

Ironbark Creek Underbridge Replacement

Application Number: **03545**Commencement Date:
21/07/2026Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

1.1.2 Project industry type *

1.1.3 Project industry sub-type

1.1.4 Estimated start date *

1.1.4 Estimated end date *

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Definitions

The following terminology are used throughout this referral form:

- The bridge: Ironbark Creek Underbridge
- Proposed action: Ironbark Creek Underbridge Replacement Project
- Investigation area: the area to be investigated for the purpose of the EIS. For the purpose of this referral, the investigation area represents the 'project area' per the requirements of the *EPBC Act referral preparation guide* (Commonwealth of Australia, 2024)
- Conceptual Disturbance Area (CDA): the area required to construct and operate the proposed action, inclusive of ancillary facilities such as site access track and compound / laydown areas. For the purpose of this referral, the CDA represents the 'disturbance footprint' per the requirements of the *EPBC Act referral preparation guide* (Commonwealth of Australia, 2024).

The following attachments are included with this referral:

- Attachment A – Bridge Image (**AttA_Bridge_Image**)
- Attachment B – Biodiversity Constraints Assessment (**AttB_Bio_Assessment**)
- Attachment C – Engagement (**AttC_Engagement**)
- Attachment D – Environmental History (**AttD_Environmental_History**)
- Attachment E – Environment Policy (**AttE_Environment_Policy**)
- Attachment F – Code of Practice (**AttF_Code_of_Practice**)
- Attachment G – Options Assessment (**AttG_Options_Assessment**).

Background

Australian Rail Track Corporation (ARTC) is proposing to replace the Ironbark Creek Underbridge (the bridge) to ensure its safety and longevity for the long term (the proposed action). Being over 110 years old, the bridge has reached the end of its economic life due to age related deterioration, capacity and fatigue constraints, and escalating maintenance costs. The bridge structure is a through Pratt truss steel underbridge spanning approximately 38 metres, supported on bearings and timber-piled brick and concrete abutments.

The new bridge is proposed to be a concrete structure comprised of both in-situ and precast components and will be located on the current rail alignment. It is anticipated that the new bridge will be a dual track single-span concrete through girder bridge. **AttA-Bridge_Image, p.1** shows an image of the bridge and the adjacent coal bridge.

The purpose of the proposed action is to replace the bridge to ensure that the rail network continues to operate safely and efficiently and to provide the following predicted benefits:

- A new bridge eliminates known structural risks and removes the need for continuous monitoring and reactive maintenance, improving safety for rail operations.
- A new bridge will improve safety for maintenance workers by eliminating the need of working at heights, potential exposure to hazardous materials and working over water
- Replacement will allow ARTC to remove the current temporary speed restriction (imposed since March 2023), improving train performance on this section of the network
- Reduced maintenance requirements: the new bridge will significantly lower maintenance demands, allowing ARTC's engineering and maintenance teams to focus on other priority structures across the network
- Support for freight supply chains: as a key route for interstate freight traffic between Melbourne – Sydney – Brisbane and a back-up route for coal traffic entering and exiting the Port of Newcastle, replacing the bridge supports the efficiency and reliability of one of Australia's busiest freight corridors

- Removal of potentially hazardous materials on the existing steel bridge, and reduced train speed changes leading to reduced fuel consumption.

Environmental assessment

The proposed action is State Significant Infrastructure (SSI) under Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Minister for Planning is the approval authority, and the proposed action is to be assessed in accordance with the provisions of Division 5.2 of the EP&A Act. As such, an Environmental Impact Statement (EIS) will be prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued on 18 May 2026 (SSI-116251240). The SEARs are available at <https://www.planningportal.nsw.gov.au/major-projects/projects/ironbark-creek-underbridge-replacement>.

A Biodiversity Constraints Assessment (refer to **AttB_Bio_Assessment**) has been prepared to assess the preliminary biodiversity values of the investigation area and to confirm the conservation significance of the investigation area, including the presence of threatened biota listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), *Fisheries Management Act 1995* (FM Act) and Matters of National Environmental Significance (MNES) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and their habitats. The findings indicate that MNES including Wetlands of International Importance (Ramsar Wetlands), threatened species and ecological communities and migratory species may relate to or occur in or nearby the proposed action and have the potential to be impacted by the proposed action.

There is potential for indirect impacts to the Hunter Estuary Wetland Ramsar site including water quality impacts and changes to hydrological regimes. It is expected that the proposed action would not exceed limits of acceptable change or constitute a significant impact to the ecological character description of the Ramsar wetland. On this basis, the proposed action is not considered likely to be a controlled action for Ramsar wetlands.

Potential direct and indirect impacts to migratory species, threatened species and ecological communities or their habitat are expected as a result of native vegetation removal and earth works and activities. On a precautionary basis, it is considered that the proposed action may result in a significant impact on migratory species, threatened species and ecological communities. Accordingly, the proposed action is being referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for consideration of whether it is a controlled action.

Further assessment will be carried out within the EIS stage to satisfy the requirements of the issued SEARs. This will also support the preparation of assessments of significance to be completed in accordance with the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Commonwealth of Australia, 2013) (the Significant Impact Guidelines) for Ramsar wetlands, threatened species and ecological communities and migratory species that may be impacted by the proposed action. This further assessment will include (but not be limited to):

- A BDAR in accordance with Key Issue SEAR 2(1)
- impacts on biodiversity values not covered by the BAM inclusive of a threatened aquatic species assessment as required by Key Issue SEAR 2(8),
- An aquatic ecology assessment as per Key Issue SEAR 2(9).
- Identify whether the proposed action, or any component of the proposed action, would be classified as a Key Threatening Process (KTP) in accordance with the listings in the EPBC Act as per Key Issue SEAR 2(10)
- a hydrology assessment for both surface and ground water
- a water quality assessment for both surface and groundwater.

Description of the proposed action

Construction

The key features of the proposed action and construction methodology are subject to further design development and may change from that described below. Based on the concept design, the key features of the proposed action include:

- Obtain temporary leases / permits for the occupation of land outside of the rail corridor
- Upgrade existing rail corridor access tracks and construct temporary access tracks outside of the rail corridor
- Establish a main site compound adjacent to the bridge at the city end abutment (southeastern side of Ironbark Creek)
- Relocate or protect existing utilities from the bridge and construction area
- Construct temporary works areas and structures such as a rock fill platform, piling and crane pads and temporary piers
- Install new bridge foundations such as piles, abutments, deflection walls
- Build and assemble the new bridge at the main site compound located at the city end abutment (southeastern side of Ironbark Creek)
- Launch new bridge onto temporary structure (parallel to the existing bridge)
- Track reconditioning and installation of transition slabs at both bridge approaches
- Remove existing steel bridge from its current position and relocate to main site compound (by crane) where it will be demolished
- Slide new bridge from temporary structure into final positioning (same alignment as the existing structure)
- Disassemble all temporary structures and temporary laydown areas
- Rehabilitate disturbed areas.

No additional developments are proposed as part of the proposed action.

Operation

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

The proposed action will not increase train volumes, and train speeds, types and consists will not change.

Indicative land requirements

The bridge is located on the Main North Line at Sandgate, NSW (32°51'24.00"S 151°41'45.41"E). The proposed action is predominantly located within the rail corridor, which is owned by Transport for NSW and managed by ARTC.

Temporary occupation of privately owned land, land managed by NSW Local Land Services (NSW LLS) and Crown land is anticipated to facilitate construction activities, including site access and the establishment of temporary construction compounds and laydown areas, subject to agreement with the relevant landholders.

The Investigation Area and the CDA comprises approximately 31.00 hectares (ha) and 5.86 ha, respectively. The indicative land requirements for the proposed action include:

- Transport for NSW - Lot 1010 / DP1193336, Lots 31 and 32 / DP1118647
- Newcastle City Council - Lot 54 / DP755232, Lot 33 / DP1118647, Lot 16 / DP1149782
- NSW LLS - Lot 61 / DP755232
- Crown Lands
- Newcastle City Council and Transport for NSW - Lots 5, 7 and 8 / DP1043133
- Private land - Lot 1 / DP1176316, Lot 200 / DP867471, Lot 22 / DP627724

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

Relevant legislation, policies and planning instruments under Commonwealth, State and Local legislation, as they relate to the proposed action, are outlined below:

Commonwealth

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, proposed 'actions' that have the potential to significantly impact on MNES, the environment of Commonwealth land, or that are being carried out by a Australian Government agency, must be referred to the Australian Government Minister for the Environment and Water for assessment. If following the referral process, the proposed action is deemed a "controlled action", it cannot be undertaken without prior approval from the Australian Government Minister for the Environment and Water.

MNES of relevance to the proposed action include:

- Threatened species and ecological communities (Sections 18 and 18A)
- Migratory species (Sections 20 and 20A)
- Wetlands of International Important (Ramsar Wetlands) (Sections 16 and 17B)

The proposed action does not affect other controlling provisions.

Potential direct and indirect impacts to threatened species and ecological communities or their habitat are expected as a result of native vegetation removal and earth works and activities.

There is potential for indirect impacts to the Hunter Estuary Wetland Ramsar site including water quality impacts and changes to hydrological regimes.

A preliminary level of assessment has been provided in this referral, however the assessment of potential impacts to MNES in accordance with the Significant Impact Guidelines will be provided within the EIS.

If the proposed action is deemed a controlled action, it will likely be subject to the Bilateral Agreement which accredits the use of planning processes for SSI under the NSW EP&A Act.

State

Environmental Planning and Assessment Act 1979 (EP&A Act)

Part 5, Division 5.2 of the EP&A Act provides for declaration, assessment and approval of SSI. The proposed action meets the definition of SSI under section 5.12(2) of the EP&A Act and is therefore subject to the environmental assessment and approval process outlined in Division 5.2, Subdivision 2, including the preparation of an EIS for the proposed action.

An EIS is required to be prepared in accordance with the SEARs issued on 18 May 2026 (SSI-116251240). The Minister for Planning (or delegate) would be the approval authority (pursuant to section 5.19).

The Scoping Report and the SEARs are available at <https://www.planningportal.nsw.gov.au/major-projects/projects/ironbark-creek-underbridge-replacement>.

State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP)

Section 2.13(1) of the Planning Systems SEPP provides that development specified in Schedule 3 of the policy is SSI. Schedule 3 of the Planning Systems SEPP states development for the purpose of rail infrastructure by or on behalf of the ARTC that has an estimated development cost of more than \$50 million. The estimated development cost of the proposed action is anticipated to exceed \$50 million and therefore the proposed action meets the definition of SSI under the Planning Systems SEPP.

State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP)

Section 2.92(1) of the Transport and Infrastructure SEPP identifies that development for the purpose of a railway or rail infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land. As development permissible without consent, the proposed action is subject to the assessment and approval under Part 5 of the EP&A Act.

Some of the land on which the proposed action is proposed to be carried out is mapped as coastal wetlands under State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP). The Resilience and Hazards SEPP contains provisions which prevail over the Transport and Infrastructure SEPP in some circumstances, with the result that development for railway purposes which might otherwise have been permissible without consent under section 2.92 of the Transport and Infrastructure SEPP requires development consent, and is declared to be designated development, under section 2.7 of the Resilience and Hazards SEPP. However, as part of the proposed action is declared SSI, then the proposed action is wholly SSI and will be permissible without development consent pursuant to clause 2.13(2) of the Planning Systems SEPP.

Biodiversity Conservation Act 2016 (BC Act)

Part 7 of the BC Act applies to approvals under the EP&A Act. Section 7.9 provides that an application for approval of SSI must be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine the proposed development is not likely to have a significant impact on biodiversity values.

As required by the issued SEARs, ARTC will prepare a BDAR during the preparation of the EIS in accordance with the BC Act, the Biodiversity Assessment Method (BAM) and the Biodiversity Conservation Regulation 2017 and the EPBC Act.

The BDAR will involve:

- Identification of the flora, fauna, and any MNES likely to be impacted.
- A description of the application of the NSW Biodiversity Offset Scheme (BOS) to avoid, minimise and offset framework impacts on both NSW and Commonwealth listed threatened species or ecological communities.
- Assessment of potential impacts on state and commonwealth listed terrestrial species, populations, ecological communities or their habitats, including any cumulative impacts.
- provide assessments of significance for MNES in accordance with the Significant Impact Guidelines
- Identification of measures that will be implemented to mitigate the impacts of the proposed action on species, populations, ecological communities and their habitats, if applicable.
- Assessment of any biodiversity offsets required.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Prior to lodging SSI Scoping Report (late 2025 – early 2026)

ARTC is committed to proactive and transparent engagement with stakeholders and the community through the planning, assessment and delivery of its projects. The engagement approach and strategy for the proposed action is detailed in **AttC_Engagement, Section 5.1, p.1**.

Preliminary engagement was undertaken between late 2025 to early 2026 to introduce the proposed action, inform key stakeholders and the local community, and understand early interests, issues and opportunities. Feedback received has informed early project planning and will continue to shape engagement activities during the environmental assessment process. Further details of engagement undertaken prior to the lodgement of the Scoping Report are provided in **AttC_Engagement, Section 5.2, p.1**.

Targeted engagement was undertaken with:

- Relevant government agencies and local council: DPHI, NSW Local Land Services, NSW Crown Land, NSW Environment Protection Authority (EPA), Heritage NSW, NSW DCCEEW - Hunter Valley Flood Mitigation Scheme, National Parks and Wildlife Services (NPWS), Transport for NSW, and City of Newcastle.
- State and Australian government elected representatives.
- Potentially affected private landowners.
- Indigenous stakeholders – two representatives from Awabakal Local Aboriginal Land Council attended a site inspection on 25 February 2026 as part of a preliminary Aboriginal due diligence assessment for the investigation area.

Wider community engagement was undertaken through a geo-targeted social media campaign between 14 February 2026 and 1 March 2026, directing community members to an online feedback survey. A total of 18 responses were received, with majority expressing support for the project. Key themes raised included:

- Rail travel time impacts during construction
- Road traffic and safety impacts during construction
- Biodiversity and waterway impacts
- Project benefits
- Benefits associated with removing the temporary speed restriction
- Construction noise
- Potential impacts on the historic heritage values of the existing bridge.

Engagement undertaken following lodgement of the Scoping Report (April – July 2026)

A Planning Focus Meeting was held on 29 April 2026 between ARTC, DPHI and relevant government agencies. ARTC provided an overview of the proposed action to assist agencies in preparing advice to DPHI regarding the SEARs. Attendees included ARTC, DPHI, Heritage NSW, City of Newcastle, NSW Local Land Services, NSW Environment Protection Authority, NSW Crown Land, NSW Fisheries, NSW DCCEEW and Transport for NSW.

A pre-referral meeting was held between ARTC and the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 10 June 2026. ARTC provided an overview of the proposed action and sought advice regarding the EPBC Act referral process.

ARTC has continued to engage with potentially affected landowners regarding the proposed temporary occupation of land required to facilitate construction.

Future engagement

Engagement during EIS preparation

ARTC will continue targeted engagement with:

- Relevant government agencies and local council
- State and Australian government elected representatives
- Potentially affected private landowners
- Indigenous stakeholders, including Registered Aboriginal Parties, as part of the Aboriginal Cultural Heritage Assessment Report
- Stakeholders identified through the SEARs and technical assessment processes.

ARTC will continue to provide project information to the wider community through a range of communication channels, including:

- Project webpage
- Stakeholder briefings
- Community notifications
- Face-to-face discussions with community members
- Geo-targeted social media posts
- Local media.

EIS public exhibition

Once prepared, the EIS will be placed on public exhibition for a minimum of 28 days, during which submissions will be invited from government agencies, stakeholders and the wider community. Engagement during the exhibition period will be guided by a Public Exhibition Engagement Action Plan and may include community notifications, advertisements, community information materials summarising key information from the EIS, community information materials, information sessions, stakeholder meetings and agency briefings.

Following the exhibition period, ARTC will prepare a Response to Submissions Report addressing issues raised during the exhibition. The report will be made publicly available.

Construction

Should the proposed action receive planning approval, ARTC will continue to engage with stakeholders and the community before and during construction. Engagement activities will be guided by the project Communications and Stakeholder Engagement Plan and will focus on providing timely information about construction activities, potential impacts and mitigation measures.

Consultation with the Australian Government will continue, where relevant, throughout the assessment process.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The National Environmental Protection Agency (the agency) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the agency to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the agency will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at Privacy@NationalEPA.gov.au.

☒ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA

Referring party details

Name	Zoe Cox
Job title	Environment Business Partner - Assessments
Phone	0447883486
Email	zcox@artc.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA

Person proposing to take the action details

Name	Duncan Cowie
Job title	Manager Projects NSW
Phone	0409601853
Email	DCowie@ARTC.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

ARTC was created as an Australian Government-owned statutory corporation in 1997 after the Australian Government and State governments agreed to the formation of a single point of contact for all operators seeking to access the national interstate rail network. Since its formation, ARTC has developed into one of Australia's largest freight rail network owners with more than 20 years' experience in building, maintaining and operating rail infrastructure.

ARTC has not been subject to any environmental prosecutions under the EPBC Act within the last 10 years and has a proven track record of responsibly delivering projects in accordance with applicable environmental legislation and regulation, and consistently delivered values based environmental performance initiatives beyond compliance obligations.

An Environmental History summary is provided in **AttD_Environmental_History, Table 1, p.1**. A total of three (3) notices under State legislation including EPA Victoria and Energy Safe Victoria have occurred in the last five years. Response actions have been undertaken through the implementation of ARTC's Environmental Policy, Environmental Management System, and Project specific environmental management plans and licences for construction and operation. ARTC considers it has maintained a satisfactory record of responsible environmental management.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

The ARTC Environment Policy (COR-PO-007) (refer to **AttE_Environment_Policy**) guides the continual improvement of ARTC's Environmental Management System, which is regularly updated and reviewed. ARTC's NSW Code of Practice for Assessment of Division 5.1 Activities (ENV-PR-009) (refer to **AttF_Code_of_Practice**) is the framework for the environmental assessment of rail infrastructure developments carried out by ARTC without consent in NSW.

The ARTC Environment Policy (COR-PO-007) commits ARTC to undertaking the proposed action in a safe and environmentally responsible manner, to achieve positive outcomes for relevant stakeholders and the environment. Achieving this will involve the following:

- Compliance with provisions and standards pertaining to economic, social and environmental performance
- Implementation of an Environmental Management System
- Ensure that proposed developments are carried out in an ecologically sustainable manner; apply avoidance, minimisation, mitigation and offset for potential impacts as required
- Ensure accountability for environmental impacts and proactive stakeholder engagement
- Optimise waste reduction, reuse and recycling opportunities
- Cultivate an environmentally conscious and responsible workforce
- Drive continual improvement in environmental performance.

The NSW Code of Practice for Assessment of Division 5.1 Activities (ENV-PR-009) covers activities that fall under Part 5, Division 5.1 of the EP&A Act. It sets out a five-stage assessment process and requires classification of the proposed activity into one of the following categories:

- Class 1 activity: requiring a Review of Environmental Factors (REF)
- Class 2 activity: requiring a REF in addition to a Species Impact Statement (SIS) and/or BDAR
- Class 3 activity: requiring an EIS.

The Code of Practice does not apply to Part 5, Division 5.1 activities that require an EIS (referred to as a Class 3 activity). If an EIS is required, the proposal will likely be classified as SSI under the Planning Systems SEPP and be subject to the assessment process set out in Division 5.2 of the EP&A Act.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN 75081455754**Organisation name** AUSTRALIAN RAIL TRACK CORPORATION LIMITED**Organisation address** 5035 SA

Proposed designated proponent details

Name Duncan Cowie**Job title** Manager Projects NSW**Phone** 0409601853**Email** DCowie@ARTC.com.au**Address** 5/33 Newton Street Broadmeadow NSW 2292

1.3.4 Identity: Summary of allocation

✔ Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA
Representative's name	Zoe Cox
Representative's job title	Environment Business Partner - Assessments
Phone	0447883486
Email	zcox@artc.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

✔ Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA
Representative's name	Duncan Cowie
Representative's job title	Manager Projects NSW
Phone	0409601853
Email	DCowie@ARTC.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

✔ Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Referring party

2. Location

2.1 Project footprint



Project Area: 31.00 Ha Disturbance Footprint: 5.86 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

Shamrock Street, Hexham NSW 2322

2.2.2 Where is the primary jurisdiction of the proposed action? *

New South Wales

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

Land tenure within the investigation area is predominantly freehold land. The exception is Crown land, which is non-freehold land.

Searches of the registers maintained by the National Native Title Tribunal, undertaken on 9 April 2026, identified no registered native title claims within the investigation area.

As at 9 June 2026, no undetermined Aboriginal Land Claims were identified over the non-freehold land within the investigation area.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The bridge is located on the Main North Line at Sandgate, NSW (32°51'24.00"S 151°41'45.41"E) and the investigation area extends from Shamrock Street, Hexham in the north to Sandgate in the south. The investigation area is in the traditional boundaries of the Awabakal people and within the Newcastle Local Government Area (LGA). The bridge is located over Ironbark Creek and is situated within a landscape characterised by rail infrastructure, tidal waterways and regionally significant wetlands.

The proposed action is predominantly located within the rail corridor which is owned by Transport for NSW and managed by ARTC and as such, most of the investigation area is zoned SP2 Railway under the Newcastle Local Environment Plan LEP 2012 (Newcastle LEP). Temporary occupation of land outside of the rail corridor is anticipated to support construction access and facilities, subject to agreement with landholders. This land is zoned as C2 Environmental Conservation Management and E5 Heavy Industrial under the Newcastle LEP.

The investigation area has been extensively modified and developed. The construction of floodgates on Ironbark Creek in 1971 impacted the tidal connectivity between the Hexham Swamp wetlands and the Hunter River estuary and resulted in dramatic changes to the landscape including the loss of mangrove and saltmarsh habitat. In 2008 the Hexham Swamp Rehabilitation Project was implemented to restore the wetlands. Despite the improved condition of the wetlands, the investigation area has been directly impacted by the modification of the landscape and the construction of road and rail infrastructure, including the Main North Line.

The closest dwellings to the investigation area are located in Shamrock Street, approximately 900 metres from the existing bridge. The proposed action is not visible from any public viewpoints and will therefore not result in any impacts to landscape character or visual amenity. The surrounding land uses include wetland environments, a small pocket of residential housing located near the rail corridor in Shamrock Street and on Old Maitland Road, industrial areas consisting of buildings dedicated primarily to industrial services, transport, manufacturing, wholesale supplying, and logistics. Other nearby land uses also include the Sandgate Cemetery and an Aged Care Facility, the primary road network and passenger rail stations at Hexham and Sandgate railway lines.

3.1.2 Describe any existing or proposed uses for the project area.

Existing use

The proposed action is predominantly located within the rail corridor, which provides rail services on the Main North Line. The existing bridge carries two main lines and is a key part of the Hunter Valley rail network, supporting passenger and freight services and providing an important link for coal movements to and from the Port of Newcastle.

Temporary occupation of land outside of the rail corridor is anticipated to support construction activities, including site access and ancillary facilities, subject to agreement with the relevant landholders. The existing uses of this land include:

- Buildings and land primarily used for industrial purposes
- A Crown land paper road (a public road identified on land titles but not physically constructed)
- Wetland areas associated with the Hexham Swamp Rehabilitation Project (NSW Major Project MP 05_0193), managed by NSW Local Land Services.

Proposed use

During construction, land within the rail corridor would be used for construction activities, access and ancillary facilities, while rail services would continue to operate on the Main North Line.

Following construction, the rail corridor would continue to be used for rail operations, with no change to its existing land use. Standard ARTC inspection and maintenance activities would continue during operations. The replacement bridge will reduce maintenance requirements associated with the ageing condition of the existing bridge.

Land outside the rail corridor would be temporarily occupied to facilitate construction activities, including access and ancillary facilities. Land not required for the ongoing operation of the proposed action would be rehabilitated and returned to its former land use, or otherwise managed in accordance with the relevant landowners.

ARTC will continue to engage with affected landowners regarding the proposed temporary land requirements. This engagement will inform the assessment of potential land use impacts, which will be further considered in the EIS, together with appropriate mitigation measures.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

The rail corridor itself is dominated by exotic weed species, which occur along the embankments and disturbed margins of the rail alignment. Outside of the rail corridor, the surrounding landscape predominantly comprises coastal wetland vegetation dominated by mangroves and casuarinas.

Ancillary construction areas are proposed temporarily on a portion of land associated with the Hexham Swamp Rehabilitation Project (MP05-0193), which is under the management of NSW Local Land Services. The Hexham Swamp Rehabilitation Project was approved by the then NSW Minister for Planning in 2006, and has been subject to three modifications in 2007, 2011 and 2013. This project essentially entailed the opening of the flood gates which are located downstream of the Ironbark Creek to allow for tidal inundation of the wetlands and restoration of estuarine habitats (WBM, 2005).

Areas of native vegetation around and within the investigation area are mapped as having Biodiversity Values on the Biodiversity Values Map (NSW DCCEEW 2026d). The mapped Biodiversity Values include coastal wetlands under the Resilience and Hazards SEPP and threatened species or communities with potential for serious and irreversible impacts.

Much of the investigation is mapped as important habitat for the following migratory shorebirds due to their association with the Hunter Estuary: *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit), *Limosa limosa* (Black-tailed Godwit), *Calidris ferruginea* (Curlew Sandpiper), *Numenius madagascariensis* (Eastern Curlew), *Calidris canutus* (Red Knot) and *Xenus cinereus* (Terek Sandpiper); NSW DECCEW 2026g. No areas of outstanding biodiversity values (AOBV) occur within the investigation area (NSW DCCEEW 2026e).

One Wetland of International Importance (Ramsar Wetlands) occurs outside of the investigation area, the Hunter Estuary Wetlands. The Hunter Estuary Wetlands is comprised of two separate areas, with one area on Kooragang Island about 2 km east of the bridge and Shortland Wetland about 1 km south of the bridge. Ironbark Creek occurs downstream of Shortland Wetland.

The area surrounding Ironbark Creek is mapped as supporting groundwater dependent ecosystems (Jacobs and Transport for NSW, 2021).

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The surrounding area is characterised by undulating low plains and broad estuarine and alluvial plains. Slopes rarely exceed 15 % gradient with occasional short steep side slopes containing terracetting and deeply incised drainage lines. In the northern part of the investigation area from Shamrock Street the elevation is about 1.8 – 2m Above Height Datum (AHD) and gradually rises to about 3.5 m AHD at the northern bank of Ironbark Creek to sea level at Ironbark Creek. On the southern side of Ironbark Creek, the elevation gradually decreases from about 3 m AHD to 1.2 m AHD at the most southern point of the investigation area.

Water levels within Ironbark Creek fluctuate in response to rainfall events and tidal movements. The water quality of Ironbark Creek is characterised as having low dissolved oxygen, high turbidity and low metal concentrations. Part of the investigation area is in Hexham Swamp, which has a high-water table of no more than 60 cm below the surface.

Depth to rock ranges between approximately 25m and 50m.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

A Biodiversity Constraints Assessment (**AttB_Bio_Assessment**) has been prepared to assess the biodiversity values associated with the investigation area and to confirm the conservation significance of the investigation area, including the presence of threatened biota listed under the NSW BC Act, FM Act and MNES listed under the EPBC Act and their habitats.

The Biodiversity Constraints Assessment (**AttB_Bio_Assessment, Section 3.1 and 3.2, p.12**) included the following key tasks:

- A desktop assessment was undertaken to identify threatened flora and fauna species, populations and ecological communities listed under the BC Act and MNES listed under the EPBC Act that may occur in the investigation area.
- A one-day site inspection of some areas of the investigation area was undertaken by an ecologist on 25 February 2026.

It is noted that field surveys have not yet been completed across the full extent of the investigation area, the current assessment is based on available field observations and desktop review. Further field survey will be carried out as part of the BDAR for all relevant biodiversity entities to satisfy the requirements of the BAM and the BOS.

Flora (NSW BC Act)

Desktop searches identified 31 threatened flora species that had been recorded or had potential habitat for the species in the locality. Of these, four species were considered to have a moderate likelihood of occurrence in the investigation area including; *Eucalyptus parramattensis* subsp. *decadens* (Earp's Gum), *Cynanchum elegans* (White-flowered Wax Plant), *Zannichellia palustris* and *Maundia triglochinoides*.

No threatened flora species were observed during the site inspection; however, targeted surveys would be needed to confirm the absence of species that are considered likely to occur.

Fauna (NSW BC Act)

The desktop assessment identified 79 threatened fauna species that have been recorded or have the potential to occur in the locality. Of these species, 22 were considered to have a high or moderate likelihood of occurrence, or were considered present, based on important habitat mapping in the investigation area. Of these 22 species, the following 6 species have habitats mapped under the BOS important habitat mapping within the investigation area:

- *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit)
- *Limosa limosa* (Black-tailed Godwit)
- *Calidris ferruginea* (Curlew Sandpiper)
- *Numenius madagascariensis* (Eastern Curlew)
- *Calidris canutus* (Red Knot)
- *Xenus cinereus* (Terek Sandpiper).

If a species has habitat mapped under the BOS important habitat mapping, it must be 'considered present' for the purpose of impact assessment and no survey effort is required to determine presence (unless the species profile in the NSW BioNet Threatened Biodiversity Data Collection (TBDC) states otherwise).

No threatened fauna species observed within the investigation area during the site inspection.

The investigation area contains a variety of habitats that are likely to be utilised by native fauna. Whilst the exotic and hardstand vegetation areas would provide limited habitat, native vegetation including mangroves, swamp oak and reedlands would provide roosting and foraging habitat for avian fauna, as well as other native fauna species such as frogs and bats. No hollow-bearing trees were observed on site.

It is possible that voids and crevices beneath the bridge and other structures could provide temporary roosting habitat for microbat species. Ironbark Creek and the surrounding tributaries would likely provide foraging habitat for threatened microbat species including the Southern Myotis.

Aquatic species (NSW FM Act)

Ironbark Creek is listed as key fish habitat (DPI, 2026a) and may provide habitat for the threatened aquatic biota such as the *Epinephelus daemeli* (Black Rockcod) and *Mogurnda adspersa* (Southern Purple Spotted Gudgeon).

Serious and Irreversible Impact (SII) entities (NSW BC Act)

Of the threatened fauna species identified during the desktop searches, eleven are listed as SII entities of which two of these species, the *Calidris ferruginea* (Curlew Sandpiper) and *Numenius madagascariensis* (Eastern Curlew) considered present in the investigation area due to the occurrence of important habitat mapping (NSW DCCEEW 2026g). Both species are also listed as critically endangered and migratory under the EPBC Act.

Eight threatened flora species identified in the desktop searches are listed as SII entities however, these species are considered unlikely to occur in the investigation area due to the absence of required habitat.

MNES (EPBC Act)

The following abbreviations relate to listings under the EPBC Act for MNES and will be used throughout this referral:

- V: vulnerable species
- E: endangered species
- CE: critically endangered species
- EEC: Endangered ecological community
- C: migratory species listed under China-Australia Migratory Bird Agreement (CAMBA)
- J: migratory species listed under Japan-Australia Migratory Bird Agreement (JAMBA)
- K: migratory species listed under Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

For certain highly mobile species, including migratory birds, the BAM identifies mapped 'important habitat' representing habitat critical to key lifecycle functions. Important habitat mapping for six MNES occurs within the investigation area. Under the BAM, species are assumed to occur within these mapped areas for assessment purposes. While this approach is defined under the BC Act, the NSW BOS and BAM are endorsed for use under the EPBC Act and, accordingly, these areas are considered to represent important habitat for the relevant species when assessing impacts on MNES.

The desktop assessment identified 41 threatened fauna species, 27 threatened flora species and 41 migratory species listed under the EPBC Act as having the potential to occur within the locality.

It is noted that for the purpose of discussion regarding EPBC Act listings, *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit) is listed as a threatened species under the EPBC Act, whilst *Limosa lapponica* (Bar-tailed Godwit) is listed as a migratory species under the EPBC Act.

Of the threatened fauna species, 11 species were considered to have a moderate or higher likelihood of occurrence, including:

- *Litoria aurea* (Green and Golden Bell Frog) is listed as V
- *Botaurus poiciloptilus* (Australasian Bittern) is listed as E
- *Calidris acuminata* (Sharp-tailed Sandpiper) is listed as V, C, J, K
- *Tringa nebularia* (Common Greenshank) is listed as E, C, J, K
- *Pteropus poliocephalus* (Grey-headed Flying-fox) is listed as V
- *Calidris canutus* (Red Knot) which is listed as E, C, J, K
- *Calidris ferruginea* (Curlew Sandpiper) which is listed as CE, C, J, K
- *Limosa limosa* (Black-tailed Godwit) which is listed as E, C, J, K
- *Numenius madagascariensis* (Eastern Curlew) which is listed as CE, C, J, K
- *Xenus cinereus* (Terek Sandpiper) which is listed as V, C, J, K

- *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit) which is listed as E.

Three fish species listed under the EPBC Act were identified as having the potential to occur within the locality based on the Protected Matters Search Tool (PMST). *Epinephelus daemeli* (Black Rockcod, Black Cod, Saddled Rockcod) which is listed as V is considered to have a low likelihood of occurrence as there are no records in the locality, however the species may use Ironbark Creek to forage. The other two fish species were unlikely to occur due to the habitat type requirements or being listed as 'Conservation Dependent'.

Of the threatened flora species, two species were considered to have a moderate or higher likelihood of occurrence, including:

- *Cynanchum elegans* (White-flowered Wax Plant) is listed as E
- *Eucalyptus parramattensis subsp. Decadens* (Earp's Gum) is listed as V.

Of the migratory species, a total of 19 species were considered to have a moderate or higher likelihood of occurrence. Migratory species with a moderate to high likelihood of occurrence include the following:

- *Calidris acuminata* (Sharp-tailed Sandpiper) is listed as V, C, J, K
- *Tringa nebularia* (Common Greenshank) is listed as E, C, J, K
- *Calidris melanotos* (Pectoral Sandpiper) is listed as J, K
- *Calidris ruficollis* (Red-necked Stint) is listed as C, J, K
- *Chlidonias leucopterus* (White-winged Black Tern) is listed as C, J, K
- *Hydroprogne caspia* (Caspian Tern) is listed as J
- *Motacilla flava* (Yellow Wagtail) is listed as C, J, K
- *Numenius phaeopus* (Whimbrel) is listed as C, J, K
- *Pluvialis fulva* (Pacific Golden Plover) is listed as C, J, K
- *Thalasseus bergii* (Crested Tern) is listed as C, J, K
- *Tringa brevipes* (Grey-tailed Tattler) is listed as C, J, K
- *Tringa glareola* (Wood Sandpiper) is listed as C, J, K
- *Tringa stagnatilis* (Marsh Sandpiper) is listed as C, J, K
- *Limosa lapponica* (Bar-tailed Godwit) which is listed as C, J, K.

The following five migratory species are considered present within the investigation area as mapped important habitat occurs within the investigation area:

- *Calidris canutus* (Red Knot) which is listed as E, C, J, K
- *Calidris ferruginea* (Curlew Sandpiper) which is listed as CE, C, J, K
- *Limosa limosa* (Black-tailed Godwit) which is listed as E, C, J, K
- *Numenius madagascariensis* (Eastern Curlew) which is listed as CE, C, J, K
- *Xenus cinereus* (Terek Sandpiper) which is listed as V, C, J, K.

Eight Threatened Ecological Communities (TECs) were identified as having the potential to occur within the investigation area. Following refinement during the initial site inspection, one TEC listed under the EPBC Act was found to be associated with the PCTs (PCT 3962 and 4026) identified in the investigation area. This TEC is the Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community and it is listed as Endangered Ecological Community (EEC).

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Most of the investigation area was developed for the construction of the railway in 1857 and has had ongoing freight and domestic use as a railway since then. Historical imagery shows that the surrounding land use has stayed relatively stable throughout this time, with some industrial development occurring on Sparke Street and off Old Maitland Road (Spatial Services 2026).

The rail corridor itself is dominated by exotic weed species, which occur along the embankments and disturbed margins of the rail alignment. Outside of the rail corridor, the surrounding landscape predominantly comprises coastal wetland vegetation dominated by mangroves and casuarinas.

The NSW (Mitchell) Landscape of the investigation area is mapped as Lower Hunter Channels and Floodplains (DECC 2008). The Soil Landscape of the investigation area is mapped as; 'Hexham Swamp' which occurs on broad, swampy, estuarine backplains on waterlogged humic clays, 'Millers Forest' which occurs on extensive alluvial plain on imperfectly to poorly drained Prairie Soils and 'Disturbed Terrain'.

A site inspection conducted by a GHD ecologist on 25 February 2026 identified three plant community types (PCTs) within the investigation area including:

- PCT 4091: Grey Mangrove- River Mangrove Forest
- PCT 4026: Estuarine Sea Rush Swamp Oak Forest
- PCT 3962: Coastal Floodplain Phragmites Reedland.

Of the three PCTs identified in the investigation area, two are associated with a listed TEC, or multiple TECs, under the BC Act and/or EPBC Act. The following TECs have the potential to occur in the investigation area including:

- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions EEC (BC Act) which is associated with PCT 4026 and PCT 3962.
- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions EEC (BC Act) which is associated with PCT 3962.
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community EEC (EPBC Act) which is associated with PCT 3962 and PCT 4026.

Vegetation mapping within the investigation area is provided in **AttB_Bio_Assessment, Section 4.2 and Figure 4.1, p.14 and p.20.**

An assessment of whether the vegetation in the investigation area is commensurate with these TECs will be completed as part of the BDAR.

3.3 Heritage

3.3.1 Describe any Commonwealth Heritage Places Overseas or other places recognised as having heritage values that apply to the project area.

Searches of the following databases were carried:

- World Heritage Register
- National Heritage List
- NSW State Heritage Register
- ARTC Heritage and Conservation Register (ARTC Section 170 register)
- Newcastle LEP 2012
- Commonwealth Heritage Places Overseas.

There are no World Heritage places, National heritage places or Commonwealth Heritage Places Overseas places within the investigation area. Fort Wallace, Stockton is a National heritage place which is located approximately 9 km east of the CDA and due to this large offset distance, it would not be impacted directly or indirectly by the proposed action.

Of the databases searched, there was one heritage item recorded within the investigation area and is of local significance. The bridge itself is listed on the ARTC Heritage and Conservation Register as 'Sandgate, Ironbark Creek Underbridges'. Under Section 170 of the NSW Heritage Act, all government agencies in NSW are required to identify, conserve, and manage the heritage assets it owns, occupies, or manages.

The 'Sandgate, Ironbark Creek Underbridges' listing encompasses an 1898 bridge that carried the coal lines and a 1912 bridge that carries the main lines. The 1898 bridge was replaced in 2004, but the listing was not updated (Hunter Water Australia, 2014). The 1912 bridge is the subject of the proposed action and is proposed for replacement.

As outlined in the heritage listing, the heritage value is related to the two bridges being the same type of bridge built 14 years apart which thereby provides a contrast in bridge design. Further, it reveals variations in bridge construction and improvements in truss design in a short period from the late 1890s to the 1910s. However, the 1898 bridge has since been replaced with a concrete girder bridge and no longer represents a steel truss bridge.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

To inform the preliminary constraints for the proposed action, a preliminary Aboriginal due diligence assessment was prepared in June 2026 to identify if Aboriginal objects are, or are likely, to be present and to determine whether the proposed action is likely to harm Aboriginal objects.

The investigation area is in the traditional boundaries of the Awabakal people. Two representatives from the Awabakal Local Aboriginal Land Council attended a site inspection on 25 February 2026 as part of the preliminary Aboriginal due diligence assessment. No Aboriginal objects or areas of Aboriginal archaeological potential were identified during the site inspection; however, not all parts of the investigation area were inspected.

The investigation area is located within Hexham Swamp, which is known by the Awabakal people as *Burraghihnbihng*. Being part of an important cultural landscape, *Burraghihnbihng* also includes Rocky Knob which was gazetted as an Aboriginal Place in 2022 and is about four kilometres west of the investigation area. *Burraghihnbihng* and Ironbark Creek provided a resource rich landscape which the Awabakal people used for subsistence, medicine and material. The Awabakal people developed a deep knowledge of the flora and fauna on their Country, which continues to be passed down through the generations.

Hexham Swamp has been heavily impacted by the construction of the Ironbark Creek floodgates, which impacted the natural tidal flows of the Hunter River and Ironbark Creek. This drastically changed the landscape, changing it from mudflats and saltmarsh to an area dominated by dense reeds.

There are no recorded Aboriginal Heritage Information Management System (AHIMS) sites within the investigation area, however a potential archaeological deposit (PAD) was identified by McCardle (2005) on the northern bank of Ironbark Creek. This area was inspected during the site inspection on 25 February 2026 with two representatives from the Awabakal Local Aboriginal Land Council. Substantial disturbance associated with the construction and maintenance of the Main North Line including the existing rail bridges was noted within the area identified as a PAD. The construction of floodgates at the mouth of Ironbark Creek in 1970 also impacted the PAD, creating an open brackish grassland. Before 1970, the area identified as a PAD was subject to tidal flushing.

Based on both the degree of disturbance, and the lack of Aboriginal objects recorded on AHIMS within Hexham Swamp (*Burraghihnbihng*), it is unlikely that any Aboriginal objects would occur within the area identified as a PAD.

Despite the importance of *Burraghihnbihng*, much of it has been impacted through various land use practices. These disturbances have impacted the likelihood of surviving Aboriginal cultural heritage within the landscape. Additionally, while *Burraghihnbihng* is significant, Aboriginal site patterning suggests that the majority of Aboriginal objects are located on the margins of the swamp on higher ground, suggesting that higher and drier landforms were preferred for camping.

As required by the SEARs, impacts on Aboriginal Cultural Heritage values (both tangible and intangible) will be assessed within an Aboriginal Cultural Heritage Assessment Report (ACHAR) as part of the EIS. The ACHAR will also include consultation with Registered Aboriginal Parties.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

The bridge is located over Ironbark Creek, which drains to the east into the south channel of the Hunter River. Ironbark Creek is part of the broader Hunter River catchment, which encompasses an area of approximately 22,000 square kilometres (Jacobs and Transport for NSW, 2021). Ironbark Creek is subject to tidal influence and flooding. The surrounding terrain is predominantly flat and characterised by significant areas of mangroves and saltmarsh.

One Wetland of International Importance (Ramsar Wetlands) occurs outside of the investigation area, the Hunter Estuary Wetlands. The Hunter Estuary Wetlands is comprised of two separate areas, with one area on Kooragang Island about 2 km east of the bridge and Shortland Wetland about 1 km south of the bridge. The bridge occurs downstream of Shortland Wetland.

Floodgates constructed in 1970 at the mouth of Ironbark Creek reduced the likelihood of Hexham Swamp (*Burraghihnbihng*) being inundated during a flood and almost eliminated tidal exchange. The Hexham Swamp Rehabilitation Project (MP05-0193) was approved in 2006 and involved the opening of the flood gates which are located downstream of the Ironbark Creek to restore tidal flushing. Land associated with the Hexham Swamp Rehabilitation Project is located adjacent to the eastern boundary of the rail corridor and is under the management of NSW Local Land Services.

Preliminary flood modelling undertaken for the site (Pitt & Sherry, 2020) identified that in the 1% Annual Exceedance Probability event:

- Only a small proportion of flood flow, about 10%, pass under the Ironbark Creek bridges. The remainder passes over the railway embankment or through the bridge to the north over a distance of about 6.5km. The waterway area under the bridges therefore has limited influence on flood conditions upstream.
- Water levels rise from an elevation of about 3.56 m AHD on the downstream side to 3.62 m AHD on the upstream side of the bridges, so the afflux or change in flood levels caused by the bridges, is about 0.06m.
- The study identified that the extent of this afflux was difficult to determine but it could extend one kilometre upstream of the bridge into Hexham Swamp.
- Flood levels exceed the rail levels either side of the bridge and the opening under the bridge deck is fully submerged.

The general areas typically have shallow groundwater levels, with flow generally following the surface topography (Jacobs and Transport for NSW, 2021). There are several existing groundwater bores located within the investigation area as identified in the previous preliminary environmental assessment (Pitt & Sherry, 2020). The assessment noted that based on published borehole data, the groundwater level at the north extent of the investigation area is approximately 1.90 metres Australian height datum (AHD). This relatively shallow groundwater reflects the landform position (coastal floodplain) and low elevation of the investigation area and locality.

The area surrounding Ironbark Creek is mapped as supporting groundwater dependent ecosystems (Jacobs and Transport for NSW, 2021).

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	Yes	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no World Heritage Areas within or adjacent to the investigation area.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no National Heritage places within the investigation area or within proximity to the investigation area. Fort Wallace, Stockton is a National heritage place which is located approximately 9 km east of the investigation area and due to this large offset distance, it would not be impacted directly or indirectly by the proposed action.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Ramsar wetland
No	Yes	Hunter Estuary Wetlands

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.3.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

One Wetland of International Importance (Ramsar Wetland) occurs outside of the investigation area, the Hunter Estuary Wetlands. The Hunter Estuary Wetlands is comprised of two separate areas, with one area on Kooragang Island about 2 km east of the bridge and Shortland Wetland about 1 km south of the bridge. The bridge occurs downstream of Shortland Wetland.

Ecological character is the combination of the ecosystem components, processes, benefits and services that characterise the wetland at a given point in time. The ecological character description of a Ramsar wetland provides the baseline description of the wetland at a given point in time and can be used to assess changes in the ecological character of these sites.

As outlined in the *Ecological Character Description of the Kooragang Component of the Hunter Estuary Wetlands Ramsar Site* (Brereton and Taylor-Wood, 2010), the critical ecosystem components, sub-components and processes that describe the ecological character of the Kooragang component at the time of listing are:

- waterbirds, particularly migratory shorebirds
- the green and golden bell frog (*Litoria aurea*), a nationally listed threatened species
- *Sarcocornia* saltmarsh which supports migratory shorebirds
- intertidal mudflats which provide foraging habitat for migratory shorebirds
- hydrology (tidal regime and freshwater inflows) which is a major influence on the distribution and extent of saltmarsh and mangroves

As outlined in the *Ecological Character of Shortland Wetlands – a Privately Managed Ramsar Site in NSW* (Taylor-Wood and Jaensch, 2005), the critical ecosystem components, sub-components and processes that describe the ecological character of the Shortland Wetland component at the time of listing are:

- Hydrological regime of Melaleuca Swamp Forest
- Inundation of wetland communities
- Water quality in BHP pond
- Extent of healthy *Melaleuca* Swamp Forest
- Extent of other vegetation/habitat types
- Extent and accessibility of wetlands
- Diversity of habitat types
- Number of vegetation communities
- Number of waterbird species
- Number of pairs of colonial waterbirds
- Impact of waterbirds on *Melaleuca* trees
- Impact of weeds

There is potential for indirect impacts to the Hunter Estuary Wetland Ramsar site such as:

- Water quality impacts due to earth works and activities such as the installation of temporary instream structures, piers, pile caps and abutments during construction. Water quality impacts could occur due to the potential for runoff, sedimentation, and contaminant mobilisation
- Changes to hydrological regimes causing upstream impacts in the construction stage due to temporary instream structures such as a rock fill platform
- Changes to hydrological regimes if the design does not incorporate design features that minimise changes to the local hydrology in the operational stage.

These potential indirect impacts are relevant to the critical ecosystem components, sub-components and processes that describe the ecological character for both the Kooragang and Shortland Wetland components of the Hunter Estuary Wetland Ramsar site.

4.1.3.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact?

*

No

4.1.3.6 Describe why you do not consider this to be a Significant Impact. *

As detailed within Section 4.1.3.2 of this referral, there are potential indirect impacts to the Hunter Estuary Wetlands Ramsar site relating to changes in the hydrological regime and water quality. The Significant Impact Guidelines specify that an action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in:

- areas of the wetland being destroyed or substantially modified
- a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland
- the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependant upon the wetland being seriously affected
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health, or
- an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.

Accordingly, the significant impact criteria relevant to the proposed action include:

- a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health

Throughout design development and constructability assessments, ARTC has aimed to minimise changes to the local hydrology that may affect the surrounding wetland areas, including the Hunter Estuary Wetlands Ramsar site. From a constructability perspective, this has included consideration of the impact of temporary instream structures within Ironbark Creek which are needed to provide safe access to the bridge over the waterway. It is anticipated that the temporary instream structure would be required for the duration of the construction period, which is approximately two years. A rock fill platform has been identified as the preferred temporary instream structure as it provides a work platform whilst also maintaining water flow with pipes. At the completion of construction, the temporary instream structure would be removed, with the creek returned to its current condition.

A key factor considered within the design development has been whether the new bridge should or should not include a central pier within Ironbark Creek. To minimise hydrological impacts to Ironbark Creek, the concept design has proposed no piers within the creek (this is also consistent with the existing bridge), with this detail to be confirmed during the next design stage.

In the 1% Annual Exceedance Probability flood event, only about 10% of flood flow passes under the Ironbark Creek bridges. The remainder passes over the railway embankment or through the bridge to the north over a distance of about 6.5km (Pitt & Sherry, 2020). The waterway area under the bridges therefore has limited influence on flood conditions upstream. It is noted that locally raising the bridge would provide limited improvement to overall flood immunity, as the railway tracks on both approaches would remain inundated over substantial lengths during such events. Accordingly, the design intent has been to maintain

a soffit level consistent with the existing coal bridge, while ensuring an equivalent or greater hydraulic opening to avoid adverse impacts on flood behaviour. As such, the proposed action is not expected to have substantive changes to regimes to the Hunter Estuary Wetlands Ramsar site.

Hydrology impacts as a result of the proposed action are expected to be minor as the design and construction methodology has already incorporated elements to minimise impacts. For these reasons, it is unlikely that the proposed action would result in a substantial and measurable change in the hydrological regime of the Hunter Estuary Wetlands Ramsar site and constitute a significant impact as per the Significant Impact Guidelines.

Notwithstanding, potential impacts of the project on hydrology will be assessed in a hydrology assessment for both surface and ground water as part of the EIS in accordance with SEAR 17. Specifically, SEAR 17(5a) requires an assessment of construction and operation of the project on surface hydrology, including impacts on hydrological processes within the Hunter River, and adjacent wetlands and sensitive environments (Hunter Wetlands National Park and Hunter Estuary Wetlands), including the discharge of stormwater runoff to the Hunter River during construction and operation. Management measures and mitigations will be prescribed within the EIS to address residual impacts in the pre-construction (next stage of design), construction or operational stages of the proposed action, as relevant.

As required by SEAR 18, a water quality assessment for both surface and groundwater will be carried out as part of the EIS, including consideration of the ambient *NSW Water Quality Objectives* and environmental values for the receiving waters relevant to the proposed action. As required by SEAR 18(1h), the water quality assessment will also identify sensitive receiving environments and measures to avoid or minimise impacts on those environments. Mitigation measures will be prescribed within the EIS to address residual impacts in the pre-construction (next stage of design), construction or operational stages of the proposed action, as relevant.

Construction presents a risk to downstream water quality if mitigation measures are not implemented, monitored and maintained throughout the construction period. The proposed action has the potential to temporarily reduce water quality from runoff, sedimentation, and contaminant mobilisation; however, with the implementation of project specific and standard soil and water construction mitigation measures (that would be prescribed in the EIS), the proposed action would not cause significant impacts on the overall condition of the surrounding wetland areas, including the Hunter Estuary Wetlands Ramsar site. As such, construction would not result in any long-term water quality impacts in the investigation area and would be unlikely to cause changes to the water quality environment against the *NSW Water Quality Objectives*. For these reasons, it is unlikely that the proposed action would result in a substantial and measurable change in the water quality of the Hunter Estuary Wetlands Ramsar site and constitute a significant impact as per the Significant Impact Guidelines.

4.1.3.7 Do you think your proposed action is a controlled action? *

No

4.1.3.9 Please elaborate why you do not think your proposed action is a controlled action.

*

An action may be deemed a controlled action if it occurs within or outside a declared Ramsar wetland and the action has, will have or is likely to have a significant impact on the ecological character of the Ramsar wetland. The 'ecological character' is the combination of the ecosystem components, processes and benefits/ services that characterise the wetland at a given point in time. The proposed action occurs outside of a declared Ramsar wetland and there are potential indirect impacts to the Hunter Estuary Wetlands Ramsar site arising from potential changes in the hydrological regime and water quality (refer to section 4.1.3.2 of this referral).

Hydrology impacts as a result of the proposed action are expected to be minor as the design and construction methodology has already incorporated elements to minimise impacts and avoid material changes in surface water patterns. Further assessment will be carried out within a hydrology assessment for both surface and ground water as part of the EIS, including the identification of mitigation measures to address residual impacts in the pre-construction (next stage of design), construction or operational stages of the proposed action, as relevant. For these reasons, it is unlikely that the proposed action would result in a substantial and measurable change in the hydrological regime of the wetland and constitute a significant impact as per the Significant Impact Guidelines.

The *NSW Water Quality Objectives* provide the agreed environmental values and long-term goals for NSW's surface waters. The objectives are consistent with the national framework for assessing water quality set out in the *NSW Water Quality Guidelines*, which supersedes the Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines. As part of the EIS, the proposed action needs to demonstrate that it can be designed, constructed and operated to protect the *NSW Water Quality Objectives* where they are currently being achieved, and ensure where they are currently not being achieved there is no further deterioration. The water quality assessment to be carried out within the EIS in accordance with the relevant guidelines together with an appropriate construction management approach and mitigation measures provides a robust framework to minimise potential water quality impacts from the proposed action. For these reasons, it is unlikely that the proposed action would result in a substantial and measurable change in the water quality of the Hunter Estuary Wetlands Ramsar site and constitute a significant impact as per the Significant Impact Guidelines.

The proposed action occurs outside of a declared Ramsar wetland and may result in indirect impacts on the ecological character of the Ramsar wetland. The concept design has incorporated design features to minimise impacts on surrounding wetlands and further assessment will be carried out within the EIS, with mitigation measures identified to minimise residual impacts. Whilst this would be assessed in detail in the EIS, it is expected that the proposed action would not exceed limits of acceptable change or constitute a significant impact to the ecological character description of the Ramsar wetland. On this basis, the proposed action is not considered likely to be a controlled action.

4.1.3.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Project specific and standard soil and water construction mitigation measures will be identified as part of the hydrology and water quality assessments to be completed as part of the EIS. The BDAR will also assess and provide mitigation measures for potential indirect impacts to the Ramsar wetland.

Should the proposed action be approved, a Construction Environmental Management Plan (CEMP) would be prepared to 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 conditions of 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* (Department of Planning, Industry and Environment (DPIE), 2020c).

In the operational stage, maintenance activities would be undertaken in accordance with ARTC's standard operating procedures.

4.1.3.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

Biodiversity offsets for unavoidable residual impacts will be secured in accordance with the NSW BOS, with the offset requirements for the proposed action confirmed in conditions of approval based on a finalised and approved BDAR.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species	Common name
No	No	Angophora inopina	Charmhaven Apple
No	No	Anthochaera phrygia	Regent Honeyeater
No	No	Ardena grisea	Sooty Shearwater
No	No	Arenaria interpres	Ruddy Turnstone
Yes	Yes	Botaurus poiciloptilus	Australasian Bittern
No	No	Caladenia tessellata	Thick-lipped Spider-orchid, Daddy Long-legs
No	No	Calidris acuminata	Sharp-tailed Sandpiper
Yes	Yes	Calidris canutus	Red Knot, Knot
Yes	Yes	Calidris ferruginea	Curlew Sandpiper
No	No	Calidris tenuirostris	Great Knot
No	No	Callocephalon fimbriatum	Gang-gang Cockatoo
No	No	Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo
No	No	Caretta caretta	Loggerhead Turtle
No	No	Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat
No	No	Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
No	No	Charadrius mongolus	Lesser Sand Plover, Mongolian Plover
No	No	Chelonia mydas	Green Turtle
No	No	Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)
No	No	Commersonia prostrata	Dwarf Kerrawang
No	No	Cryptostylis hunteriana	Leafless Tongue-orchid
Yes	Yes	Cynanchum elegans	White-flowered Wax Plant

Direct impact	Indirect impact	Species	Common name
No	No	<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)
No	No	<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth
No	No	<i>Diomedea antipodensis</i>	Antipodean Albatross
No	No	<i>Diomedea antipodensis gibsoni</i>	Gibson's Albatross
No	No	<i>Diomedea epomophora</i>	Southern Royal Albatross
No	No	<i>Diomedea exulans</i>	Wandering Albatross
No	No	<i>Diomedea sanfordi</i>	Northern Royal Albatross
No	No	<i>Diuris praecox</i>	Newcastle Doubletail
Yes	Yes	<i>Epinephelus daemeli</i>	Black Rockcod, Black Cod, Saddled Rockcod
No	No	<i>Eretmochelys imbricata</i>	Hawksbill Turtle
No	No	<i>Erythrorhynchus radiatus</i>	Red Goshawk
Yes	Yes	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	Earp's Gum, Earp's Dirty Gum
No	No	<i>Euphrasia arguta</i>	
No	No	<i>Falco hypoleucos</i>	Grey Falcon
No	No	<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe
No	No	<i>Grantiella picta</i>	Painted Honeyeater
No	No	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea
No	No	<i>Hirundapus caudacutus</i>	White-throated Needletail
No	No	<i>Lathamus discolor</i>	Swift Parrot
Yes	Yes	<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit
Yes	Yes	<i>Limosa limosa</i>	Black-tailed Godwit
Yes	Yes	<i>Litoria aurea</i>	Green and Golden Bell Frog
No	No	<i>Macronectes giganteus</i>	Southern Giant-Petrel, Southern Giant Petrel
No	No	<i>Macronectes halli</i>	Northern Giant Petrel

Direct impact	Indirect impact	Species	Common name
No	No	Melanodryas cucullata cucullata	South-eastern Hooded Robin, Hooded Robin (south-eastern)
No	No	Mixophyes balbus	Stuttering Frog, Southern Barred Frog (in Victoria)
No	No	Natator depressus	Flatback Turtle
No	No	Neophema chrysostoma	Blue-winged Parrot
Yes	Yes	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Nyctophilus corbeni	Corben's Long-eared Bat, South-eastern Long-eared Bat
No	No	Pachyptila turtur subantarctica	Fairy Prion (southern)
No	No	Persicaria elatior	Knotweed, Tall Knotweed
No	No	Petauroides volans	Greater Glider (southern and central)
No	No	Petaurus australis australis	Yellow-bellied Glider (south-eastern)
No	No	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)
No	No	Pluvialis squatarola	Grey Plover
No	No	Potorous tridactylus tridactylus	Long-nosed Potoroo (northern)
No	No	Prasophyllum sp. Wybong (C.Phelps ORG 5269)	a leek-orchid
No	No	Pseudomys novaehollandiae	Pookila, New Holland Mouse
Yes	Yes	Pteropus poliocephalus	Grey-headed Flying-fox
No	No	Pycnoptilus floccosus	Pilotbird
No	No	Rhizanthella slateri	Eastern Underground Orchid
No	No	Rhodamnia rubescens	Scrub Turpentine, Brown Malletwood
No	No	Rhodomyrtus psidioides	Native Guava
No	No	Sphyrna lewini	Scalloped Hammerhead
No	No	Stagonopleura guttata	Diamond Firetail
No	No	Sternula nereis nereis	Australian Fairy Tern

Direct impact	Indirect impact	Species	Common name
No	No	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry
No	No	<i>Tetradlea juncea</i>	Black-eyed Susan
No	No	<i>Thalassarche bulleri</i>	Buller's Albatross, Pacific Albatross
No	No	<i>Thalassarche bulleri platei</i>	Northern Buller's Albatross, Pacific Albatross
No	No	<i>Thalassarche cauta</i>	Shy Albatross
No	No	<i>Thalassarche eremita</i>	Chatham Albatross
No	No	<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross
No	No	<i>Thalassarche melanophrys</i>	Black-browed Albatross
No	No	<i>Thalassarche salvini</i>	Salvin's Albatross
No	No	<i>Thalassarche steadi</i>	White-capped Albatross
No	No	<i>Thesium australe</i>	Austral Toadflax, Toadflax
Yes	Yes	<i>Tringa nebularia</i>	Common Greenshank, Greenshank
No	No	<i>Uperoleia mahonyi</i>	Mahony's Toadlet
Yes	Yes	<i>Xenus cinereus</i>	Terek Sandpiper

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Central Hunter Valley eucalypt forest and woodland
Yes	Yes	Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community
No	No	Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland
No	No	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria
No	No	Subtropical and Temperate Coastal Saltmarsh

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The proposed action is in a preliminary stage, and the area of impact will be refined as the proposed action progresses. Potential impacts to MNES have been considered within a Biodiversity Constraints Assessment (**AttB_Bio_Assessment, Table 6.2, p.30**). It is noted that field surveys have not yet been completed across the full extent of the investigation area and that the current assessment is based on available field observations and desktop review. Further assessment including field survey will be carried out as part of the BDAR for all relevant biodiversity entities to satisfy the requirements of the BAM and the BOS.

The following text is a summary of the potential direct and indirect impacts to threatened species and ecological communities with a moderate or higher likelihood of occurrence. The full assessment is available in **AttB_Bio_Assessment, Table 6.2, p.30**.

At this stage, potential direct and indirect impacts to threatened species and ecological communities are expected as a result of the following:

- Native vegetation removal for a number of activities including but not limited to the establishment of the new bridge, construction compound sites and laydown areas for machinery and access paths for heavy machinery into the rail corridor.
- Earth works and activities such as the installation of temporary instream structures, piers, pile caps and abutments during construction.

Threatened ecological communities

One TEC being the Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community listed under the EPBC Act was found to be associated with PCT 3962 and 4026 in the investigation area.

Further assessment is required to be carried out within the EIS (as part of the BDAR) to confirm if this vegetation meets the criteria for inclusion for this TEC. Should the vegetation be confirmed as the TEC, potential direct impacts to the TEC would occur through vegetation clearing and potential indirect impacts could occur through the invasion and spread of weeds, hydrological changes and leachate from acid sulphate soils leading to fauna kills and vegetation dieback.

Flora

Cynanchum elegans (White-flowered Wax Plant) is listed as Endangered and has a moderate likelihood of occurrence within the investigation area. Potential direct impacts to the White-flowered Wax Plant include removal of individuals (should they occur) and removal of suitable habitat for the species. Potential indirect impacts could occur through invasion and spread of weeds.

Eucalyptus parramattensis subsp. Decadens (Earp's Gum) is listed as Vulnerable and has a moderate likelihood of occurrence within the investigation area. Potential direct impacts to the Earp's Gum include removal of individuals (should they occur) and removal of suitable habitat for the species. Potential indirect impacts could occur through invasion and spread of weeds and the spread of potentially harmful pathogens and disease.

Further assessment is required to be carried out within the EIS (as part of the BDAR) including targeted surveys to identify the presence of the White-flowered Wax Plant and Earp's Gum in the investigation area.

Fauna

Litoria aurea (Green and Golden Bell Frog) is listed as Vulnerable and has a high likelihood of occurrence. It may be subject to direct impacts through the removal of potential breeding, foraging and movement habitat. This includes aquatic and terrestrial habitat. Indirect impacts may occur through hydrological changes, spread of diseases such as Chytrid Fungus, noise impacts and sedimentation and pollution of wetlands from runoff.

Botaurus poiciloptilus (Australasian Bittern) is listed as Endangered and has a moderate likelihood of occurrence. It may be subject to direct impacts through the removal of potential breeding and foraging habitat. Indirect impacts may occur through hydrological changes, noise impacts and sedimentation and pollution of wetlands from runoff.

Calidris acuminata (Sharp-tailed Sandpiper) is listed as V, C, J, K and has a moderate likelihood of occurrence. It may be subject to direct impacts through the removal of potential foraging habitat. Indirect impacts may occur through changes to water quality and hydrological changes, noise and vibration disturbance and runoff, sedimentation and contaminant mobilisation.

Tringa nebularia (Common Greenshank) is listed as E, C, J, K and has a moderate likelihood of occurrence. It may be subject to direct impacts through the removal of potential foraging habitat. Indirect impacts may occur through changes to water quality and hydrological changes, noise and vibration disturbance and runoff, sedimentation and contaminant mobilisation.

Pteropus poliocephalus (Grey-headed Flying-fox) is listed as Vulnerable and has a high likelihood of occurrence. It may be subject to direct impacts through the removal of suitable foraging habitat for the species, including critical food resources. Indirect impacts may occur through the spread and invasion of weeds into new areas, negatively impacting the condition of foraging habitat.

For certain highly mobile species, including migratory birds, the BAM identifies mapped 'important habitat' representing habitat critical to key lifecycle functions. Important habitat mapping for six MNES occurs within the investigation area. Under the BAM, species are assumed to occur within these mapped areas for assessment purposes. While this approach is defined under the BC Act, the NSW BOS and BAM are endorsed for use under the EPBC Act and, accordingly, these areas are considered to represent important habitat for the relevant species when assessing impacts on MNES. For these reasons, the following six species are considered present within the investigation area:

- *Calidris canutus* (Red Knot) which is listed as E, C, J, K
- *Calidris ferruginea* (Curlew Sandpiper) which is listed as CE, C, J, K
- *Limosa lapponica baueri* (Alaskan Bar-tailed Godwit) which is listed as E
- *Limosa limosa* (Black-tailed Godwit) which is listed as E, C, J, K
- *Numenius madagascariensis* (Eastern Curlew) which is listed as CE, C, J, K
- *Xenus cinereus* (Terek Sandpiper) which is listed as V, C, J, K.

These six species may be subject to direct impacts through the removal of suitable foraging habitat or vegetation removal within mapped important habitat. Indirect impacts may occur through changes to water quality and hydrological changes, noise and vibration disturbance and runoff, sedimentation and contaminant mobilisation.

Aquatic species

Whilst it is considered to have a low likelihood of occurrence, *Epinephelus daemeli* (Black Rockcod, Black Cod, Saddled Rockcod) which is listed as V may use Ironbark Creek to forage. Further assessment in the EIS stage is required to determine the potential for species and their habitats to occur.

For fish species and other relevant aquatic entities, further assessment will be carried out within the EIS and will include (but not be limited to):

- impacts on biodiversity values not covered by the BAM inclusive of a threatened aquatic species assessment as required by SEAR 2(8),
- An aquatic ecology assessment as per SEAR 2(9).

Identify whether the proposed action, or any component of the proposed action, would be classified as a KTP in accordance with the listings in the EPBC Act as per SEAR 2(10).

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact?

*

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

At this stage, potential direct and indirect impacts to threatened species and ecological communities are expected as a result of the following:

- Native vegetation removal for a number of activities including but not limited to the establishment of the new bridge, construction compound sites and laydown areas for machinery and access paths for heavy machinery into the rail corridor.
- Earth works and activities such as the installation of temporary instream structures, piers, pile caps and abutments during construction

The nature of the proposed action will be temporary in nature and potential disturbance will be mitigated through the implementation of mitigation measures and biodiversity offsets for any residual impacts. Notwithstanding, the significance of the potential impacts cannot be confidently quantified at this stage without the further assessment in the EIS to enable the assessments of significance to be completed in accordance with the Significant Impact Guidelines. On a precautionary basis, it is considered that the proposed action may result in a significant impact on threatened species and ecological communities. This will be assessed further and confirmed within the EIS.

The further assessment to be included in the EIS will include (but not be limited to):

- impacts on biodiversity values not covered by the BAM inclusive of a threatened aquatic species assessment as required by SEAR 2(8),
- An aquatic ecology assessment as per SEAR 2(9).
- Identify whether the proposed action, or any component of the proposed action, would be classified as a KTP in accordance with the listings in the EPBC Act as per SEAR 2(10)
- A BDAR in accordance with SEAR 2(1)
- Assessments of significance in accordance with the Significant Impact Guidelines.

4.1.4.7 Do you think your proposed action is a controlled action? *

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

An action may be deemed a controlled action if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:

- extinct in the wild
- critically endangered
- endangered, or
- vulnerable.

An action may be deemed a controlled action if the action has, will have, or is likely to have a significant impact on an ecological community listed in any of the following categories:

- critically endangered, or
- endangered.

On a precautionary basis, it is considered that the proposed action may result in a significant impact on threatened species and ecological communities listed in section 4.1.4.2 of this referral. Accordingly, this referral is being submitted to Australian Government DCCEEW for assessment.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Avoiding and minimising impacts to biodiversity values was a key consideration in the options assessment for the proposed action, as discussed further in section 4.3.8 of this referral.

Project specific and standard biodiversity mitigation measures will be identified as part of the BDAR to be completed as part of the EIS.

Should the proposed action be approved, a CEMP would be prepared to 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 conditions of 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* (Department of Planning, Industry and Environment (DPIE), 2020c).

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

Biodiversity offsets for unavoidable residual impacts will be secured in accordance with the NSW BOS, with the offset requirements for the proposed action confirmed in conditions of approval based on a finalised and approved BDAR.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species	Common name
No	No	<i>Actitis hypoleucos</i>	Common Sandpiper
No	No	<i>Anous stolidus</i>	Common Noddy
No	No	<i>Apus pacificus</i>	Fork-tailed Swift
No	No	<i>Ardenna grisea</i>	Sooty Shearwater
No	No	<i>Arenaria interpres</i>	Ruddy Turnstone
Yes	Yes	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper
Yes	Yes	<i>Calidris canutus</i>	Red Knot, Knot
No	No	<i>Calidris falcinellus</i>	Broad-billed Sandpiper
Yes	Yes	<i>Calidris ferruginea</i>	Curlew Sandpiper
Yes	Yes	<i>Calidris melanotos</i>	Pectoral Sandpiper
No	No	<i>Calidris pugnax</i>	Ruff
Yes	Yes	<i>Calidris ruficollis</i>	Red-necked Stint
No	No	<i>Calidris tenuirostris</i>	Great Knot
No	No	<i>Calonectris leucomelas</i>	Streaked Shearwater
No	No	<i>Caretta caretta</i>	Loggerhead Turtle
No	No	<i>Charadrius bicinctus</i>	Double-banded Plover
No	No	<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover
No	No	<i>Charadrius mongolus</i>	Lesser Sand Plover, Mongolian Plover
No	No	<i>Chelonia mydas</i>	Green Turtle
Yes	Yes	<i>Chlidonias leucopterus</i>	White-winged Tern, White-winged Black Tern
No	No	<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo
No	No	<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth
No	No	<i>Diomedea antipodensis</i>	Antipodean Albatross

Direct impact	Indirect impact	Species	Common name
No	No	Diomedea epomophora	Southern Royal Albatross
No	No	Diomedea exulans	Wandering Albatross
No	No	Diomedea sanfordi	Northern Royal Albatross
No	No	Eretmochelys imbricata	Hawksbill Turtle
No	No	Fregata ariel	Lesser Frigatebird, Least Frigatebird
No	No	Fregata minor	Great Frigatebird, Greater Frigatebird
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Hirundapus caudacutus	White-throated Needletail
Yes	Yes	Hydroprogne caspia	Caspian Tern
No	No	Lamna nasus	Porbeagle, Mackerel Shark
Yes	Yes	Limosa lapponica	Bar-tailed Godwit
Yes	Yes	Limosa limosa	Black-tailed Godwit
No	No	Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel
No	No	Macronectes halli	Northern Giant Petrel
No	No	Mobula alfredi	Reef Manta Ray, Coastal Manta Ray
No	No	Mobula birostris	Giant Manta Ray
Yes	Yes	Motacilla flava	Yellow Wagtail
No	No	Natator depressus	Flatback Turtle
Yes	Yes	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
Yes	Yes	Numenius phaeopus	Whimbrel
No	No	Pandion haliaetus	Osprey
No	No	Phaethon lepturus	White-tailed Tropicbird
Yes	Yes	Pluvialis fulva	Pacific Golden Plover
No	No	Pluvialis squatarola	Grey Plover
No	No	Thalassarche bulleri	Buller's Albatross, Pacific Albatross
No	No	Thalassarche cauta	Shy Albatross

Direct impact	Indirect impact	Species	Common name
No	No	Thalassarche eremita	Chatham Albatross
No	No	Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross
No	No	Thalassarche melanophris	Black-browed Albatross
No	No	Thalassarche salvini	Salvin's Albatross
No	No	Thalassarche steadi	White-capped Albatross
Yes	Yes	Thalasseus bergii	Greater Crested Tern
Yes	Yes	Tringa brevipes	Grey-tailed Tattler
Yes	Yes	Tringa glareola	Wood Sandpiper
Yes	Yes	Tringa nebularia	Common Greenshank, Greenshank
Yes	Yes	Tringa stagnatilis	Marsh Sandpiper, Little Greenshank
Yes	Yes	Xenus cinereus	Terek Sandpiper

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The following 14 migratory species have a moderate likelihood of occurrence:

- *Calidris acuminata* (Sharp-tailed Sandpiper) is listed as V, C, J, K
- *Tringa nebularia* (Common Greenshank) is listed as E, C, J, K
- *Calidris melanotos* (Pectoral Sandpiper) is listed as J, K
- *Calidris ruficollis* (Red-necked Stint) is listed as C, J, K
- *Chlidonias leucopterus* (White-winged Black Tern) is listed as C, J, K
- *Hydroprogne caspia* (Caspian Tern) is listed as J
- *Motacilla flava* (Yellow Wagtail) is listed as C, J, K
- *Numenius phaeopus* (Whimbrel) is listed as C, J, K
- *Pluvialis fulva* (Pacific Golden Plover) is listed as C, J, K
- *Thalasseus bergii* (Crested Tern) is listed as C, J, K
- *Tringa brevipes* (Grey-tailed Tattler) is listed as C, J, K
- *Tringa glareola* (Wood Sandpiper) is listed as C, J, K
- *Tringa stagnatilis* (Marsh Sandpiper) is listed as C, J, K
- *Limosa lapponica* (Bar-tailed Godwit) is listed as C, J, K.

The following five migratory species are considered present within the investigation area as mapped important habitat occurs within the investigation area, they are automatically 'confirmed present':

- *Calidris canutus* (Red Knot) which is listed as E, C, J, K
- *Calidris ferruginea* (Curlew Sandpiper) which is listed as CE, C, J, K
- *Limosa limosa* (Black-tailed Godwit) which is listed as E, C, J, K
- *Numenius madagascariensis* (Eastern Curlew) which is listed as CE, C, J, K
- *Xenus cinereus* (Terek Sandpiper) which is listed as V, C, J, K.

All 19 migratory species noted above may be subject to direct impacts through the removal of suitable foraging habitat or vegetation removal within mapped important habitat. Indirect impacts may occur through changes to water quality and hydrological changes, noise and vibration disturbance and runoff, sedimentation and contaminant mobilisation.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact?

*

Yes

4.1.5.5 Describe why you consider this to be a Significant Impact. *

The proposed action is in a preliminary stage, and the area of impact (investigation area) will be refined as the proposed action progresses. Potential impacts to MNES have been considered within a Biodiversity Constraints Assessment (**AttB_Bio_Assessment, Table 6.3, p.33**). It is noted that field surveys have not yet been completed across the full extent of the investigation area and that the current assessment is based on available field observations and desktop review. Further assessment including field survey will be carried out as part of the BDAR for all relevant biodiversity entities to satisfy the requirements of the BAM and the BOS.

At this stage, potential direct and indirect impacts to migratory species are expected as a result of the following:

- Native vegetation removal for a number of activities including but not limited to the establishment of the new bridge, construction compound sites and laydown areas for machinery and access paths for heavy machinery into the rail corridor.
- Earth works and activities such as the installation of temporary instream structures, piers, pile caps and abutments during construction.

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

The nature of the proposed action will be temporary in nature and potential disturbance will be mitigated through the implementation of mitigation measures and biodiversity offsets for any residual impacts. Notwithstanding, the significance of the potential impacts cannot be confidently quantified at this stage without the further assessment in the EIS to enable the assessments of significance to be completed in accordance with the Significant Impact Guidelines. On a precautionary basis, it is considered that the proposed action may result in a significant impact on threatened species and ecological communities. This will be assessed further and confirmed within the EIS.

The further assessment to be included in the EIS will include (but not be limited to):

- impacts on biodiversity values not covered by the BAM inclusive of a threatened aquatic species assessment as required by SEAR 2(8),
- An aquatic ecology assessment as per SEAR 2(9).
- Identify whether the proposed action, or any component of the proposed action, would be classified as a KTP in accordance with the listings in the EPBC Act as per SEAR 2(10)
- A BDAR in accordance with SEAR 2(1)
- Assessments of significance in accordance with the Significant Impact Guidelines.

4.1.5.7 Do you think your proposed action is a controlled action? *

Yes

4.1.5.8 Please elaborate why you think your proposed action is a controlled action. *

An action may be deemed a controlled action if the action has, will have, or is likely to have a significant impact on a listed migratory species.

On a precautionary basis, it is considered that the proposed action may result in a significant impact on migratory species listed in Section 4.1.5.2 of this referral. Accordingly, this referral is being submitted to Australian Government DCCEEW for assessment.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Avoiding and minimising impacts to biodiversity values was a key consideration in the options assessment for the proposed action, as discussed further in section 4.3.8 of this referral.

Project specific and standard biodiversity mitigation measures will be identified as part of the BDAR to be completed as part of the EIS.

Should the proposed action be approved, a CEMP would be prepared to 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 conditions of 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 (Department of Planning, Industry and Environment (DPIE), 2020c).

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

Biodiversity offsets for unavoidable residual impacts will be secured in accordance with the NSW BOS, with the offset requirements for the proposed action confirmed in conditions of approval based on a finalised and approved BDAR.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action does not involve a Nuclear Action.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Proposed Action is not located within, adjoining or nearby a Commonwealth marine area. The Proposed Action will not impact any Commonwealth marine area.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Great Barrier Reef Marine Park is not located within or adjacent to the investigation area. The Great Barrier Reef is more than 500 km north of the proposed action. The proposed action will not impact the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The proposed action is related to a rail bridge replacement and does not relate to any coal mining or coal seam gas development. The proposed action will not impact a water resource in relation to large coal mining development or coal seam gas.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The closest Commonwealth land to the proposed action is Fort Wallace, Stockton which is located approximately 9 km east of the investigation area. Due to this large offset distance, it would not be impacted directly or indirectly by the proposed action.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no Commonwealth Heritage Places Overseas within the investigation area or within proximity to the investigation area.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

Two initial options were considered for the proposed action as follows:

- Replace the existing bridge.
- Do nothing (no replacement and keeping existing maintenance and repairs regime).

The do nothing scenario was discounted as the existing bridge has reached the end of its service life and requires increasing maintenance. In addition, a temporary speed restriction (imposed since March 2023) is in place due to the condition of the existing bridge, which impacts the efficient operation of the Main North Line.

Following the identification of bridge replacement as the preferred option, ARTC undertook options assessments for the bridge design and for the construction area and access options.

Key considerations in identifying and assessing potential options have included minimising:

- Impacts to train operations.
- Environmental impacts, in particular impacts to coastal wetlands.
- Safety risks to the public and workers.
- Property impacts to adjacent landholders, including residences and industrial and commercial facilities.

The bridge design options were assessed using a multi-criteria assessment (MCA) process, and the preferred solution identified as a dual track, single span, ballast top concrete through-girder bridge.

Four options for the construction area and access options were further considered.

Refer to **AttG_Options_Assessment, Section 3.5, p.1**) which includes an extract of the Scoping Report where these options assessments have been discussed in detail.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	AttA_Bridge_Image.pdf An image differentiating the Ironbark Creek Underbridge from the adjacent coal line bridge		No	High
#2.	Document	AttB_Bio_Assessment.pdf Biodiversity Constraints Assessment		No	High
#3.	Document	AttC_Engagement.pdf Summary of engagement carried out for the proposed action		No	High
#4.	Document	AttD_Environmental_History.pdf ARTC's history of responsible environmental management		No	High
#5.	Document	AttE_Environment_Policy.pdf ARTC's organisational environmental policy		No	High
#6.	Document	AttF_Code_of_Practice.pdf ARTC's organisation environmental planning framework in NSW		No	High
#7.	Document	AttG_Options_Assessment.pdf An extract of the Scoping Report which details the options and alternatives considered		No	High
#8.	Link	Ironbark Creek Underbridge Replacement https://www.planningportal.nsw.gov.au/major-proj..			High

5.2 Declarations

✔ Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA
Representative's name	Zoe Cox
Representative's job title	Environment Business Partner - Assessments
Phone	0447883486
Email	zcox@artc.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

☒ Check this box to indicate you have read the referral form. *

☒ Check this box to confirm these are the correct identification details. *

☒ By checking this box, I, **Zoe Cox of AUSTRALIAN RAIL TRACK CORPORATION LIMITED**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.

✔ Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	75081455754
Organisation name	AUSTRALIAN RAIL TRACK CORPORATION LIMITED
Organisation address	5035 SA
Representative's name	Duncan Cowie

Representative's job title	Manager Projects NSW
Phone	0409601853
Email	DCowie@ARTC.com.au
Address	5/33 Newton Street Broadmeadow NSW 2292

☒ Check this box to indicate you have read the referral form. *

☒ Check this box to confirm these are the correct identification details. *

☒ I, **Duncan Cowie of AUSTRALIAN RAIL TRACK CORPORATION LIMITED**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☒ Check this box to indicate you have read the referral form. *

☒ Check this box to confirm these are the correct identification details. *

☒ I, **Duncan Cowie of AUSTRALIAN RAIL TRACK CORPORATION LIMITED**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.

