include (as required), undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers.
Construction	LP7	Land disturbance	Areas temporarily leased for construction will be restored to a condition as set out in leases or other arrangements with the landowner. Rehabilitation of disturbed areas will be undertaken progressively.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction /construction	SI1	Workforce management	A workforce management plan will be implemented to manage local and Indigenous employment opportunities and to manage the interaction between the non-resident workforce with the community. The workforce management plan will include: ▸ identification of local skills gaps and potential workforce skills and training requirements, and establish how the contractor will use the Inland Rail Skills Academy to achieve its training objectives ▸ employment targets for local and regional residents, Indigenous people, women, under 25-year-old participation and trade related positions ▸ strategies for maximising local training and employment opportunities for residents ▸ a localised communication and engagement strategy to raise awareness of opportunities to gain employment and training ▸ manage health and wellbeing services needs of the temporary construction workforce, including medical, allied health and wellbeing services ▸ consultation with councils, local health and emergency services to establish processes for managing potential increased demand due to non-resident workforce, if required ▸ a code of conduct and strategies to promote workforce wellbeing ▸ liaison with ARTC to identify potential opportunities to provide, where possible, the continuation of employment to maximise worker retention from subsequent Inland Rail projects ▸ monitor regional infrastructure projects to pre-emptively identify potential constraints in labour markets
Construction	SI2	Workforce management	Volunteering program will be implemented to encourage community cohesion between the local community and non-resident workforce through activities facilitated by ARTC.
Pre-construction/ construction	SI3	Local business and industry content	A local and Indigenous industry participation plan will be implemented, which: ▸ identifies the capacity of local and Indigenous businesses suitable to supply the proposal ▸ sets out procurement targets and identifies methods for preparing suppliers to be ready for potential demand ▸ liaise with business development and industry support groups and the Wagga Wagga and Albury LALCs to understand the capacity of local and Indigenous business to engage in business with the proposal ▸ promotes the Inland Rail website and supplier portal to businesses in the region ▸ delivers business capacity workshops to address contract requirements and meet-the-contractor events for local and/or Indigenous businesses.
Pre-construction/ construction	SI4	Local business and industry content	Business and service providers whose access and/or properties will be impacted during construction will be engaged to: ▸ agree on feasible and reasonable property-specific measures ▸ maintain active communication with landowners and residents adjacent to enhancement sites to inform any changes on construction schedule and receive feedback about the effectiveness of measures in place.
Operation	SI5	Local business and industry content	ARTC will promote the use of Inland Rail for local businesses to reach markets elsewhere in Australia, through social investment programs that foster innovation and business growth.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction/ Construction	SI6	Housing and accommodation	A workforce accommodation plan will be implemented to address the potential shortages of accommodation for temporary workforce. The plan will: ▸ prioritise the use of temporary local accommodation ▸ avoid the use of private rental housing accommodation during workforce peak periods (possession) ▸ consider combined strategies to mitigate shortages of accommodation ▸ outline transport arrangement of workers to and from works site daily ▸ include a monitoring and management mechanism to identify the capacity of local short-term accommodation and rental housing. If accommodation supply constraints become apparent, amendments will be done to the workforce housing and accommodation plan appropriately.
Pre-construction/ construction	SI7	Health and community wellbeing	A community health and wellbeing plan will be implemented to identify strategies to promote community wellbeing, local support mechanisms, and communications and engagement activities to directly support health and wellbeing. The plan will: ▸ identify those residents within 1 kilometre (km) of enhancement sites who are more prone to experience stress and wellbeing issues due to construction activities ▸ partner with local support mechanisms/services to provide information and support to residents who report wellbeing issues, and establish approaches to adaptively manage support measures on a case-by-case basis ▸ liaise with local Indigenous services and community service providers to identify potential increases in health service demand that may be as a result of the proposal's amenity changes ▸ outline measures to address changes in access for vulnerable community members across the rail corridor at Junee and Wagga Wagga as a result of bridge replacement works ▸ promote road and rail safety during construction and operation, including school-based education programs for schools in the local study area, and culturally appropriate approaches to rail safety education and awareness campaigns for Indigenous communities ▸ address privacy and safety concerns of residents adjacent to Cassidy Parade pedestrian bridge enhancement site, Wagga Wagga Station pedestrian bridge and Kemp Street bridge ▸ ARTC will work with the Wagga Wagga and Albury LALCs and the local Aboriginal community to investigate opportunities to incorporate Aboriginal aspirations and connection to Country design principles into the proposal.
Operation	SI8	Cultural values and community identity	ARTC will explore with the local community, including relevant Indigenous groups, ways to enhance aesthetic value, cultural heritage, and community identity and cohesion across the social locality through a community investment program.
Detailed design/pre-construction	SI9	Way of life	Prior to closure of the Kemp Street bridge, ARTC will investigate opportunities to reduce the duration of level crossing closures on the Olympic Highway, Junee.
Pre-construction/ construction	SI10	Community and stakeholder engagement	ARTC will oversee the preparation and implementation of a proposal-specific communication management plan, which would include: ▸ the appointment of a dedicated community and landowner liaison officer ▸ communications action plans tailored to each stage of the construction program that focus on awareness and preparedness for upcoming impacts, with special attention to most vulnerable groups at each precinct ▸ targeted engagement for residents who may experience cumulative impacts ▸ engagement with the LALCs to incorporate local Indigenous community knowledge into engagement practices.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction/ Construction	SI11	Social impact	A comprehensive social impact management plan (SIMP) will be finalised through consultation with key stakeholders to manage and monitor the implementation of the proposed social and economic mitigation measures. The SIMP would review and refine the proposed monitoring and reporting framework presented in this report on an ongoing basis.
Operation	SI12	Community and stakeholder engagement	ARTC will develop an operations communication and engagement plan that builds community awareness of the rail corridor's operational characteristics, including information on level crossing operations, likely daily train movements and ARTC's ongoing role after construction. ARTC will continue to monitor and inform the community about ways for people to be informed about the time of day in which trains may be passing through a level crossing to facilitate access and movement around the town.
Detailed design/ pre-construction	NV1	Managing the potential for construction noise and vibration impacts	Location and activity-specific construction noise and vibration review will be prepared based on a more detailed understanding of the construction methods, including the size and type of construction equipment, construction traffic, duration and timing of works, and detailed reviews of local receivers as required. The plan will confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures. The statements will also confirm noise and vibration auditing and monitoring requirements.
Pre-construction /construction	NV2	Minimising the potential for construction vibration (structural) impacts	Condition surveys will be completed before and after construction works where buildings or structures, utilities or road infrastructure are within the minimum vibration working distances.
Detailed design	NV3	Minimising the potential for operational noise and vibration impacts	An operational noise and vibration review will 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. This will be informed, where applicable, by further investigations of internal noise levels, building layout and building condition, to confirm noise trigger exceedances and required mitigation responses.
Detailed design	NV4	Minimising the potential for operational noise impacts	Feasible and reasonable mitigation measures will be identified where exceedances of operational noise and vibration triggers are identified in accordance with the NSW RING Guideline. Measures will 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 will be developed in consultation with individual property owners.
Pre-construction/ construction	NV5	Managing the potential for noise and vibration impacts during construction	A construction noise and vibration management plan (CNVMP) will be prepared and implemented as part of the CEMP, in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework. The plan will outline measures, processes and responsibilities to manage and monitor noise and vibration, and minimise the potential for impacts during construction. This plan will include: ▸ construction noise and vibration criteria for the proposal ▸ the location of sensitive receivers ▸ specific management measures for activities that could exceed the construction noise and vibration criteria ▸ OOH protocol ▸ procedures for monitoring noise and vibration levels during construction ▸ community and stakeholder engagement measures in accordance with the communication management plan.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction/ construction	NV6	Managing the potential for noise and vibration impacts during construction	The proposal will be constructed, with the aim of achieving the applicable construction noise management levels and vibration criteria. All feasible and reasonable noise and vibration measures will be implemented. Any activities that could exceed the construction noise management levels and vibration criteria will be identified and managed in accordance with the framework, the CNVMP, and the construction noise and vibration impact statements. Notification of impacts will be undertaken in accordance with the communication management plan for the proposal.
Pre-construction/ construction	NV7	Managing the potential for noise and vibration impacts during construction	In consultation with contractors and suppliers, aim to source plant and equipment with the lowest available noise and vibration emissions that can practically complete the works. This will include consideration of minimising the use of equipment that generates impulsive, tonal or irregular noise.
Construction	NV8	Impacts of OOH work	An OOH work protocol will be developed as part of the CNVMP to define the process for considering, approving and managing OOH work, including implementation of feasible and reasonable measures and communication requirements. Measures will 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 will be undertaken in accordance with the Inland Rail NSW Construction Noise and Vibration Management Framework and in accordance with the OOH work protocol. The protocol will provide guidance for the preparation of OOH work plans for each construction work location and for key works. OOH work plans will be prepared in consultation with key stakeholders (including the NSW Environment Protection Authority (EPA)) and the community, and incorporated into the CNVMP. Respite will be considered in accordance with section 3.2.2 of the Inland Rail NSW Construction Noise and Vibration Management Framework.
Construction	NV9	Impacts of OOH work	Where reasonable and feasible, deliveries should be undertaken only during standard daytime construction hours.
Pre-construction/ construction	NV10	Minimising the potential for construction vibration (structural) impacts	Where vibration levels are predicted to exceed the screening criteria, and following the condition survey, the potential for damage to the item will be assessed. Where there is potential for damage, alternative methods that generate less vibration will be investigated and substituted, where practicable. Where residual damage risks remain, attended vibration measurements will be undertaken at the commencement of vibration-generating activities to confirm that structural vibration limits are within the acceptable range. Site activities will be modified where practicable to avoid exceeding the applicable criteria. Any identified vibration-related damage to the items will be rectified.
Operation	NV11	Operational noise and vibration	The proposal will 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 EPL.
Operation	NV12	Operational noise and vibration	Operational noise and vibration compliance monitoring will 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 will be defined by the operational noise and vibration review. The results of monitoring will 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 will be identified as an outcome of the monitoring.

Phase	Ref	Issue/impact	Mitigation measures
Detailed design/ pre-construction	BD1	Avoiding impacts on biodiversity	Detailed design and construction planning will seek to identify refinements that further avoid or minimise the need to further impact or disturb native vegetation, fauna habitat and riparian habitat.
Detailed design/ pre-construction	BD2	Connectivity and fauna passage	During detailed design, provision of one glider pole on each side of the rail corridor will be further investigated to enhance habitat connection between patches of remnant vegetation for squirrel glider at the Billy Hughes bridge enhancement site.
Detailed design/ pre-construction	BD3	Connectivity and fauna passage	A regional connectivity strategy will be prepared and implemented with reference to the Fauna Design Guidelines for the Inland Rail Project (2021) to consider further enhancements, including beyond the proposal site.
Detailed design/pre-construction/ construction	BD4	Fish passage	Fish passage will be maintained at Jeralgambeth Creek (Junee to Illabo clearances).
Pre-construction/ construction	BD5	Avoidance of fauna impacts	Pre-clearance surveys will be carried out prior to construction by a suitability qualified ecologist in accordance with the biodiversity management sub-plan. This would include: ▸ inspections of structures that provide potential microbat habitat. If bats are identified roosting in these structures, individuals will be excluded from this habitat (meaning bats can exit the habitat unharmed during their nocturnal activity period but not re-enter) ▸ native aquatic fauna salvage in watercourses of residual pools directly impacted by construction. All salvaged aquatic fauna will be relocated to similar habitat nearby.
Pre-construction/ construction	BD6	Managing the potential for biodiversity impacts during construction	Exclusion areas will be established and maintained around native vegetation and riparian vegetation to be retained, particularly areas of biodiversity value adjoining the proposal site that are located in close proximity to work areas.
Pre-construction/ construction	BD7	Managing the potential for biodiversity impacts during construction	Construction workforce will be supplied with sensitive area maps (showing clearing boundaries and exclusion zones), including updates as required.
Construction	BD8	Riparian vegetation and aquatic habitats	Activities within vegetated riparian zones will be managed to minimise impacts to aquatic environments as far as practicable. Riparian areas subject to disturbance will be progressively stabilised and rehabilitated.
Construction	BD9	Sloane's froglet	Temporary frog exclusion fencing will be considered where construction compounds/laydown areas occur adjacent to potential Sloane's froglet breeding habitat.
Construction	BD10	Instream impacts	Instream works at Sandy Creek (Uranquinty Yard clearances) and Jeralgambeth Creek (Junee to Illabo clearances) will be undertaken in dry conditions as far as practicable. Where works cannot be conducted in the dry, appropriate erosion and sediment control would be installed (i.e. a silt curtain or sediment boom around the work area and attached to the same side of the bank to maintain fish passage). Appropriate erosion and sediment control will be installed and maintained. Aquatic habitat will be returned to pre-works condition (or better) in accordance with the rehabilitation strategy.
Construction	BD11	Instream impacts	Any instream habitat features (woody debris, large rocks and boulders) at the temporary creek crossing location at Sandy Creek (Uranquinty Yard clearances) is to be removed and placed up or downstream of the construction area in consultation with a suitably qualified aquatic ecologist. Any such aquatic features will be reinstated within the watercourse at the completion of construction.
Construction	BD12	Unexpected finds (biodiversity)	A species UFP will be implemented if TECs, flora and fauna species, not assessed in the biodiversity assessment, are identified in the proposal site. This will include stop work orders in the immediate area and notifying the Department of Planning and Environment (DPE).

Phase	Ref	Issue/impact	Mitigation measures
Construction and operation	BD13	Instream impacts	Refuelling will be conducted outside of waterfront land, so far as it practicable, with appropriate measures in place to avoid impacts to waterways, aquatic habitats and groundwater. This includes spill kits always kept with maintenance vehicles and or machinery within 100 m of a watercourse.
Operation	BD14	Fish-passage impacts	Instream structures (bridges and culverts) that provide for the flow of watercourses will be inspected and maintained during routine track inspections to address any issues that may contribute to the blockage of fish passage.
Detailed design/pre-construction	LV1	Landscape and visual impact	Detailed design and construction planning will seek to further minimise the construction and operation footprints to avoid impacts on mature vegetation, as far as reasonably practicable.
Detailed design/pre-construction	LV2	Landscape and visual impact	An urban design and landscape plan will be prepared to provide a consistent approach to design, landscaping and landform rehabilitation. The urban design and landscape plan would include: ▸ vegetation screening in strategic locations to minimise 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 ▸ integration of batter slopes into the surrounding landscape, as far as practicable, and inclusion of appropriate slope stabilisation measures to ensure successful rehabilitation and slope stability ▸ appropriate treatment of cuttings to minimise the need for shotcrete, and use of appropriate urban design finishes where shotcrete is unavoidable ▸ appropriate species that respond to the existing landscape character setting and environmental conditions ▸ design guidelines to minimise the visual impacts of infrastructure, with consideration of the existing landscape and visual context. Detailed design will be undertaken in accordance with the urban design objectives developed for the design, and the urban design and landscape plan.
Detailed design/pre-construction	LV3	Landscape and visual impact	The final urban design treatments and landscaping at Kildare Street Park (Wagga Wagga) and Endeavour Park (Junee) will be identified in consultation with the relevant council and informed by community consultation. This includes park embellishments where possible. Where possible, these improvements will provide screening of rail corridor and enhance local landscape character.
Detailed design/pre-construction	LV4	Landscape and visual impact	Detailed design of the new road and pedestrian bridges will have regard to *Bridge aesthetics: design guideline to improve the appearance of bridges in NSW* (TfNSW, 2019a).
Detailed design/pre-construction / construction	LV5	Landscape and visual impact	Any landscape works are to be completed in accordance with the Inland Rail Landscape and Rehabilitation Framework, Landscape Rehabilitation Strategy, and Landscape Specification. Rehabilitation of disturbed areas will be undertaken progressively in accordance with the urban design and landscape plan and individual property agreements, where relevant. Landscaping works will be monitored and maintained until vegetation has been established, in accordance with ARTC's procedures or as agreed with the relevant landowner.
Detailed design/pre-construction	LV6	Night-time visual impacts	Temporary lighting will be designed and sited to minimise light spill on adjacent receivers as far as practicable with consideration of *AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* (Standards Australia, 2019).
Detailed design/pre-construction	LV7	Night-time visual impacts	Light spill onto private property due to permanent lighting and train headlights will be managed in accordance with *AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* (Standards Australia, 2019) as far as practicable.
Construction	LV8	Landscape and visual impact	Construction compounds will be located, as far as practicable, within cleared areas and away from sensitive receivers. Compounds will be designed and orientated to minimise visual impacts. This will include locating areas of low visual amenity away from sensitive receivers and erecting boundary screening around compounds, where appropriate.

Phase	Ref	Issue/impact	Mitigation measures
Construction	LV9	Landscape and visual impact	Trees to be retained will be protected prior to the commencement of construction in accordance with *AS4970-2009 Protection of trees on development sites* (Standards Australia, 2009a).
Construction	LV10	Landscape and visual impact	All trees removed for the proposal (that are not subject to biodiversity offsets) will be replaced at a ratio of 2:1 in locations within the enhancement sites or in the general locality to the enhancement sites, as determined in consultation with stakeholders and relevant local council. A tree is defined as woody perennial plants above 3 m in height.
Detailed design/pre-construction	LV11	Landscape and visual impact	During detailed design and in consultation with the relevant council, opportunities to screen the rail corridor and enhance local landscape character, through the provision of additional trees and shrubs within local parks and streets adjoining enhancement sites, will be investigated in locations such as Culcairn, Henty, Yerong Creek and Uranquinty.
Detailed design / pre-construction	HFWQ1	Construction water supply	Construction-phase water supply options will continue to be explored during detailed design and would include ongoing consultation with water suppliers to access the local reticulated network, use of water tanks within construction compounds and/or use of farm dams. Alternative water supply options, including recycled water, would also be investigated.
Detailed design/ pre-construction	HFWQ2	Construction water supply	Opportunities to reduce the need for water would be further explored during detailed design and construction planning. Such options include: ▸ use of additives ▸ alternative construction techniques ▸ reduced dust suppression regime where there is minimal potential for impacts.
Detailed design/ pre-construction	HFWQ3	Flooding impacts	Further consultation will be undertaken with local councils and other relevant authorities to identify opportunities to coordinate the proposal with flood mitigation works committed to as part of the council's flood management plans, or other strategies.
Detailed design / pre-construction	HFWQ4	Flooding impacts	At Wagga Wagga Yard enhancement site, flood modelling would be carried out during detailed design to confirm predicted afflux at industrial properties located at Railway Street and compliance with the Quantitative Design Limits for Inland Rail. This would be informed by building floor surveys (if required).
Construction	HFWQ5	Flooding impacts	Construction planning and the layout of construction work sites and compounds will be carried out with consideration of overland flow paths and flood risk, avoiding flood-liable land and flood events, where practicable. For the sites located in flood-prone land, and where temporary obstruction of overland flows or drainage systems cannot be avoided, further consideration of flood risk will be carried out to develop the staging of works to minimise impacts of the proposal and ensure proper management of a flood event at all stages of construction. A flood and emergency response plan will be prepared for the sites located within a flood-prone area.
Construction	HFWQ6	Water quality	Sediment and erosion control devices will be installed in accordance with *Managing Urban Stormwater: Soils and Construction, Volume 1* (Landcom, 2004).
Construction	HFWQ7	Discharge to surface water	Discharge to surface water will be undertaken in accordance with the EPL for construction of the proposal and would consider the hydrological attributes of the receiving waterbody.
Detailed design/ pre-construction	GW1	Groundwater interaction	Preliminary groundwater monitoring at all enhancement sites requiring excavations greater than 0.5 metres below ground level (mbgl) will be completed to inform detailed design and confirm potential interaction with groundwater at these enhancement sites. This may include design responses, such as the installation of appropriate drainage measures and refinement of estimated groundwater take at Kemp Street bridge, with an aim to minimise dewatering volumes.

Phase	Ref	Issue/impact	Mitigation measures
Detailed design/ pre-construction/ construction	GW2	Groundwater monitoring	A groundwater monitoring program (level and quality), prepared by a suitably qualified person, will be implemented in accordance with the requirements outlined in this assessment prior to construction. This will identify ongoing monitoring requirements, following the completion of construction, according to the risks to groundwater levels and quality. Ongoing groundwater monitoring (level and quality) will be carried out at the sites for the duration specified in the groundwater monitoring program.
Detailed design/ pre-construction	GW3	Groundwater interaction	Opportunities to use appropriate piling construction methodologies for bridge foundations that minimises groundwater take, such as the use of a tremie system, will be investigated during detailed design and implemented where practicable.
Detailed design	GW4	Groundwater	The quality of groundwater taken during excavation works at Riverina Highway bridge and Kemp Street bridge enhancement sites will be assessed for the suitability for re-use during construction (or by others), or disposed of accordingly.
Detailed design/ construction	GW5	Groundwater	Registered bore GW402492 at the Olympic Highway underbridge enhancement site will be avoided during construction. If this registered bore is accidently damaged during construction and cannot be used for its intended purpose (monitoring), make-good arrangements will apply (such as replacement), subject to discussion with the registered owner.
Construction	GW6	Groundwater	Site inspection will be carried out to confirm the current viability of registered bore GW064614 (water supply) at Kemp Street bridge enhancement site. In the event that the bore is viable, and the AIP minimal impact considerations are temporarily or permanently exceeded, make-good provisions will apply.
Detailed design/ pre-construction	SC1	Acid soils and rock	In the event of any ground disturbance below the water table in areas mapped as containing potential acid sulfate soils (ASS) at the Murray River bridge enhancement site, testing will be carried out to confirm the presence of actual and/or potential ASS and liming rates required to mitigate the risk. If ASS are encountered, they will be managed in accordance with the *Acid Sulfate Soils Manual* (Acid Sulfate Soils Management Advisory Committee (ASSMAC), 1998b) and the *Waste Classification Guidelines – Part 4: Acid Sulfate Soils* (NSW EPA, 2014b).
Detailed design/ pre-construction	SC2	Acid soils and rock	The aggressivity of the soil pH to construction materials will be assessed to confirm impacts from acidity.
Detailed design/ pre-construction	SC3	Acid soils and rock	Where excavation into sulfidic rock is confirmed during detailed design, a suitably qualified geologist or geotechnical engineer will advise on the risk and mitigation required to ensure the suitability of construction materials. If sulfidic rock is identified, environmental advice will be sought for waste management and environmental protection.
Detailed design/ pre-construction	SC4	Saline soils	Further assessment of salinity will be completed at enhancement sites where excavation is required, including: ▸ Riverina Highway bridge enhancement site ▸ Billy Hughes bridge enhancement site ▸ Pearson Street bridge enhancement site ▸ Kemp Street bridge enhancement site. The assessment of salinity will include drilling of representative boreholes to test the depth profile of salts and consideration of how the works will affect surface and subsurface water flows. Where identified, salinity will be managed in accordance with the salinity management plan. Relevant aggressivity will be considered in the design of subsurface structures.

Phase	Ref	Issue/impact	Mitigation measures
Detailed design/ pre-construction	SC5	Contamination	Site investigations at more developed railway precincts (Albury and Wagga Wagga) and enhancement sites with more significant excavation (Riverina Highway bridge, Billy Hughes bridge, Pearson Street bridge and Kemp Street bridge) will be undertaken by a suitably qualified and experienced consultant, as defined in Schedule B9 of the NEPM (2013), to inform the detailed design and the subsequent management and classification of waste soil. The scope of site investigations will be informed by a Sampling, Analysis, and Quality Plan (SAQP). Any excavated material would be suitably managed in accordance with the Soil and Water Management sub-plan and the spoil management strategy (mitigation measure WM2).
Detailed design/ pre-construction	SC6	Contamination	In the event that unidentified contaminated material is discovered during construction, an unexpected contaminated finds protocol will be implemented. The protocol will detail requirements for ceasing work and isolating the potential contaminated material, requirements for site investigations, and procedures for reporting and response. Site investigations, where required, will be undertaken by a suitably qualified and experienced consultant, as defined in Schedule B9 of the NEPM (2013) to assess exposure risks to site workers and other receivers. The results of the site investigations will be assessed against the criteria contained within the *National Environment Protection (Assessment of Site Contamination) Measure 1999* to determine the need for any remediation.
Detailed design/ pre-construction	SC7	Hazardous materials	An occupational hygienist will be engaged to complete survey of areas known or suspected to contain asbestos or lead-based paint potentially impacted by the proposal. This work will be carried out in accordance with asbestos and lead-based paint management controls contained in the contamination and hazardous materials sub-plan of the CEMP. This would include (but is not limited to) areas with known or suspected asbestos or lead-based paint, including Murray River bridge (AEC 1), The Rock Yard clearances (AEC 27), buildings at Wagga Wagga Yard clearances (AEC 35), Harefield Yard clearances (AEC 41) and buildings at Junee Yard clearances (AEC 42). Lead paint is known to be present at Murray River bridge (AEC 1).
Construction	SC8	Hazardous materials	An appropriately licensed asbestos removal contractor will be engaged to remove all asbestos identified to be present. Removal will be undertaken in accordance with *How to Safely Remove Asbestos Code of Practice* (Safe Work Australia, 2020) and relevant regulatory requirements. This work will be carried out in accordance with asbestos management controls contained in the contamination and hazardous materials sub-plan of the CEMP
Construction	SC9	Hazardous materials	Lead-based paint at localised areas on structures to be modified will be appropriately removed and/or managed in accordance with the lead risk work outlined in the Work Health and Safety Regulation (2017).
Construction	SC10	Hazardous materials	Lead-based paint removal will be performed in accordance with the procedure outlined in *AS/NZS 4361.2:2017 Guide to hazardous paint management, Part 1: Lead and other hazardous metallic pigments in industrial applications* (Standards Australia, 2017)
Detailed design/ construction	SU1	Achieving the target sustainability rating	Sustainability initiatives would be incorporated into the detailed design and construction to support the achievement of the Inland Rail program sustainability objectives and targets, and the targeted achievement of an 'excellent' design and as built rating, according to the Infrastructure Sustainability Council's (ISC) Infrastructure Sustainability (IS) rating scheme v1.2. These initiatives will be detailed in the Sustainability Management Plan.
Detailed design	SU2	Procurement	Procurement would be undertaken in accordance with the *Inland Rail Sustainable Procurement Policy* (ARTC, 2020a).
Detailed design	SU3	Reporting	Monthly sustainability reporting (and corrective action where required) would be undertaken during detailed design, in accordance with the sustainability management plan.

Phase	Ref	Issue/impact	Mitigation measures
Construction	SU4	Reporting	Monthly sustainability reporting (and corrective action where required) would be undertaken during construction, in accordance with the sustainability management plan.
Operation	SU5	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.
Construction	AQ1	All dust-generating activities	Where visible dust is generated from onsite activities, watering (water cart or water sprays) and/or other appropriate measures will be implemented.
Detailed design/ pre-construction	WM1	Excess waste generation	Detailed design would include measures to minimise spoil generation as far as practicable. This would include a focus on optimising the design to minimise spoil volumes and the reuse of material onsite.
Detailed design/ pre-construction	WM2	Management of spoil	A spoil management strategy would be developed to define the preferred approach to managing spoil. The strategy would include: ▸ 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 ▸ defining the preferred option for reusing and/or disposing of any spoil that cannot be reused ▸ the outcomes of the strategy would inform the construction waste management sub-plan.
Construction	WM3	Construction waste and spoil management	All waste generated would be classified in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a) and disposed of in accordance with the relevant requirements of the Protection of the Environment Operations (Waste) Regulation 2014.
Operation	WM4	Operation 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 *Waste Avoidance and Resource Recovery Act 2001* (NSW).
Detailed design / pre-construction	H1	Impacts on underground utilities	Dial-before-you-dig searches and non-destructive digging will be carried out to identify the presence of underground utilities prior to commencing construction.
Construction	H2	Bushfire risks	Adequate access and egress for fire-fighting vehicles and staff will be provided at all enhancement sites during construction. Protocols for the management of bushfire risk will be implemented during construction. Requirements for first-response capabilities, including fire extinguishers, water carts and hoses, will be assessed and provided at enhancement sites during construction, where needed.
Construction	H3	Dangerous goods and hazardous materials	Dangerous goods and hazardous materials will be stored in accordance with supplier's instructions and relevant legislation, Australian Standards, and applicable guidelines; and may include bulk storage tanks, chemical storage cabinets/containers or impervious bunds.
Detailed design/pre-construction	CC1	Climate change risk management	The climate change risk assessment would continue to be refined as the design of the proposal progresses. The adaptation measures identified for the proposal would be reviewed and final measures would be incorporated into the design, where practicable, as described for CCR8, CCR9, CCR10, CCR11, CCR17 and CCR19 in Table 25-6.
Construction	CC2	Climate change risk management	The adaptation measures identified for the proposal would be reviewed and final measures would be implemented during construction, as far as practicable, as described for CCR1, CCR8, CCR9, CCR10, CCR11, CCR17 and CCR19 in Table 25-6.
Operation	CC3	Climate change risk management	Operational management and maintenance procedures would address potential climate change risks and adaptation measures as described for CCR8, CCR9, CCR10 and CCR25 in Table 25-6.

Phase	Ref	Issue/impact	Mitigation measures
Pre-construction/ construction	GHG1	Greenhouse gas (GHG) emissions	GHG emissions will be managed and minimised as part of the Sustainability Management Plan, which will be implemented to assist in pursuing 'design' and 'as built' rating targets of 'Excellent' under the ISC's rating scheme for the Inland Rail program.
Detailed design/pre-construction	CI1	Cumulative impacts at Junee to Illabo clearances enhancement site	ARTC will continue to consult with TfNSW to be aware of the final design solution of the grade separation project at the Olympic Highway level crossing (LX 603) and proposed construction timeframe to minimise cumulative impacts with works at the Junee to Illabo clearances enhancement site.

27.3 Proposal uncertainties and approach to design refinements

27.3.1 Proposal uncertainties

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

A summary of the uncertainties around the design, construction and/or operational methodologies of the proposal, and how these will be resolved, is provided in Table 27-2.

TABLE 27-2 PROPOSAL UNCERTAINTIES

Category	Uncertainty	How uncertainties would be resolved
Design	Utilities—impacts on utilities as part of early works or main works to be defined in detail	The location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, and the timing of these works would be confirmed prior to construction. This will include (as required), undertaking utilities investigations, including intrusive investigations, and consultation and agreement with service providers. The utilities management framework provides an outline of how utility works would be managed (Appendix D: Utilities management framework).
Design	Preferred construction water supply options	Construction phase water supply options would continue to be explored during detailed design and would include ongoing consultation with water providers to access the local reticulated network, use of water tanks within construction compounds and/or use of farm dams. Alternative water supply options, including recycled water, would also be investigated.
Design	Non-Aboriginal heritage—re-use of removed top bracing from Murray River bridge	The condition of the original top bracing framework of the Murray River underbridge (SHR 01020) would be investigated during detailed design to determine if this material can be re-purposed in the modified structure. If this cannot be re-purposed, a suitably qualified heritage professional would be consulted concerning the design and installation of the new bracing framework to ensure that it is appropriate to the existing fabric and style of the bridge.
Design	Housing and accommodation availability for construction workforce	A temporary workforce accommodation plan would be implemented to address the provision of temporary workers accommodation, potential shortages of accommodation to supply the demand from other industry sectors and by vulnerable groups, and transportation and parking of temporary workforce. The plan would align to ARTC's Inland Rail Program Accommodation Principles and would be prepared in consultation with local councils and service providers. The plan would include: ▸ proposed workforce housing options, prioritising the use of existing facilities in order to minimise amenity impacts to any surrounding sensitive receivers ▸ a monitoring and management mechanism for identifying the capacity of local short-term accommodation and rental housing for use by workers, having regard to forecast tourism, seasonal workforce and students/highway traveller demand.
Design	Operational noise mitigation for triggered receivers	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. This would be informed by further investigations of internal noise levels, building layout and building condition to confirm noise trigger exceedances and required mitigation responses. Feasible and reasonable mitigation measures, such as noise barriers, rail corridor fencing and at-property treatments, would be identified where exceedances of operational noise and vibration criteria are confirmed.
Design	Potential extent of groundwater interaction	Preliminary groundwater monitoring at all enhancement sites requiring excavations greater than 0.5 mbgl will be completed to inform detailed design and confirm potential interaction with groundwater at these enhancement sites. This may include design responses such as the installation of appropriate drainage measures and refinement of estimated groundwater take at Kemp Street bridge, with an aim to minimise dewatering volumes. A groundwater monitoring program (level and quality), prepared by a suitably qualified person, would be implemented in accordance with the requirements outlined in this assessment prior to construction. This will identify ongoing monitoring requirements, following the completion of construction, according to the risks to groundwater levels and quality.

Category	Uncertainty	How uncertainties would be resolved
Design	Potential to encounter sulfidic rock	Where excavation into sulfidic rock is confirmed during detailed design, a suitably qualified geologist or geotechnical engineer would advise on the risk and mitigation required to ensure the suitability of construction materials. If sulfidic rock is identified, environmental advice will be sought for waste management and environmental protection.
Design	Potential to encounter higher salinity levels in soils	Further assessment of salinity would be completed at enhancement sites where excavation is required. The assessment of salinity would include drilling of representative boreholes to test the depth profile of salts and consideration of how the works will affect surface and subsurface water flows. Where identified, salinity would be managed in accordance with the soil and water management sub-plan. Relevant aggressivity would be considered in the design of subsurface structures.
Construction	Haul routes—exact routes and haulage methods	A detailed haulage program would be developed based on the detailed design and final construction methodology, and developed as part of the traffic and transport management sub-plan.
Construction	Compound sites—location, layout and facilities	The final selection of identified compound locations and final layout of construction areas would be confirmed based on the detailed design and final construction methodology. The selected locations would be consistent with those assessed in this EIS (or as modified by an amendment report or preferred infrastructure report) and the relevant mitigation measures would be applied.
Construction	Biodiversity—presence of fauna in the proposal site	Pre-clearance surveys would be carried out prior to construction by a suitability qualified ecologist to identify potentially affected fauna. This would include: ▸ inspections of structures that provide potential microbat habitat. If bats are identified roosting in these structures, individuals will be excluded from this habitat. ▸ native aquatic fauna salvage in watercourses of residual pools within 50 m of construction. All salvaged aquatic fauna will be relocated to similar habitat nearby.
Construction	Noise and vibration impacts based on final construction methodology	Location- and activity-specific construction noise and vibration reviews will 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 plan would confirm predicted impacts at relevant receivers to assist with the selection of feasible and reasonable management measures, and the required auditing and monitoring requirements. Any activities that could exceed the construction noise management levels and vibration criteria would be identified and managed in accordance with the framework, the CNVMP, 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	Potential to encounter contaminated soils	A contamination UFP would be prepared and implemented. This would detail the required management response, which may require further investigation. Further investigations would also occur where there is a higher likelihood for contamination to be present in the Albury and Wagga Wagga yards or where deep excavations are proposed at track lowering enhancement sites.
Construction	Management of excess spoil	A spoil management strategy would be developed to define the preferred approach to managing spoil. The strategy would include: ▸ 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 ▸ defining the preferred option for reusing and/or disposing of any spoil not able to be reused ▸ the outcomes of the strategy would inform the construction waste management sub-plan.

Category	Uncertainty	How uncertainties would be resolved
Construction	Potential hazardous materials present in construction areas	An occupational hygienist would be engaged to complete survey of areas known or suspected to contain asbestos or lead-based paint potentially impacted by the proposal. Work identified to interact with hazardous material will be carried out in accordance with asbestos and lead-based paint management controls contained in the contamination and hazardous materials sub-plan of the CEMP.

27.3.2 Approach to design refinements

The reference design defines a proposal that provides a sound basis for developing the detailed design to the standard required to support delivery. Sufficient flexibility has been provided to allow for the design to be refined during the detailed design stage, where relevant, to improve the performance, minimise impacts on the community and the environment, and in response to feedback from the community and stakeholders. As a result, the final design may vary from the reference design described in this EIS (or as documented in an amendment report or preferred infrastructure report, if prepared).

Any proposed variations would be reviewed for consistency with the assessments described in this document, 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.

The design of the proposal, as described in the EIS, would be subject to ongoing refinements during the detailed design phase. Refinements may be made for various reasons, including (for example) to:

- reduce the construction timeframe
- avoid areas of environmental sensitivity identified following approval
- reduce impacts on the local community
- accommodate other refinements arising out of the further work noted in Table 27-2 or discussions with the construction contractor, once appointed
- improve the operation of the proposal without increasing the potential environmental impacts.

Such refinements may include, for example, minor changes to:

- the location of construction compounds and construction site access routes
- technology or features of key proposal components.

Refinements would not include significant changes to the proposal.

For design refinements, a consistency review would be undertaken to consider whether the refinement:

- would result in any of the conditions of approval not being met
- be consistent with the objectives and operation of the proposal as described in the EIS
- result in a significant change to the approved project
- would trigger the requirement for additional environmental investigations (including heritage) and mitigation measures
- would result in any potential environmental or social impacts of a greater scale or different nature than that considered by the EIS.

A refinement that does not meet these criteria would be considered a design modification. Approval would be sought from the Minister for Planning for modifications, as required, in accordance with Division 5.2 of the EP&A Act.

27.4 Compilation of performance outcomes

The SEARs identify a number of desired performance outcomes for the proposal. These desired performance outcomes outline the broader objectives to be achieved in the design, construction and operation of the proposal. Based on the outcomes of the environmental impact assessment, summarised in Chapters 9 to 26 of the EIS, and the implementation of the mitigation measures compiled in section 27.2, proposal-specific performance outcomes are proposed. These performance outcomes and how they are addressed in this EIS are described in Table 27-3. Future design development, any design changes and final construction methodologies would be considered against these environmental performance outcomes.

TABLE 27-3 DESIRED PERFORMANCE OUTCOMES

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Transport and traffic		
Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts. The safety of transport system customers is maintained. Impacts on network capacity and the level of service are effectively managed. Works are compatible with existing infrastructure and future transport corridors.	▸ Provides for more efficient and productive freight rail operations. ▸ Encourages a shift from road to rail for the transport of freight, contributing to a reduction in heavy vehicles on the road network and improving road safety. ▸ Minimises impacts on the local and regional transport network during construction and operation, as far as practicable. ▸ Minimises the use of local roads by heavy vehicles as far as practicable. ▸ Maintains or improves motorist and active transport safety. ▸ Avoids loss of on-street parking, where practicable ▸ Maintains safe access to property.	▸ Operational outcomes would be achieved by the proposal and the broader Inland Rail program. ▸ Construction works would occur within scheduled rail possessions and would minimise impacts to operation of the rail network as far as practicable. ▸ Construction personnel parking is primarily contained to the proposal site outside peak workforce periods and only short-term occupation on station parking areas are proposed. ▸ Replacement pedestrian bridges that are DDA compliant, and pedestrian paths on replacement road bridges are proposed. Further work with Wagga Wagga City Council and Junee Shire Council will pursue and adopt an alternative design that will provide DDA-compliant access for pedestrians at Edmondson Street bridge and Kemp Street bridge. ▸ Access would be maintained to properties during construction. ▸ Detours would be required to manage bridge construction works at Wagga Wagga and Junee. At Wagga Wagga, this would have impacts on the road network and further mitigation and management measures would be required.
Heritage		
The design, construction and operation of the project facilitates, to the greatest extent possible, the long-term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places.	▸ Minimises the construction and operational footprint to minimise heritage impacts. ▸ Design is sympathetic to retained and adjacent heritage items, and, where practicable, avoids and minimises impacts on built or archaeological heritage. ▸ Impacts are managed in accordance with relevant legislation, including the *Heritage Act 1977* (NSW) and the *National Parks and Wildlife Act 1974* (NSW). ▸ Avoids or minimises impacts to areas of moderate or higher archaeological potential and significance, where feasible and reasonable. ▸ Salvage of Aboriginal heritage objects with the potential to be impacted by the proposal, in accordance with the salvage methodology.	▸ The proposal site has been minimised, where practicable, with focus on using existing disturbed areas during construction and avoiding of heritage structures. ▸ New bridges and modified bridge designs are sympathetic to existing environmental and heritage character. These responses would be refined and investigated further during detailed design to assist in minimising the potential impacts of these structures on the surrounding community and capitalise on opportunities to improve visual amenity. ▸ Impacts have been assessed and would be managed in accordance with the relevant legislation. ▸ No salvage measures are proposed as impacts to Aboriginal heritage objects have been avoided to the extent that potential impacts have been identified.

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Social		
The project minimises adverse social impacts and capitalises on opportunities potentially available to affected communities.	▸ Avoids or minimises permanent acquisition outside the rail corridor as far as practicable. ▸ Avoids impacts to social infrastructure during construction and operation as far as practicable. ▸ Negative impacts on the community (including amenity, noise and vibration, air quality, connectivity and cohesion) are minimised. ▸ Communicates with affected communities in a clear and timely manner to reduce disruption and address community concerns. ▸ Delivers legacy opportunities to benefit local communities. ▸ Maintains access to community facilities.	▸ Permanent acquisition of private property has been avoided. ▸ Access would be maintained to properties during construction and detours would be established. ▸ Impacts due to the disruption of access across the rail corridor would be minimised through staging of the bridge works in Wagga Wagga. Residual impacts would remain, and implementation of further mitigations would be required. ▸ Impacted receivers have been identified and a communication management plan would be implemented. ▸ Procedures for complaints handling would be implemented during construction.
Economic and land use		
The project minimises impacts to property and business and achieves appropriate integration with adjoining land uses, including maintenance of appropriate access to properties and community facilities, and minimisation of displacement of existing land use activities, dwellings and infrastructure.	**Economic** ▸ Avoids or minimises impacts to businesses during construction and operation as far as practicable. ▸ Maintains access to businesses as far as practicable. ▸ Communicates with affected businesses in a clear and timely manner to reduce disruption and address business concerns. ▸ Delivers legacy opportunities to benefit local communities. **Land use** ▸ Minimises the construction and operational footprint as far as practicable. ▸ Avoids or minimises permanent acquisition of private property as far as practicable ▸ Integrates transport infrastructure appropriately with land use planning. ▸ Minimises residual land at the completion of construction as far as practicable.	▸ Land use outside the rail corridor during construction has been minimised as far as practicable with only temporary occupation proposed. ▸ Permanent acquisition of private property has been avoided. ▸ Access would be maintained to properties during construction and detours would be established where road closures are required. ▸ Consultation with stakeholders and the community has been undertaken during preparation of the reference design and the EIS and is ongoing.

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Noise and vibration		
Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on acoustic amenity. Increases in noise emissions and vibration affecting nearby properties and other sensitive receivers during operation of the project are effectively managed to protect the amenity and wellbeing of the community. Increases in noise emissions and vibration affecting environmental heritage as defined in the *Heritage Act 1977* (NSW) during operation of the project are effectively managed.	▸ Ensures operational rail noise and vibration levels comply with the rail noise trigger levels in the *Rail Infrastructure Noise Guideline* (EPA, 2013) as far as practicable. ▸ Complies with the applicable road traffic noise criteria in the *NSW Road Noise Policy* for operational road noise levels, where permanent road adjustments are required (Department of Environment, Climate Change and Water (DECCW), 2011), where reasonable and feasible. ▸ Minimises impacts, as far as practicable, from construction noise and vibration on local communities by controlling noise and vibration at the source, on the source to receiver path and at the receiver, as far as practicable. ▸ Implements practicable and reasonable measures to minimise impacts from construction and operational vibration, including environmental heritage.	▸ Substantial construction noise impacts are predicted due to the extended hours proposed. Mitigation measures have been proposed to minimise the noise and vibration exceedance predicted at receivers, considering respites and alternative accommodation offers. Procedures for monitoring noise and vibration levels during construction would be developed and implemented during construction. ▸ Operational rail noise is predicted to generally comply with noise criteria, with mitigation proposed for the 12 receivers identified to experience exceedances. Operational noise and vibration compliance monitoring will be undertaken, once Inland Rail has commenced operation, to compare actual noise performance against that predicted by the operational noise and vibration review. ▸ Traffic noise from permanent road modifications is not predicted to exceed criteria.
Biodiversity		
The project design considers measures to avoid and minimise impacts on terrestrial and aquatic biodiversity. Offsets and/or supplementary measures are assured, equivalent to any remaining impacts of project construction and operation.	▸ Avoids and minimises, as far as practicable, impacts to terrestrial and aquatic biodiversity, including clearing of native vegetation. ▸ Offsets biodiversity impacts in accordance with the *Biodiversity Conservation Act 2016* (NSW) and the offset strategy for the Inland Rail program. ▸ Does not contribute to key threatening processes associated with weeds and pathogens. ▸ Incorporates best-practice principles into the design of waterway crossings. ▸ Minimises, as far as practicable, significant impacts to flow regimes in receiving waterways. ▸ Integrates mitigation measures in design, where practicable, to maintain or enhance ecological connectivity. ▸ Manages impacts on biodiversity in accordance with relevant legislation.	▸ Direct impacts to terrestrial and aquatic biodiversity during construction and operation has been avoided through minimisation of the proposal site and identified mitigation measures, as far as practicable. ▸ Offset requirements have been identified, noting some areas of potential offset risk have been identified if some areas cannot be avoided but are limited. ▸ Provision of one temporary creek crossing during construction (for four weeks) would be designed in accordance with the Blue Book. The proposed design does not change the bridge at Sandy Creek, and no new permanent structures would be built within waterways. ▸ A regional connectivity strategy will be prepared and implemented with reference to the *Fauna Design Guidelines for the Inland Rail Project* (2021) to consider further enhancements, including beyond the proposal site. During detailed design, provision of one glider pole on each side of the rail corridor will be further investigated to enhance habitat connection at the Billy Hughes bridge enhancement site.

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Visual amenity		
The project minimises adverse impacts on the visual amenity of the built and natural environment (including public open space) and capitalises on opportunities to improve visual amenity.	▸ Incorporates design features to minimise the potential visual impacts where the proposal interfaces with the urban domain, as far as practicable. ▸ Impacts to visual amenity are minimised during construction, as far as practicable. ▸ Impacts to public open space is avoided or minimised, as far as practicable. ▸ Retains vegetation providing screening to the rail corridor, where practicable.	▸ Construction is primarily contained to the rail corridor. ▸ During construction, established vegetation that does not require removal for the design would be avoided, where practicable. ▸ Occupation of open space during construction has been minimised along the rail corridor, as far as practicable. ▸ At completion, there would be no net loss of open space as a result of the proposal. ▸ During detailed design, an urban design and landscape plan would be prepared by a suitably qualified consultant, to provide a consistent approach to design and landscaping.
Flooding		
The project minimises adverse impacts on existing flooding characteristics. Construction and operation of the project avoids or minimises the risk of, and adverse impacts from, infrastructure flooding, flooding hazards, or dam failure.	▸ Reduces, or does not significantly increase, the area subject to flooding. ▸ Impacts on dedicated evacuation routes are minimised, as far as practicable, in flood events up to and including the probable maximum flood. ▸ The performance of the downstream drainage network is maintained, as far as practicable. ▸ Does not cause dam failure. ▸ Minimises the potential for adverse flooding impacts, as far as practicable, through the implementation of mitigation measures.	▸ The proposal has been designed to minimise impact to flooding or improved flooding outcomes during operation, as far as practicable. ▸ No impacts to farm dams are proposed during construction and operation. ▸ Construction would be planned to minimise impacts to overland flow paths, as far as practicable.
Water—hydrology		
Long-term impacts on surface water and groundwater hydrology (including drawdown, flow rates and volumes) are minimised. The environmental values of nearby, connected and affected water sources, groundwater and dependent ecological systems, including estuarine and marine water (if applicable), are maintained (where values are achieved) or improved and maintained (where values are not achieved). Sustainable use of water resources.	▸ Avoids long-term impacts on surface water, as far as practicable. ▸ Minimises the use of water during construction, as much as practicable.	▸ The proposal has avoided in- stream works except for one temporary water crossing during construction. ▸ Dewatering would be minimised, as far as practicable, at the two enhancement sites where groundwater take is predicted during construction. A groundwater monitoring program (level and quality), prepared by a suitably qualified person, will be implemented in accordance with the requirements outlined in this assessment prior to construction ▸ Water use during construction would be minimised, as far as practicable.

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Water—quality		
The project is designed, constructed and operated to protect the NSW Water Quality Objectives, where they are currently being achieved, and contribute towards achievement of the Water Quality Objectives over time, where they are currently not being achieved; including downstream of the project to the extent of the project impact including estuarine and marine waters (if applicable).	▸ Minimises changes to water flows in watercourses, as far as practicable, due to design and construction considerations. ▸ Implements erosion and sediment controls during construction in accordance with the Blue Book. ▸ Protects or contributes to achieving the water quality objectives, during construction and operation, by establishing discharge criteria that protect the environmental values of the receiving waters, as far as practicable.	▸ Erosion and sediment measures would be implemented during construction in accordance with the principles and requirements of the Blue Book. ▸ Scour protection has been included at modified culverts, as required, to minimise water quality impacts, as far as practicable.
Soils		
The environmental values of land, including soils, subsoils and landforms, are protected. Risks arising from the disturbance and excavation of land and disposal of soil are minimised, including disturbance to ASS and site contamination.	▸ Considers site-specific soil, subsoil and landform characteristics during detailed design and construction. ▸ Manages any contamination in accordance with relevant regulatory requirements. ▸ Assesses, classifies, manages and disposes of any soil waste in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014b).	▸ Geotechnical investigations have been carried out to inform the reference design. ▸ Phase 1 contamination investigation of the proposal site has been considered in the reference design and construction planning. ▸ Where reuse opportunities are not feasible, spoil generated during construction would be classified and disposed of at an appropriately licensed facility.
Climate change and sustainability		
The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources. Conservation of natural resources is maximised. The project is designed, constructed and operated to be resilient to the future impacts of climate change.	▸ Carries out climate change risk assessments with extreme and high risks being treated, as far as practicable. ▸ Targets an 'excellent' rating through the design process in accordance with the ISC rating tool. ▸ Integrates sustainability considerations throughout the design, construction, and operation phases of the proposal.	▸ Climate change risks have been identified and considered in design.
Other issues—air quality		
No desired performance outcome from the SEARs.	▸ Controls dust and exhaust emissions of plant and equipment from construction activities, as far as practicable. ▸ Minimises air quality impacts during construction, as far as practicable. ▸ Constructed and operated in accordance with the requirements of the POEO Act and relevant EPLs.	▸ Dust and exhaust emissions of plant and equipment would be controlled with standard mitigation measures during construction.

Desired performance outcome from the SEARs	Proposal-specific performance outcome	How the EIS addresses performance outcomes
Other issues—waste		
No desired performance outcome from the SEARs.	▸ Implements the preferred waste management hierarchy of avoidance, minimisation, reuse, recycling and disposal. ▸ Implements measures to minimise waste, manage waste and conserve resources throughout the construction of the proposal. ▸ Reuses spoil as part of the proposal, as far as practicable. ▸ Disposes of waste at appropriately licensed facilities.	▸ The preferred waste hierarchy would be adopted. ▸ Spoil would be reused as part of the proposal, where practicable. ▸ Waste would be classified and disposed of at appropriately licensed facilities.
Other issues—Greenhouse gas and energy		
No desired performance outcome from the SEARs.	▸ Reduces GHG emissions by 15% across design, construction and operation.	▸ Inland Rail program is expected to bring a net GHG emission improvement compared to not completing the Inland Rail program.
Other issues—Hazards		
No desired performance outcome from the SEARs.	▸ No unplanned or unexpected disturbance of utilities, as far as practicable.	▸ Utilities have been considered in the design and construction planning. ▸ The location of all utilities, services and other infrastructure, and requirements for access to, diversion, protection and/or support, will be confirmed prior to construction.
Other issues—Cumulative		
No desired performance outcome from the SEARs.	▸ Minimises cumulative construction impacts, as far as practicable, through co-ordination of construction activities and communication processes with nearby projects.	▸ Minor cumulative impacts are predicted with a couple projects in the vicinity. Re-evaluation of concurrent projects would be undertaken prior to construction.