3.3.2 Maintenance activities

Standard ARTC maintenance activities would be undertaken during operations. Typically, these activities include minor maintenance works, such as bridge inspections, rail grinding and track tamping, through to major maintenance, such as limited sleeper replacement, reconditioning of track formation and ballast cleaning as required.

The project will not result in any increase maintenance activities. The project will reduce the increasing maintenance regime that is currently occurring due to the condition of the existing bridge.

3.3.3 Traffic and access

During operation, road traffic would be minimal and primarily associated with routine inspections and maintenance activities.

3.4 Estimated development cost

The estimated development cost of the project is anticipated to exceed $50 million. A detailed estimated development cost will be prepared to support the EIS.

3.5 Options considered

3.5.1 Options assessment

Various options for the bridge design, and construction areas and access have been investigated by ARTC as summarised in the following sections. 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.

3.5.2 Initial options

Two initial options were considered for the project 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.

3.5.3 Bridge design options

Preliminary options

In 2020, ARTC undertook a preliminary environmental assessment (Pitt & Sherry, 2020) for the project. The assessment considered two bridge design options (option 1: single span and option 2: double span with central pier) and these were subject to preliminary flood modelling. While option 2 performed better from a hydraulic perspective only (primarily due to the presence of a central pier on the adjacent existing bridge that carries the coal lines), option 1 was selected as being preferred on balance as it resulted in less overall environmental impacts associated with construction activities within Ironbark Creek.

Feasibility design options

Options identification

In 2026, ARTC undertook further assessment of bridge options. A total of 10 bridge design options were considered as summarised in Table 3.4.

Table 3.4 Feasibility design bridge options

Option	Description
Option 1a 38m concrete through girder – sliding	A 38m single-span concrete through-girder is proposed to replace the existing bridge in this option. Construction involves building new abutment foundations (behind existing foundation on the City side and in front of existing foundation on the Country side), assembling the superstructure on temporary foundations over the creek, then sliding the new bridge into position during a major possession after lifting out the existing bridge.
Option 1b 38m concrete through girder – drop in	A 38m single-span concrete through-girder is proposed to replace the existing bridge in this option. Foundation construction remains the same as Option 1a, with changes limited to the superstructure installation methodology. Temporary foundations within the creek are not required for this option. After lifting the existing bridge, the new girders are installed using a dual-crane lift. The deck is formed using post-tensioned deck slab units with transverse prestressing.
Option 2 45m concrete through girder – sliding/launching	A 45 m single-span concrete through-girder is proposed to replace the existing bridge in this option. The increased span length enables construction of the new abutment foundations behind the existing foundations on both sides, avoiding works in front of the current abutments. Construction involves building new abutment foundations, assembling the superstructure on temporary supports (via lifting or launching), and sliding the new bridge into position during a major possession after lifting out the existing bridge.
Option 3 47m concrete through girder (skew) - sliding	A 47m single-span skew concrete through-girder is proposed to replace the existing bridge in this option. The increased span length enables construction of the new abutment foundations behind the existing foundations on both sides, avoiding works in front of the current abutments. The skew arrangement reduces the temporary foundation piles required within the creek.
Option 4 45m concrete through girder – drop in	A 45m single-span concrete through-girder is proposed to replace the existing bridge in this option. This option combines features of Option 1b and Option 2: – From Option 1b: Drop-in installation, avoiding the need for temporary foundations within the creek. – From Option 2: Longer span length to enable abutment foundation construction behind the existing foundations.
Option 5 2 span plank bridge	A two span concrete plank bridge is proposed to replace the existing bridge in this option. Two spans with a new intermediate pier to reduce the span lengths that will clash with the adjacent coal bridge pier.
Option 6 45m half-through steel truss - straddled	A 45 m half-through steel truss is proposed to replace the existing bridge in this option. Noted that new steel bridges are not consistent with the ARTC Heavy Haul Guidelines and Corridor Strategy which clearly promote concrete ballast-top bridges as the preferred solution for bridge replacement projects. On this basis, this option was discounted and not considered further.
Option 7 45m segmental concrete U-girder	A 45m single-span segmental concrete U-girder is proposed to replace the existing bridge in this option. This option involves casting U-shaped segments and transporting them to site, assembling them on temporary foundation and sliding to the final position. The design is intended to minimise individual segment weights, allowing the use of lighter cranes.
Option 8 45m integral through girder	A 45m single-span concrete integral through girder is proposed to replace the existing bridge. In this option, the girder is made integral with the abutments. The concept was considered to reduce girder weight and potentially allow the use of lighter cranes.

Option	Description
Option 9 Temporary track realignment	This option involves constructing a temporary track realignment on the eastern side to divert rail traffic around the existing bridge, allowing demolition and construction works to be undertaken offline. This approach enables full demolition of the existing truss and construction of the replacement bridge without major continuous possessions.

Options assessment

As noted above, Option 6 (steel bridge), is not consistent with the ARTC Heavy Haul Guidelines and Corridor Strategy and on this basis, this option was discounted and not considered further.

The remaining nine bridge options were assessed using a multi-criteria assessment (MCA) process against the following criteria:

– Construction complexity
– Durability and maintenance
– Operational safety and reliability
– Environment and community
– Rail possession periods required
– Delivery timeframe
– Whole of life cost

The MCA determined that on balance, Option 2 would be the best outcome for ARTC and at the time of this report is being subject to further concept design.

Therefore, the current preferred option is a concrete bridge, shown in Appendix C, Following completion of concept design, ARTC intends to undertake a reference design this will be provided in the EIS.

3.5.4 Construction area and access options

Preliminary options

In 2020, ARTC undertook a preliminary environmental assessment (Pitt & Sherry, 2020) for the project. At this stage of the project, the arrangement for construction areas involved the establishment of temporary crane pads and a piling platform within Ironbark Creek, and laydown areas on the northeastern and southeastern sides of the existing bridge. This option was later discounted due to potential impacts to flows within Ironbark Creek.

Feasibility design options

During 2025, as part of the feasibility design, four options were further considered, with key features summarised in Table 3.5. Review of these against the considerations outlined above identified Option D as the preferred option.

Table 3.5 Feasibility design construction area options

Option	Description
Option A	– Main construction compound located to the southeast of the existing bridge, partially within coastal wetlands. – Secondary compound located to the northeast of the existing bridge, requiring some temporary filling of Ironbark Creek and partially within coastal wetlands. – Laydown area on vacant land in Sparke Street. – Access via Sparke Street and a new access off Old Maitland Road.
Option B	– Main construction compound located within the steel recycling facility to the northeast of the existing bridge, and requiring some temporary filling of Ironbark Creek. – Secondary compound located to the southeast of the existing bridge, partially within coastal wetlands. – Laydown areas on vacant land in Sparke Street. – Access via Sparke Street and a new access off Old Maitland Road.

Option	Description
Option C	– Main construction compound located on vacant land to the north of Sparke Street. – Secondary compound located to the southeast of the existing bridge, requiring some temporary filling of Ironbark Creek and partially within coastal wetlands. – Construction area to the northeast of the existing bridge, requiring some temporary filling of Ironbark Creek and partially within coastal wetlands. – Access via new accesses off the Pacific Highway / Maitland Road and Old Maitland Road.
Option D	– Main construction compound located to the southeast of the existing bridge, partially within coastal wetlands. – Construction area to the northeast of the existing bridge, requiring some temporary filling of Ironbark Creek and partially within coastal wetlands. – Laydown areas on vacant land in Sparke Street. – Access via Shamrock Street, Sparke Street, Astra Street and a new access off Old Maitland Road.

Current options

As described in Section 3.2.5, various options are still under investigation subject to further design development, environmental and engineering investigations, and landholder consultation.

The primary construction area cannot be located on the northeastern side of Ironbark Creek as this land is currently occupied by InfraBuild Recycling. It also can't be located on the southwestern or northwestern sides of Ironbark Creek as this would require construction activity (e.g. movement of workers and lifting of bridge components) over four active railway lines (two coal lines and two main lines). This would pose an unacceptable risk to train movements, train passengers and workers. Filling and clearing of coastal wetlands would also be required on the southwestern side of Ironbark Creek.

Concept design of the project commenced in early 2026 and further constructability options are being considered. These will be detailed in the EIS.

Plate 7: looking northeast from existing laydown area

Plate 8: looking southeast from existing laydown area