

Report

Narwonah Material Distribution Centre— Supplementary Review of Environmental Factors: Shunt Neck Works

COVER IMAGE

Railway sleepers sitting in a rail yard.

ACKNOWLEDGEMENT OF COUNTRY

Inland Rail acknowledges the Traditional Custodians of the land on which we work and, pay our respect to their Elders past, present and emerging.

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SUPPLEMENTARY REVIEW OF ENVIRONMENTAL FACTORS (REF) CERTIFICATION

Certification by Suitably Qualified Person

This Supplementary Review of Environmental Factors (SREF) provides a true and fair review of the proposal in relation to its likely effects on the environment. It addresses, to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposed activity and provides sufficient information to determine that the activity as described in this SREF will not or is not likely to significantly affect the environment. Accordingly, no Environmental Impact Statement (EIS) and/or Species Impact Statement (SIS) are required.

Name & Position Dallas Nixon—Senior Environmental Advisor

Company ARTC—Inland Rail

Signature



Date Feb 29, 2024

Certification by ARTC Project Manager

The project is titled: Narwonah Material Distribution Centre—Shunt Neck Works

Subject to approval, proposal commencement is anticipated to be: March 2024

I confirm that I have reviewed and accept the SREF, including the scope of works as detailed, and will:

- construct and operate the project as described in the SREF
- ensure all legislative requirements related to approvals, consultation and notification are fulfilled
- implement all listed environmental management measures
- seek advice from ARTC environment staff as required and report all non-conformances and incidents
- undertake audits and/or environmental site inspections
- appropriately communicate SREF requirements to project personnel.

Name & Position Greg Carr—Integration and Operational Readiness Lead

Signature


Greg Carr (Feb 29, 2024 14:56 GMT+10)

Date Feb 29, 2024

Certification by ARTC Environment Lead

I confirm that:

- I have reviewed the SREF in accordance with legislative requirements and it meets the requirements of the REF Guidance Note (ENV-FM-021)
- the management measures listed in the SREF are suitable to mitigate the impact of works
- the activity as described, is unlikely to significantly affect the environment.

Name & Position Dan Lumby—Environment Lead: Approvals

Signature



Date Feb 29, 2024

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GLOSSARY

Acronym/term	Definition
NMDC	Narwonah Material Distribution Centre
N2N	Narromine to Narrabri section of the Inland Rail project
ARTC	Australian Rail Track Corporation
BC Act	<i>Biodiversity Conservation Act 2016</i>
CSSI	Critical State Significant Infrastructure
dB(A)	Decibels
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECC	Department of Environment and Climate Change
DPE	Department of Planning and Environment
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021 (NSW)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EPL	Environment Protection Licence (issued under the POEO Act)
ICNG	NSW Interim Construction Noise Guideline
MNES	Matters of national environmental significance under the EPBC Act
NMLs	Noise Management Levels
NPT	ARTC Noise Prediction Tool
PCT	Plant Community Type
POEO Act	Protection of the Environment Act 1997
Proposal site	Area of the proposed works, including the existing utility, easement and immediate adjacent area.
REF	Review of Environmental Factors
NMDC DREF	Narwonah Material Distribution Centre Determined Review of Environmental Factors
NMDC	Narwonah Material Distribution Centre
SREF	Supplementary Review of Environmental Factors
TEC	Threatened Ecological Community, under the EPBC Act
TfNSW	Transport for New South Wales
TMP	Traffic Management Plan
TI SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021 (NSW)

1. INTRODUCTION

1.1 Background

Australian Rail Track Corporation (ARTC) Inland Rail is a once-in-a-generation project that will enhance supply chains and complete the backbone of the national freight network between Melbourne and Brisbane via regional Victoria (VIC), New South Wales (NSW) and Queensland (QLD).

ARTC Inland Rail is transforming the way we move freight around the country, better linking business, manufacturers and producers to national and global markets and generating new opportunities for our industries and regional communities.

At the time of the project's initiation in 2021, Inland Rail was comprised of 13 individual projects spanning more than 1,700 km, ARTC Inland Rail is the largest freight rail infrastructure project in Australia and one of the most significant infrastructure projects in the world.

Construction of ARTC Inland Rail commenced in late 2018 and it is expected to be fully operational in 2027.

ARTC Inland Rail will provide greater freight carrying capacity, as it is designed for double-stacked trains up to 1,800 m long, each of which will be able to carry the same volume of freight as 110 B-double trucks.

Better infrastructure and an effective national freight operation are key to delivering efficient supply.

Across its rail network, ARTC is responsible for:

- ▶ selling access to train operators
- ▶ developing new business
- ▶ capital investment in the corridors
- ▶ managing the network
- ▶ rail infrastructure maintenance.

The Narwonah Material Distribution Centre (NMDC) is a key component of the Inland Rail Program, facilitating early material delivery, stockpiling and distribution of construction materials to support multiple Inland Rail projects across NSW, including Narramine to Narrabri (N2N), North Star to Border (NS2B) and Illabo to Stockinbingal (I2S).

1.2 The proponent

ARTC is the proponent for the determined Narwonah Material Distribution Centre Review of Environmental Factors (NMDC REF) and this Supplementary Review of Environmental Factors (NMDC SREF), and has a program to deliver Inland Rail. ARTC is an Australian Government-owned statutory corporation that manages more than 8,500 km of rail track in NSW, Queensland, South Australia, Victoria, and Western Australia.

1.3 Summary of approved NMDC project

The approved project includes the construction and temporary operation of the NMDC. The NMDC will primarily be used for track material (concrete sleepers, rail and ballast) storage and management, prior to distribution to multiple Inland Rail projects and sections. When fully operational the following activities will take place at the NMDC:

- ▶ rail logistics and welding, including short rail delivery and stockpiles, flash-butt welding and grinding stations, and LWR stockpiles
- ▶ sleeper logistics, including sleeper stockpiling and handling
- ▶ ballast logistics, including stockpile and handling
- ▶ TLM and work train provisioning
- ▶ storage of turnouts and catchpoints, and other pre-cast materials, as required (e.g. culverts, level crossing panels)
- ▶ installation of mainline turnouts and catchpoints from exiting ARTC corridors
- ▶ stabling roads for work trains, ballast trains, track plant and locomotives
- ▶ office and amenities for MDC operation and maintenance personnel

- ▶ heavy vehicle access to material stockpiles
- ▶ construction plant laydown
- ▶ civil and rail plant maintenance facilities.

The NMDC is not considered to be an ancillary development as it is essentially a separate Inland Rail project that will be servicing multiple Critical State Significant Infrastructure (CSSI) and non-CSSI Inland Rail projects.

As per Figure 1-1, the proposal also included the subdivision of Lot 16 DP755131, Lot 17 DP755131, Lot 1 DP1198931, Lot 232 DP755131 and Lot 233 DP755131 to create two lots: Lot A (476.15 hectares (ha)) and Lot B (558.05 ha). The NMDC is located on the section of Lot B to the east of the P2N line, in the new subdivision.

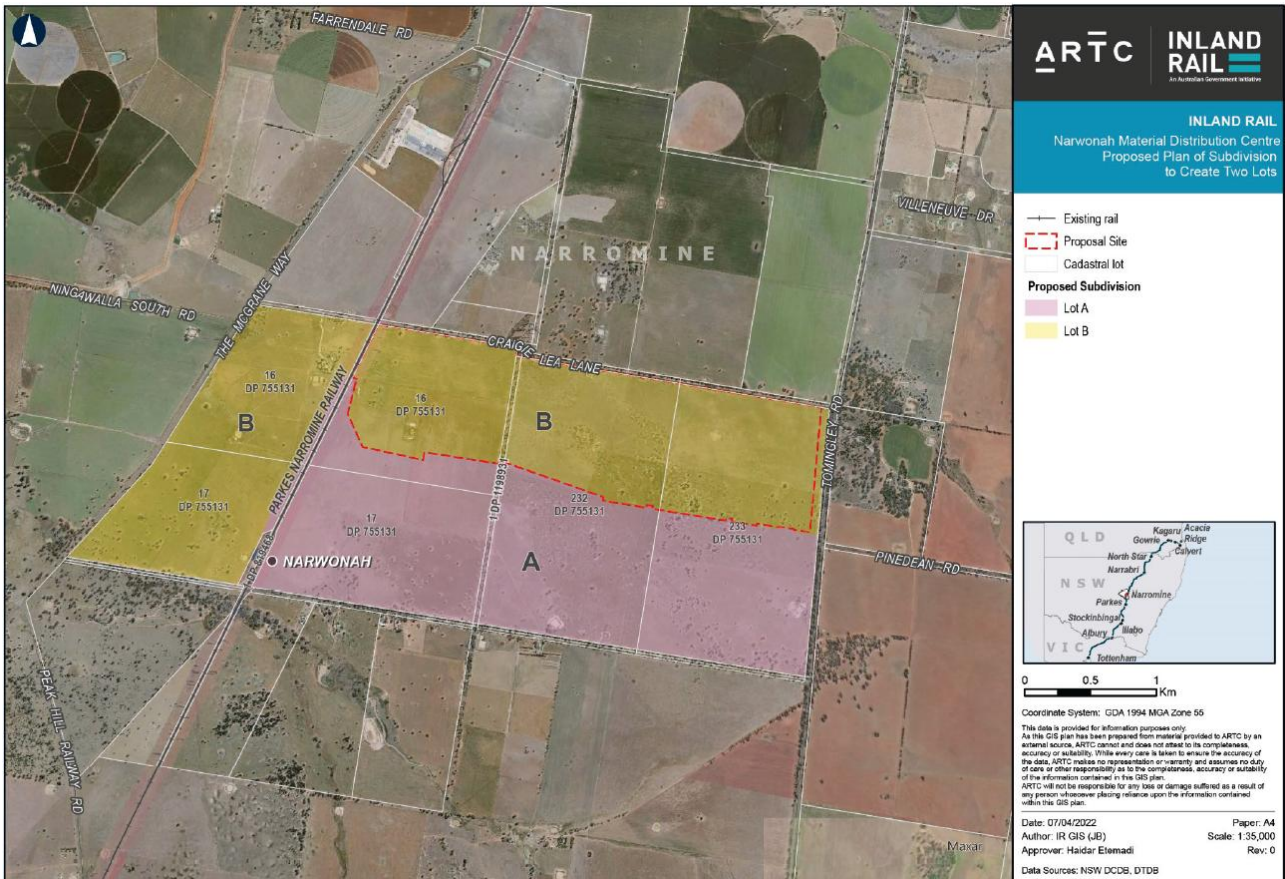


FIGURE 1-1: NMDC REF SUBDIVISION

The subdivision is a development that formed part of the NMDC approval. It separated the land to allow Lot A to be specifically used to build the N2N project under its own contract, while part of Lot B will be used to specifically build the NMDC under a different contract.

It is important to note, that the shunt neck works proposed as part of this NMDC SREF sits within Lot A (within N2N project EIS proposal site footprint).

Following the proposed sub-division as shown in Figure 1-1, the lot and DP numbers were updated as per Figure 1-2 below.

project. ARTC now proposes to construct a portion of the NMDC approach track for use as a shunt neck, within the N2N project footprint to facilitate the completion of the NMDC works. This land is former farmland owned by ARTC and has been assessed as part of the N2N EIS.

ARTC proposes for the shunt neck works portion to be assessed and constructed as part of the NMDC in order for these works to proceed earlier than originally planned, to support works currently underway at the NMDC.

The original Division 5.1 approval concept design is shown in Figure 1-3. The shunt neck works portion of track proposed to be assessed under this SREF is highlighted in Figure 1-4.

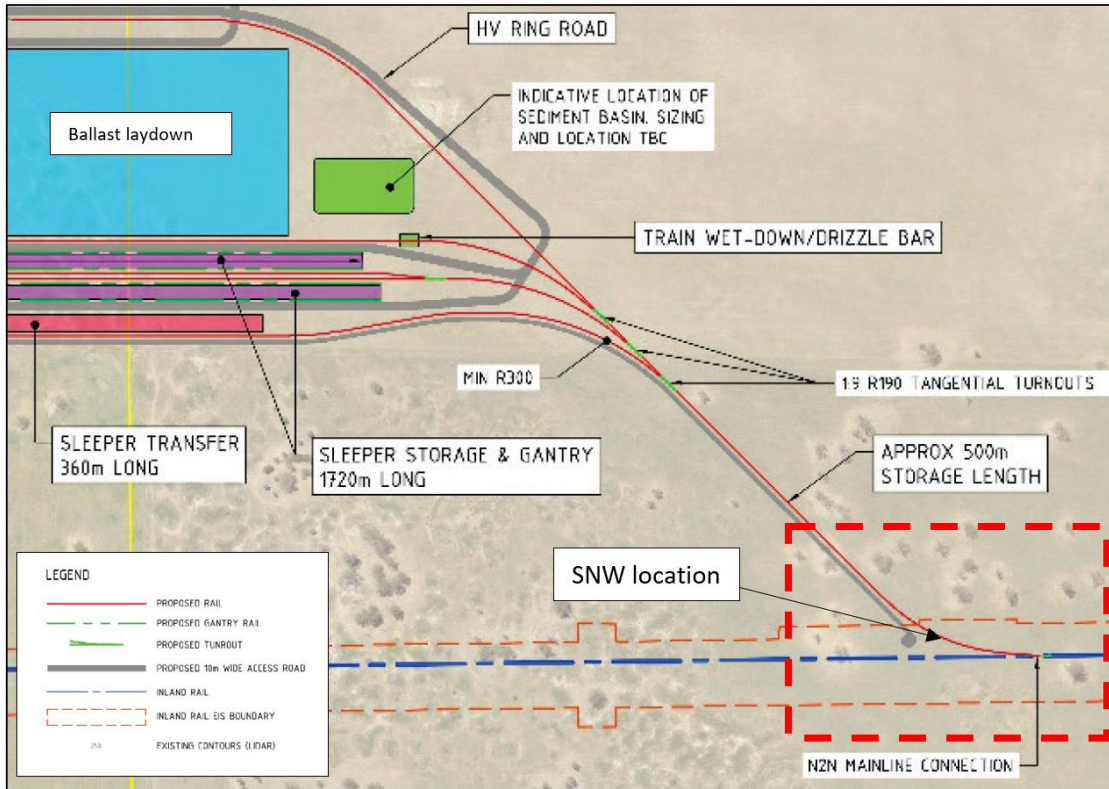


FIGURE 1-3: NMDC REF CONCEPT DESIGN EXTRACT

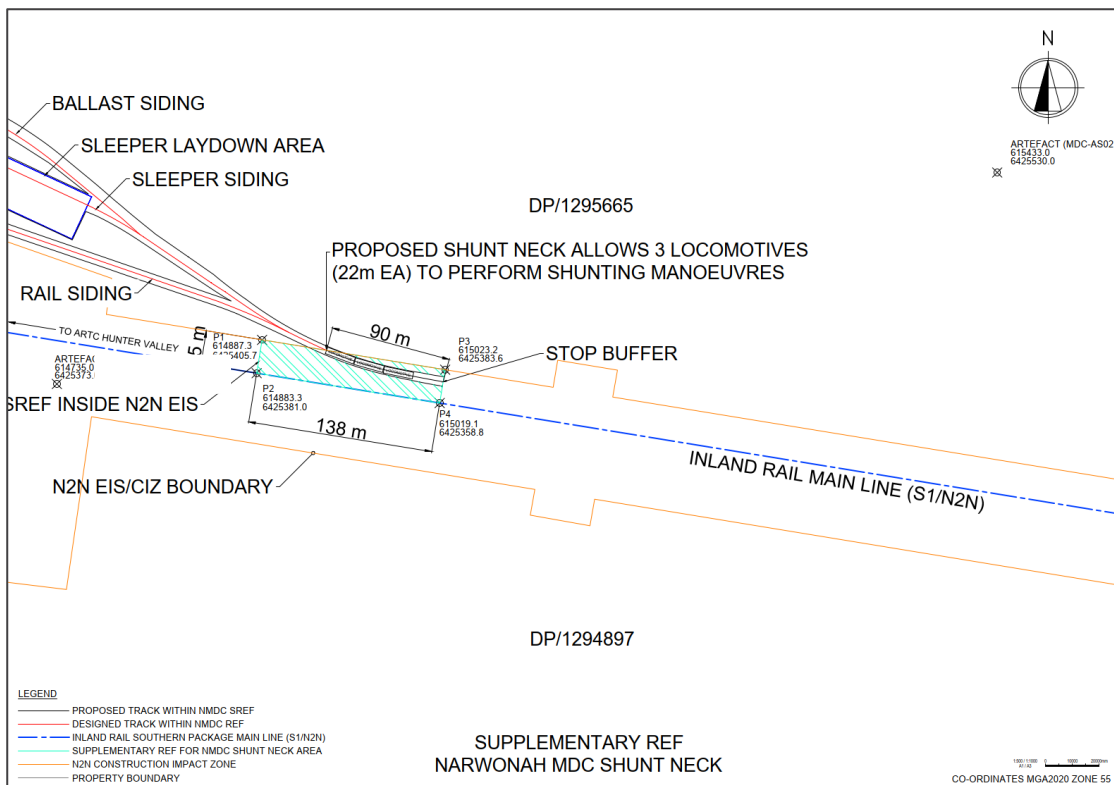


FIGURE 1-4: UPDATED DESIGN EXTRACT

1.5 Purpose of this Supplementary REF report

This SREF seeks to assess the shunt neck works section of track that sits outside the approved NMDC footprint as per Figure 1-4, above. The shunt neck works are located within the footprint assessed as part of the N2N EIS (and therefore did not form part of the Division 5.1 approval). Accordingly, the impacts of the proposed change were not assessed by the original NMDC REF.

As per the ARTC REF Work Instruction (ENV-WI-006), to ensure ARTC’s environmental impact assessment obligations are met—a consistency assessment or SREF may be required where changes arise from the originally assessed scope of the approved project. The change may relate to a delay in construction commencement, project scope modifications, or as a result of community/stakeholder consultation.

It is noted that the proposed change (i.e. installation of the 90 m of track) is part of the existing approved NMDC REF scope; however, it sits outside the existing approved project area; as such, ARTC is required to prepare a supplementary Review of Environmental Factors in accordance with Part 5, Division 5.1 of the EP&A Act.

The SREF has been prepared by ARTC and ‘takes into account all matters affecting or likely to affect the environment as a result of the proposal’. For the purpose of this proposal, ARTC is both the proponent and determining authority.

The findings of this SREF will be used to determine:

- ▶ whether the proposal is likely to have a significant environmental impact
- ▶ the requirement for implementation of additional mitigation measures to those outlined in the determined REF.

2. AMENDED PROPOSAL DESCRIPTION

2.1 Proposal location

The proposed shunt neck works location is presented below in Figure 2-1. As per Section 1.5, the purpose of this SREF is to address the scope of works that sits outside of the NMDC DREF approved footprint. This area is defined in Figure 1-4. Please refer to Appendix A for the proposed Construction Impact Zone (CIZ) and associated constraints.

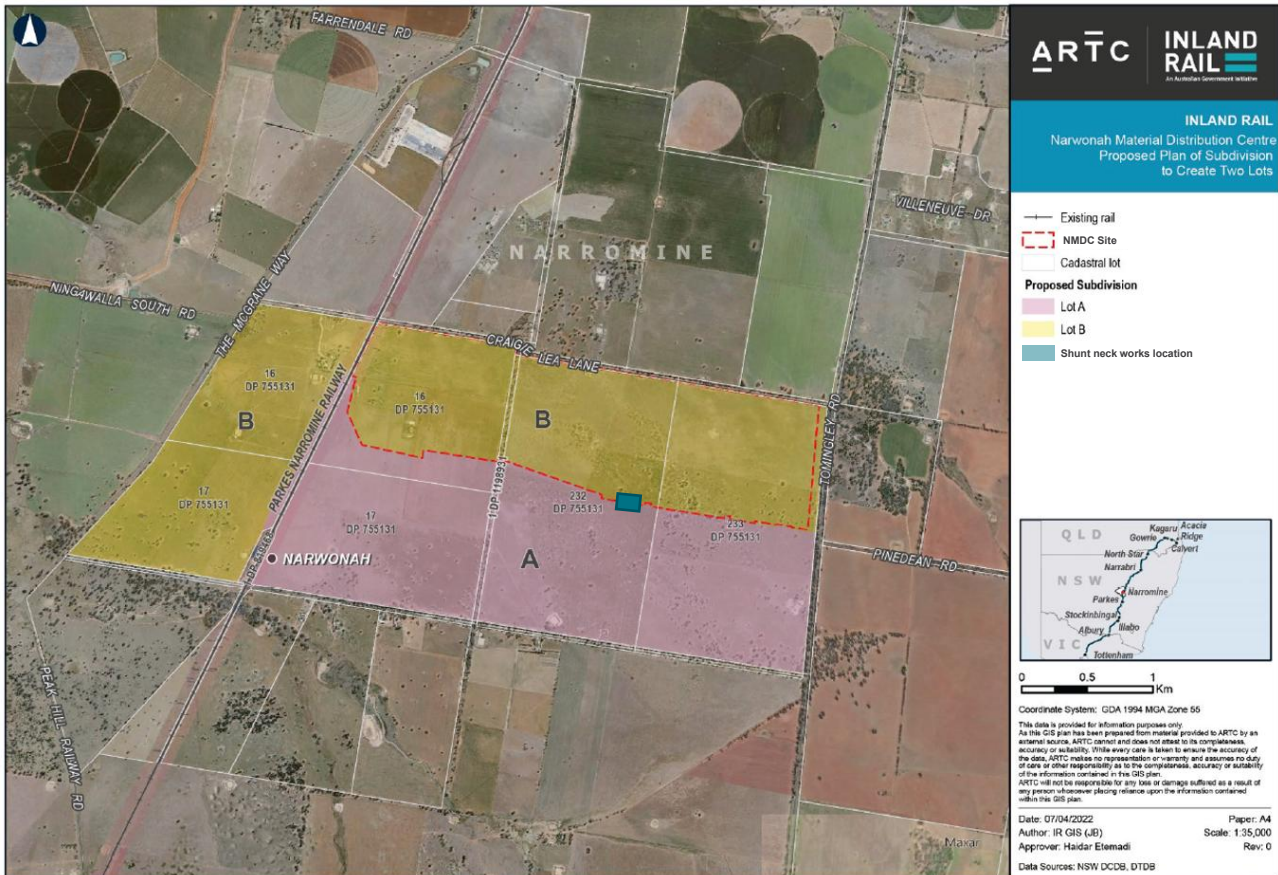


FIGURE 2-1: PROPOSED SHUNT NECK WORKS LOCALITY

2.2 Key driver for shunt neck works

To allow wagons of sleepers to travel to and from the MDC, a shunt neck to allow trains to turn around in the facility is required. Initially, shunting operations were intended to occur on the first stretch of the Inland Rail main lines Southern Package 1 (N2N). The land proposed is beyond the boundary of the NMDC REF but the former farmland has already been assessed as part of the N2N EIS.

When taking sleeper deliveries within the yard, there will be limited operational capacity prior to the connecting section of track on S1 N2N being constructed. As a result, there is now a necessity to find an alternative to shunt trains at the eastern end of the yard by allowing up to three locomotives of 22 m each to detach from an inbound consist of sleeper wagons. The locomotives will then turn around the consist via the parallel rail siding before re-attaching to the empty consist and departing the facility.

The MDC will not be able to take deliveries after Stage 2 is completed during its operations and maintenance phase for sleeper handling without this shunt neck. Additionally, the shunt neck will form the first section for the approach track that will provide the necessary connecting infrastructure between the Narwonah MDC and Inland Rail Southern Package 1 (N2N).

2.3 Methodology

The approved NMDC DREF included a high-level description of proposed NMDC construction phase activities that are not proposed to be altered; the construction methodology included:

- ▶ track construction including placement of ballast, sleepers and rail—the track will be constructed using specialist excavator attachments, loaders, trucks and track-mounted resurfacing machines, and will connect to the existing rail corridor
- ▶ vegetation clearing and grubbing
- ▶ stripping of topsoil
- ▶ bulk earthworks and subgrade treatment
- ▶ installation of diversion drains and erosion control

The NMDC REF stated complete and detailed construction methodology for the MDC will be prepared by the nominated construction contractor.

2.3.1 Shunting neck works—construction methodology

1. Install boundary flagging for approved works—including any exclusion fencing retained vegetation
2. Install erosion and sediment controls as per approved Erosion and Sediment Control Plan (ESCP)
3. Installation of a small temporary laydown for the importation of materials used for the proposal and delivery of equipment
4. Civil earthmoving for track formation including stripping of topsoil
5. Importing and placement of capping layer material from the NMDC site
6. Installation of signalling equipment
7. Installation of 90 m of track

2.4 Plant and equipment

Plant and equipment anticipated to be used for the construction of the determined NMDC REF include:

- ▶ all-terrain forklifts/franna cranes
- ▶ articulated dumper trucks
- ▶ ballast regulator and tamper
- ▶ bulldozers (bush rake)
- ▶ compactors and rollers
- ▶ concrete agitators
- ▶ concrete pumps
- ▶ crawler cranes
- ▶ excavators
- ▶ front-end loaders
- ▶ fuel pods
- ▶ generators
- ▶ graders
- ▶ light vehicles
- ▶ mobile flash-butt welder
- ▶ portable office/amenities
- ▶ road stabiliser
- ▶ road trains
- ▶ scrapers
- ▶ side-tippers
- ▶ skid-steers
- ▶ sleeper laying excavator with octopus attachment
- ▶ track geometry trolley
- ▶ truck & dogs, HI-rail dump trucks
- ▶ tub grinder/mulcher graders
- ▶ water trucks (body, semis, road trains & articulated).

It is noted that the above list is inclusive of entire NMDC construction. Plant and equipment specific to the proposed shunt neck works include:

- ▶ front-end loaders
- ▶ excavators
- ▶ skidsteers
- ▶ all-terrain forklifts/franna cranes
- ▶ resurfacing machines
- ▶ excavators
- ▶ graders
- ▶ water carts
- ▶ articulated dump trucks
- ▶ front-end loaders
- ▶ light vehicles

2.5 Working hours

2.5.1 Standard and non-standard working hours

Standard construction working hours as per the NMDC D-REF are:

- ▶ between the hours of 7:00 am and 6:00 pm Mondays to Friday
- ▶ between the hours of 8:00 am and 1:00 pm Saturday.

2.5.2 Works outside of ARTC HV corridor

The proposed works located outside of the ARTC HV corridor will occur in line with the NMDC Decision REF. Construction activities, including site establishment and unloading activities, would be sought to be undertaken during the recommended standard hours for construction work as per the *NSW Interim Construction Noise Guideline* (ICNG) (Department of Environment and Climate Change (DECC), 2009), which will be:

- ▶ 7:00 am to 6:00 pm Monday to Friday
- ▶ 8:00 am to 1:00 pm Saturday.

Works may be undertaken outside the recommended standard hours, however, which include, but are not limited to, the following:

- ▶ works where the proponent has negotiated agreements with directly affected residents and sensitive land uses
- ▶ low-impact noise activities can occur, including:
 - ▶ construction that causes LAeq (15 minutes) noise levels:
 - no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG
 - no more than the 'noise affected' noise management levels (NMLs) specified in Table 3 of the ICNG at other sensitive land uses
 - ▶ construction that causes:
 - continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of *Assessing Vibration: a technical guideline* (Department of Environment and Conservation (DEC), 2006)
 - intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline*
- ▶ the delivery of oversized plant or materials that are subject to excess mass or dimension restrictions to transport along public roads
- ▶ emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
- ▶ maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours
- ▶ public infrastructure works that shorten the length of the project and are supported by the affected community

- ▶ works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.

NMDC construction commenced (as per NMDC DREF proposed date) in June 2022. Proposed start of operations is currently August 2024.

Proposed construction duration of the shunt neck works is approximately one (1) month, beginning March 2024 to June 2024.

3. STATUTORY FRAMEWORK

The amended proposal would be delivered in conjunction with (as a component of) the approved NMDC REF.

Pursuant to the provisions of the *Transport and Infrastructure State Environmental Planning Policy 2021* (TISEPP), the amended proposal does not require development consent and is assessable under Division 5.1 of the EP&A Act. ARTC is the proponent and the determining authority for the amended proposal.

The amended proposal requires no removal of additional native vegetation not already assessed and is not considered likely to significantly impact the environment or threatened species, populations or ecological communities or their habitats, and therefore an EIS or SIS is not required. As such, the amended proposal should be assessed under Division 5.1 of the EP&A Act.

This SREF fulfils ARTC's obligation under Division 5.1 of the EP&A Act to 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity' (see Section 7, 8).

Review of survey-informed mapping and publicly available data (see Appendix C, D) of this SREF and section 7.3 of the determined REF), the amended proposal is not likely to have a significant impact on MNES or Commonwealth land, nor is it likely to significantly affect any Commonwealth or NSW-listed threatened species, populations or ecological communities, or their habitats. As such, the amended proposal does not need to be referred to the Australian Government Minister for the Environment for assessment.

3.1 Protection of the Environment Operations Act 1997 (POEO Act)

The shunt neck works scope has already been assessed in the NMDC DREF and did not constitute a scheduled activity; therefore, an EPL does not apply.

3.2 Consultation

Consultation requirements associated with local government, stakeholders and the community have been outlined within the determined REF. Consultation with the community and key stakeholders would be ongoing in the lead up to, and during construction of the proposal as outlined in the determined REF.

The community and landowner consultation process identified within the NMDC DREF is deemed to be sufficient to address the changes assessed in this SREF, other than the mitigations set out in Section 5.2 with consideration for potential heritage and biodiversity impacts.

During the development of the NMDC DREF, ARTC engaged with relevant agencies, council and landowners to develop an understanding of the impact associated with the proposal.

During the engagement and public exhibition of this REF, various themes were identified from stakeholders, these were:

- ▶ subdivision
- ▶ road infrastructure
- ▶ water usage
- ▶ operation hours
- ▶ traffic and access impacts
- ▶ hydrology/surface water.

This engagement informed the final decision report and commitments within the approved REF.

3.3 Supplementary REF consultation

During the assessment of the changes proposed within this SREF it has been identified that no further consultation is required to inform the impact of this proposal. ARTC has undertaken a review of the consultation and submissions received during the NMDC DREF assessment and, with the exception of potential heritage and biodiversity, anticipates that no change of impacts or mitigations are required.

It can be concluded that additional consultation for this SREF is not required, given:

- ▶ the NMDC REF, which included the shunt neck scope of works was publicly exhibited

- ▶ the MDC concept plan within the existing NMDC DREF contained the approach track/tie-in works
- ▶ ARTC's N2N Project has undertaken substantial consultation to inform its EIS, of which has not resulted in any further requirements for this SREF
- ▶ the change is a minor change to the timing of the approach track/tie-in and is relatively consistent with that originally exhibited and consulted on.

It is therefore the position of ARTC that further additional consultation would not result in any change to this assessment.

3.4 Complaints management

Complaints management was not included in the NMDC DREF and is required for the proposal. The contractor's (Martinus Rail) approved Construction Environmental Management Plan (CEMP) defines the requirements for the complaints management system implemented during construction. The process also interfaces with ARTC Enviroline for reporting and EPL 3142 compliance purposes.

The approved complaints management procedure includes:

- ▶ contact details for a 24-hour program response line and email address for ongoing stakeholder contact throughout the proposal
- ▶ provision of accurate public information signs while work is in progress
- ▶ review of construction staging and activities to identify opportunities, to minimise disruptions and impacts to community activities and functions .

Management of complaints is in accordance with ARTC's emergency management procedure, specifically:

- ▶ details of all complaints received will be recorded
- ▶ verbal and written responses describing the action response to be taken will be provided to the complainant within time limits (or as otherwise agreed by the complainant).

4. ENVIRONMENTAL IMPACT ASSESSMENT

As noted in Section 1.5, the intent of this SREF is to assess the portion of the shunt neck works scope that is located outside of the existing approved proposal area. As illustrated in Figure 1-4, the proposed change is located within the footprint assessed as part of the N2N EIS (and therefore did not form part of the Division 5.1 approval). Accordingly, the impacts of the proposed change were not assessed by the original NMDC REF.

The assessments prepared for the purposes of the N2N EIS did consider the parcel of land on which the change is proposed to take place. Even though the N2N EIS did not assess the specific works for the shunt neck works it is nevertheless the most accurate indicator to assess and determine the impact of works.

Given the limited nature of change (from the NMDC REF) assessment and mitigations as outlined in the NMDC DREF is considered adequate (see Table 6-1) for the following environmental factors:

- ▶ noise and vibration
- ▶ hydrology and flooding
- ▶ non-Indigenous heritage
- ▶ air quality
- ▶ soils and geology
- ▶ contamination
- ▶ waste management
- ▶ visual amenity
- ▶ sustainability and climate change
- ▶ traffic and transport
- ▶ socio-economic
- ▶ land use and property.

No further assessment has been undertaken for these environmental factors in this SREF.

Additional assessment has been undertaken for Indigenous heritage—to assess any impact not addressed in the NMDC DREF.

A consistency review is summarised in Table 6-1 below, and additional assessment is undertaken in Section 4.1 below.

TABLE 4-1: SUMMARY OF ASSESSMENT REQUIREMENTS FOR ENVIRONMENTAL FACTORS WITH REGARDS TO THE AMENDED PROPOSAL

	Environmental Factor	Assessment	Potential Impacts
ADDITIONAL ASSESSMENT REQUIRED	Indigenous heritage	See Section 4.1 below	<p>NMDC REF</p> <p>Potential heritage Impacts as a result of the works include: The NMDC D-REF included the requirement for a program of archaeological sub-surface testing to be completed for areas where Gilgais are evident. The potential impacts to heritage site MDC-AS01 and the areas where Gilgais are present is presented in Section 4.1 below.</p> <p>N2N EIS</p> <p>Section 6.3.1 of the EIS heritage assessment sets out the construction impacts in relation to construction activities. Most of the sites that have the potential to be impacted have been assessed as having a significance rating of moderate or lower. Five sites have been assessed as having moderate-to-high overall significance. The proposed shunt neck works area is not located within an area of archaeological potential, as per Figure B6.1, furthermore the AHIMS undertaken as part of this SREF (Appendix B) did not identify any known heritage sites within the proposed footprint of the shunt neck works. The closest AHIMS site (IF5) is located >170 m to the west of proposed CIZ boundary. See Figure 4-1 for artefact location, and Appendix B for the basic AHIMS.</p>

Environmental Factor	Assessment	Potential Impacts
NO ADDITIONAL ASSESSMENT REQUIRED	See Section 6.1.3 of the determined MNDC REF	<p>Jacobs prepared an Addendum Aboriginal Cultural Heritage Assessment Report (ACHAR) following the exhibition of the N2N EIS to identify gaps associated with the project amendments and to inform the combined <i>Inland Rail Narromine to Narrabri Preferred Infrastructure/Amendment Report</i> (Jacobs GHD, 2021a). The ACHAR did not provide any additional mitigation measures relevant to the Shunt Neck Works, however a <i>Response to Submissions Report</i> (Jacobs GHD, 2021b) was prepared, which included amended mitigation measures which supersede the measures presented in the EIS.</p> <p>N2N Response to Submissions 2022</p> <p>Section 11.2 of the N2N RTS includes updated mitigation measures to those initially described in Chapter D5 of the N2N EIS. Table 11-1 of the N2N RTS includes additional Indigenous heritage mitigation measures which are relevant to sites located within the N2N project alignment. The mitigation measures include reference to avoidance of heritage sites, detailed salvage methodologies, additional targeted surveys and other measures. The Aboriginal heritage mitigation measures (AH1–AH9) as outlined in the N2N RTS do not relate to the proposed shunt neck works location of construction methodology.</p>
	See Section 6.1.3 of the determined MNDC REF	<p>Database searches undertaken as part of the N2N EIS confirmed the presence of crop and/or introduced grassland located in the area of proposed shunt neck works. See Appendix D.</p> <p>The EPBC approval (2018/8259) for the N2N project was determined on 5 February 2024; therefore, as per the conditions of the approval, vegetation clearing of PCTs, (being a controlled action), can be undertaken if required. As per Section B1.3.1 of the Biodiversity Assessment, 1,743 ha of native vegetation is required to be removed for the N2N project, with an allowance of 277.79 ha of PCT 88.</p> <p>The proposed shunt neck works do not require the removal of PCT 88 or other threatened or endangered species to undertake the works.</p> <p>Furthermore, it is noted that although no vegetation removal is required to undertake the proposed shunt neck works, with the closest protected vegetation the (PCT 88, Pilliga Box) vegetation located approximately 120 m west of the work zone.</p>
	See Section 6.2.3 and of the determined MNDC REF	There is no change in construction scope or use of additional plant and equipment as outlined in the determined NMDC REF; therefore, no additional noise and vibration impacts are anticipated.
	See Section 6.4.3 of the determined MNDC REF	There is no change in scope as outlined in the determined NMDC REF; therefore, no additional hydrological or flooding impacts are anticipated.
	See Section B7.3 of the determined REF	There is no change in scope as outlined in the determined NMDC REF; therefore, no non-Indigenous impacts are anticipated.
	See Section 6.7 of the determined MNDC REF	<p>The construction activities and affected landowners or managers would not change due to the amended proposal. As per section 2.1, it is important to note that the proposed works sits within Lot A (within the N2N project EIS proposal site footprint).</p> <p>As such, no additional impacts to land use and property are predicted due to the amended proposal.</p>
	See Section 6.5 of the determined MNDC REF	<p>The nature and extent of the proposed works would not change due to the amended proposal.</p> <p>A relatively minor amount of additional dust potential, due to ground disturbance and earthworks is expected; however, existing management safeguards are deemed acceptable.</p> <p>No additional or modified safeguards or management measures are required.</p>
	See Section 6.10 of the determined MNDC REF	<p>Database searches completed as part N2N EIS confirmed:</p> <ul style="list-style-type: none"> ▶ no sites listed on NSW EPA's contaminated land record or NSW EPA's record of notices are located within 500 m of the N2N project site ▶ no sites listed on ARTC's contaminated sites register are located in proximity to the N2N project site

Environmental Factor	Assessment	Potential Impacts
		<ul style="list-style-type: none"> ▶ a search of the NSW Department of Primary Industries cattle dip site locator did not identify any cattle dip structures within the N2N project site, and none were identified during the site visits ▶ a search of the Department of Defence's UXO Mapping Application identified no unexploded ordinance within 1 km of the N2N project site. <p>It is noted, contamination associated with existing railways and rail infrastructure is likely to be relatively isolated to the fill materials, ballast and surface soils immediately adjacent to existing infrastructure; however, the likelihood of encountering contamination at these locations is considered to be high. The unexpected finds procedure is to be enforced, and would be included in the pre-start. See Table 7-1 of this SREF.</p> <p>The amended proposal would not alter the potential contamination impacts identified in the project REF.</p> <p>No additional or modified safeguards or management measures are required.</p>
Waste management	See Section 6.11 of the determined MNDC REF	<p>The nature of waste management and requirements for stockpiling are adequately assessed in the determined MNDC REF. All waste would be disposed of at a suitably licenced facility or in accordance with relevant EPA exemptions.</p> <p>No additional or modified safeguards or management measures are required.</p>
Traffic and transport	See Section 6.6 of the determined MNDC REF	<p>The amended proposal identifies additional access points (via HV corridor) to and from Craigie Lea Lane and Narwonah Siding Road no change to traffic volumes is anticipated.</p> <p>No additional or modified safeguards or management measures are required.</p>
Socio-economic	See Section 6.8 of the determined MNDC REF	<p>The nature and extent of the proposed works would not change because of the amended proposal.</p> <p>No additional or modified safeguards or management measures are required.</p>

4.1 Indigenous heritage

4.1.1 NMDC project area

The NMDC REF states that the NMDC area is unlikely to be of greater than low to moderate archaeological potential (based on local modelling).

The NMDC REF includes reference to the gilgai features located on the eastern extent of the assessment area (refer to Appendix A). The gilgai area has been assessed as being of moderate archaeological potential. The NMDC REF included the requirement for a program of archaeological sub-surface testing to be completed for areas where gulgais are evident. The shunt neck works proposal has been designed to avoid the gilgai area. It is noted that while these areas can be traversed by plant and vehicles, the ground cannot be disturbed by excavation until further cultural heritage site investigation has been undertaken with Registered Aboriginal Parties.

Predictive modelling undertaken as part of N2N EIS assessment of archaeological potential supports this conclusion. The model was based on the distribution of known sites, sensitive landscape, resource areas and waterways. As per Appendix C, Chapter B6 (Aboriginal Heritage), Section B6.2.5 of the N2N EIS confirms no moderate or higher archaeological potential at the proposed Shunt Neck Works site. Furthermore, Figure B6.1 of the N2N EIS (Section B6.2.4.5), did not include the proposed shunt neck works site as an area of archaeological potential. As such, no indigenous sites were identified in the CIZ of the at the proposed shunt neck works site.

4.1.2 NMDC heritage locations

The closest heritage artefacts, relative to the shunt neck works CIZ are located 150 m to the west (IF5), and 420 m to the north-east (MDC-AS02). Given the distance from the works no impacts to these heritage items are anticipated, see Figure 4-1.

As noted above in Section 4.1.1, the shunt neck proposal has been designed to avoid the gilgai features. As illustrated in Appendix A, the alignment of the shunt neck proposal avoids the gilgai (ground disturbance) exclusion area by approximately 5 m.

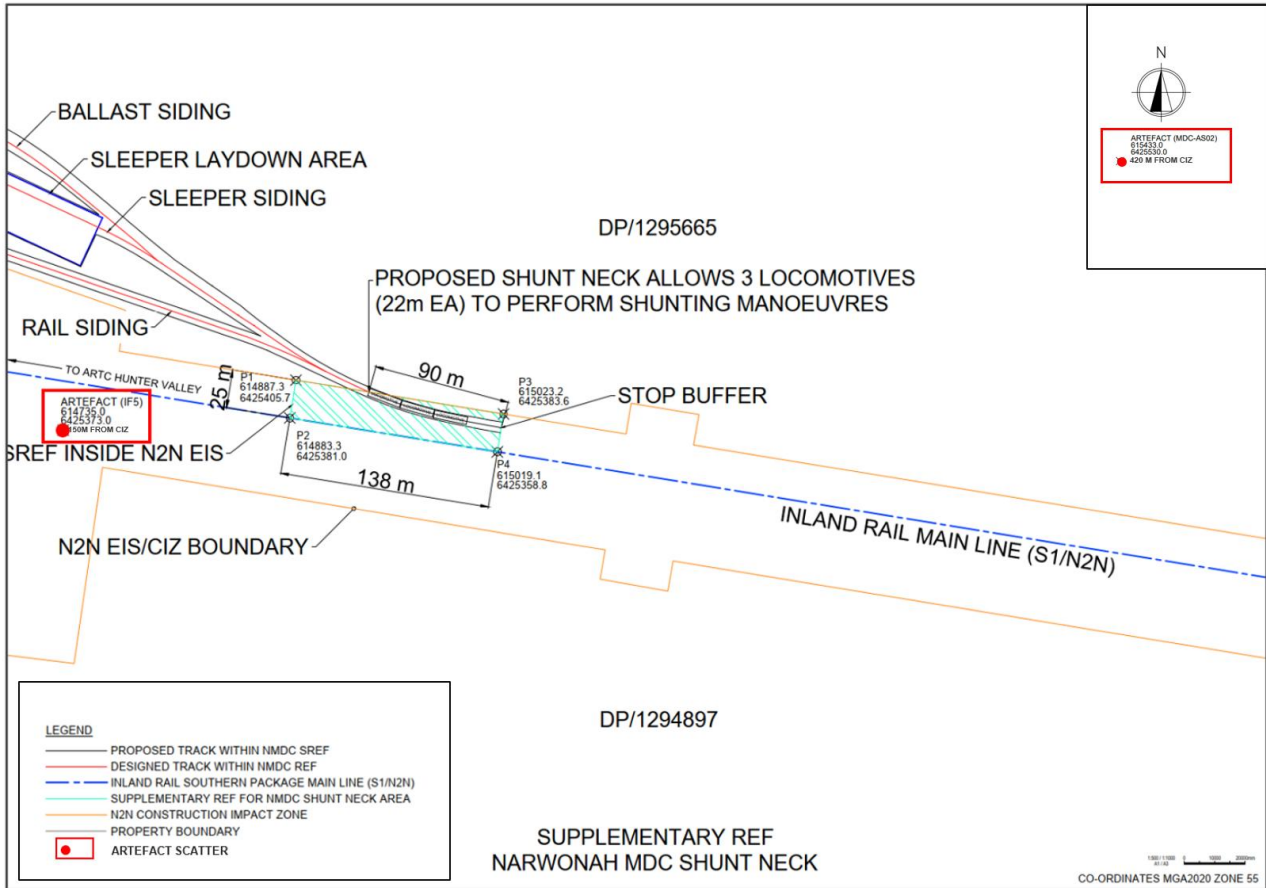


FIGURE 4-1: HERITAGE ARTEFACT LOCATIONS RELATIVE TO THE SHUNT NECK WORKS AREA

4.1.3 N2N project area

As per Section B6.3.1 of the N2N EIS the main risks relating to Aboriginal heritage would occur during construction. Construction activities have the potential to disturb identified Aboriginal sites and areas of archaeological potential as a result of:

- ▶ vegetation clearing
- ▶ excavation to install infrastructure and utilities
- ▶ construction vehicle movements.

The artefacts, or potential artefact locations in the vicinity of the proposed shunt neck works site can be seen above in Figure 4-1.

An additional AHIMS search was completed on 30 January 2024, as part of this SREF assessment (refer Appendix B, which confirms the presence of 15 artefacts in the general area, all are outside of the proposed shunt neck works CIZ.

All of these areas are outside of the proposed shunt neck works location, and would not be impacted by the proposed works.

4.1.4 Potential impact

The proposal will involve ground disturbance, as heavy earth moving machinery will be required to complete the works. Predictive modelling, however, as supported by the MNDC DREF and N2N EIS, predicts that the proposal is unlikely to contain lands with greater than low to moderate archaeological potential. The artefacts as shown in Figure 2-1 and Appendix B will be avoided with the mitigations described in Section 4.1.5 to be in effect.

4.1.5 Mitigation measures

Additional mitigation measures to prevent the impact to the nearby heritage areas for the shunt neck works include:

- ▶ protective high-visibility flagging has been installed and will be maintained around the western boundary of the Gilgai area located within the NMDC project boundary
- ▶ existing flagging to be reviewed and extended (if necessary) to ensure appropriate delineation in place to control proposed extension of the CIZ
- ▶ clear delineation and signage required where the gilgai boundary comes in close proximity to proposed works. This control needs to be applied to ensure work crews have a clear understanding of where ground disturbance is allowable and where it is prohibited
- ▶ protective flagging has been installed around the scar trees located within the MNDC REF project footprint.

Refer to existing NMDC DREF for a full list of approved mitigations, an excerpt is available below in Table 6-1.

5. CUMULATIVE IMPACTS

Potential cumulative impacts of the shunt neck works are not anticipated to be significant and are consistent with those discussed within the approved REF. Potential cumulative impacts that may differ are discussed below in Table 6-1. Based on the below assessment, and implementation of recommended mitigation measures no significant cumulative impacts are predicted.

The location of the shunt neck works, and its interface with the N2N EIS footprint would have a direct cumulative association if all works were to be undertaken concurrently; however, the shunt neck works would be completed before the N2N works in the area commenced.

Conclusion

There are no predicted significant cumulative Aboriginal heritage impacts associated with the proposal and the N2N alignment.

6. ENVIRONMENTAL MANAGEMENT AND IMPACT MITIGATION MEASURES

Several safeguards and management measures have been identified in this SREF to mitigate and minimise any environmental impacts that could potentially arise as a result of the amended proposal.

Should the amended proposal proceed with the changes as described in Section 1.4, the additional and approved mitigation measures detailed in Table 6-1 will be applied.

TABLE 6-1: PROPOSED MITIGATION MEASURES IDENTIFIED IN THIS SREF TO BE APPLIED IN ADDITION TO THOSE IDENTIFIED IN THE DETERMINED REF

Aspect	Mitigation Measures	Timing	Responsibility
Aboriginal heritage	Additional mitigation measures		
	<p>Protective high-visibility flagging is currently in place around the western boundary of the Gilgai area, located within the NMDC project boundary.</p> <p>This area is subject to ongoing artefact salvage works and is a no-go zone until further notice.</p> <p>Existing flagging to be reviewed and extended (if necessary) to ensure appropriate delineation in place to control proposed extension of the CIZ.</p> <p>Clear delineation and signage required where the gilgai boundary comes in close proximity to proposed works. This control needs to be applied to ensure work crews have a clear understanding of where ground disturbance is allowable and where it is restricted.</p> <p>The ongoing management of these areas, which includes maintenance of flagging and no access will be toolboxed for the work crews prior to works, and on an ongoing basis throughout the works.</p> <p>An unexpected finds process will be utilised to manage unexpected finds throughout the shunt neck works excavation works.</p>	During construction	Contractor
Biodiversity, flora and fauna	Additional mitigation measures		
	<p>Small parcels of PCT 88 (Pilliga Box) nearby the proposal footprint has been identified as 'no-go zones', temporary exclusion fencing and signage has been installed for protection, and will be inspected and maintained throughout the works.</p> <p>Protective flagging has also been installed around the scar trees located approximately 200 m to the west of the proposed shunt neck works, which is to be routinely inspected and maintained as required.</p>	During construction	Contractor
	Approved mitigation measures		
	<p>A flora and fauna management sub-plan will be prepared prior to construction and implemented as part of the construction environmental management plan (CEMP).</p> <p>The plan will be prepared in accordance with the relevant guidelines, legislation, and standards, and will include but not be limited to:</p> <ul style="list-style-type: none"> ▶ establishing protocols for the staged clearing of vegetation and safe tree felling and log removal to reduce the risk of fauna mortality ▶ an unexpected find protocol, and; ▶ a process for notification of a wildlife rescue organisation (e.g. WIRES) in case any injured fauna are found. All animals encountered will be treated humanely, ethically, and in accordance with relevant codes under the <i>Prevention of Cruelty to Animals Act 1979</i> (NSW). 	Design and preconstruction	Contractor
	<p>Measures to suppress dust, prevent erosion and sedimentation will be implemented during clearing and site work.</p>	Construction/ Operation	Contractor

Aspect	Mitigation Measures	Timing	Responsibility
	Temporary and permanent stockpiles are to be located within cleared areas (and not within areas of adjoining native vegetation) or within the dripline of trees.	Construction/ Operation	Contractor
	All workers will be provided with an environmental induction prior to starting work onsite. This will include information on the ecological values of the site, protection measures to be implemented to protect biodiversity, and penalties for breaches.	Pre-clearing	Contractor
	A weed and pest species management protocol will be prepared as part of the CEMP to manage weeds and pathogens during site activities. It will include, but not be limited to, the following: <ul style="list-style-type: none"> ▶ process to identify, control and remove all priority weeds in accordance with the requirements of the <i>Biosecurity Act 2015</i> ▶ Process to minimise the introduction and spread of weeds, such as exclusion areas for native vegetation, driving instructions, etc ▶ communication of responsibilities of all site personnel regarding the management of weeds and pathogens, through site inductions and toolbox talk meetings ▶ measures to ensure all trucks transporting weed waste from the site are covered to avoid the spread of weed contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept. 	Pre-clearing	Contractor
	So far as is practicable, suitable bush rock habitat, hollow-bearing logs or limbs, and woody debris will be relocated to nearby adjacent areas outside of the proposal site footprint by the supervising ecologist or contractor.	Pre and during clearing	Contractor
	Disturbance of vegetation will be limited to the minimum necessary to undertake the proposal.	During clearing	Contractor
	All machinery entering the site must be appropriately washed down and disinfected, as far as practicable, prior to mobilisation onsite to prevent the potential spread of weeds, Cinnamon Fungus (<i>Phytophthora cinnamomi</i>) and Myrtle Rust (<i>Pucciniales</i> fungi), in accordance with the <i>National best practice guidelines for Phytophthora</i> (O’Gara et al., 2005) and the <i>Myrtle Rust factsheet</i> (DPI, 2015O) for hygiene control. Weed inspections of vehicles should also be undertaken and documented as part of the CEMP.	Prior to any plant or machinery being brought onsite, where practicable	Contractor
	Protocols to prevent introduction or spread of chytrid fungus will be implemented following hygiene guidelines for wildlife, protocols to protect priority biodiversity areas in NSW from <i>Phytophthora cinnamomi</i> , myrtle rust, amphibian chytrid fungus and invasive plants (DPIE, 2020b).	Pre-clearing, during construction and operation	Contractor
	Sediment controls are to be established around the proposal site perimeter as a minimum, in accordance with the Blue Book and the contractor’s environmental management plan. Measures will be implemented to minimise the risk of movement of materials in the event of a significant rainfall, such as covering stockpiles with impervious covers (tarps) or temporary trenching upslope of stockpiles to divert surface runoff around stockpiles. In the event of forecast heavy rainfall, additional measures will be implemented, or works will be postponed, to prevent the potential for sediment laden run-off into adjacent properties or waterways.	Pre-clearing, during construction and operation	Contractor
Noise and vibration	Approved mitigation measures		
	Develop and implement a Construction Noise and Vibration Management Plan (CNVMP).	Design and pre construction Construction/ Operation	Contractor

Aspect	Mitigation Measures	Timing	Responsibility
	Selection of quieter construction equipment should be investigated where feasible and practicable. This is especially important for any out-of-hours works where predicted noise levels indicate high levels of noise impacts to nearby sensitive receivers.	Design and pre construction	Contractor
	Staff training is to be undertaken so that unnecessary sources of noise and vibration are avoided. Training must include the understanding and adoption of the CNVMP and best-practice behaviours onsite to minimise noise and vibration. The behaviours and implementation of CNVMP should be enforced through regular checks and reminders.	Construction/ Operation	Contractor
	Where feasible and practicable, plant and equipment used intermittently, or no longer in use, will be throttled or shut down.	Construction/ Operation	Contractor
	Equipment will be operated and maintained in a manner as detailed by the manufacturer. This includes the replacement of engine covers, repair of defective silencing equipment, tightening of rattling components and repair of leakages in compressed air lines.	Construction/ Operation	Contractor
	Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on all construction vehicles and mobile plant regularly used on the site and for any out-of-hours works, where practicable.	Construction/ Operation	Contractor
	Site access points and roads should be sited as far as practicable from sensitive receivers.	Construction/ Operation	Contractor
	Delivery vehicles shall be fitted with straps rather than chains where feasible.	Construction/ Operation	Contractor
	Sites are to be designed so that reversing of delivery vehicles is minimised so that they can drive through the site were possible.	Construction/ Operation	Contractor
	Where feasible and practicable: <ul style="list-style-type: none"> ▶ unsealed haul roads should be regularly graded. Sealed access roads and hardstand areas should have potholes filled in a timely fashion ▶ night-time construction traffic should be limited. If unavoidable, they should be redirected away from noise-sensitive receivers, in accordance with the Construction Traffic Management Plan ▶ appropriate construction traffic speed limits should be established and enforced near noise-sensitive receivers. 	Construction/ Operation	Contractor
	Regular communications on the activities and progress of the proposal should be provided to the community (e.g. via newsletter, email and/or website).	Construction/ Operation	Contractor
	The operational works staging method will be reviewed to identify opportunities to schedule noisy works during the day or, where relevant, evening.	Operation	Contractor
Flooding and hydrology	Approved mitigation measures		
	Construction planning and the layout of construction work sites and compounds will be carried out with consideration of overland flow paths and flood risk, avoiding flood-labile land and flood events, where practicable. For the sites located in flood-prone land, and where temporary obstruction of overland flows or drainage systems cannot be avoided, further consideration of flood risk will be carried out to develop the staging of works to minimise impacts of the proposal and ensure proper management of a flood event at all stages of construction. A flood and emergency response plan will be prepared for the sites located within a flood-prone area.	Before construction	Contractor

7. ENVIRONMENTAL MATTERS AND CHECKLISTS

7.1 Ecologically sustainable development

The principles of ecologically sustainable development have been considered in Section 8.1 of the determined MNDC REF.

7.2 Clause 171(2) Checklist

The following factors in Table 7-1 of the EP&A Regulation, have also been considered to assess the likely impacts of the amended proposal on the natural and built environment.

TABLE 7-1: CLAUSE 171(2) CHECKLIST

Factor	Impact
Any environmental impact on a community?	Short-term/significant impact (worst-case) Temporary construction noise impacts are anticipated
Any transformation of a locality?	No significant impact Minor boundary adjustment from determined REF. Refer to Figure 1-4
Any environmental impact on the ecosystems of the locality?	Minor impact No change from determined REF
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	No significant impact No change from determined REF
Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	No significant impact No change from determined REF
Any impact on the habitat of protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)?	No significant impact No change from determined REF
Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	No significant impact No change from determined REF
Any long-term effects on the environment?	No change from determined REF
Any degradation of the quality of the environment?	No significant impact No change from determined REF
Any risk to the safety of the environment?	No significant impact No change from determined REF
Any reduction in the range of beneficial uses of the environment?	No significant impact No change from determined REF
Any pollution of the environment?	No significant impact No change from determined REF
Any environmental problems associated with the disposal of waste?	No significant impact No change from determined REF.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	No significant impact No change from determined REF
Any cumulative environmental effect with other existing or likely future activities?	No significant impact No change from determined REF
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	No significant impact No change from determined REF
Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	No significant impact No change from determined REF
Other relevant environmental factors	Impacts of relevant environmental factors have been considered in this SREF (Table 6-1)

7.3 Matters of national environmental significance

Under the environmental assessment provisions of the EPBC Act, the following MNES and impacts on Commonwealth land are required to be considered to assist in determining whether the amended proposal should be referred to the federal Department of Climate Change, Energy, the Environment and Water (DCCEE).

TABLE 7-2: MNES CHECKLIST

Will the proposal:	If yes, describe the impact (i.e. short term, long term, positive, negative, nil)
Impact on listed threatened species and ecological communities?	No
Impact on listed migratory species?	No
Impact on Wetlands of International Importance?	No
Impact on the Commonwealth marine environment?	No
Impact on World Heritage properties?	None identified
Impact on National Heritage places?	None identified
Involve nuclear actions?	No
Impact on the Great Barrier Reef Marine Park?	No

8. CONCLUSIONS

Additional information has become available since the determination of the NMDC DREF, which may affect the environmental assessment. The ARTC REF Work Instruction states that a SREF must be prepared to assess material changes to scope or construction hours that were not assessed in the existing determined REF. As such, Inland Rail is required to prepare a SREF.

This SREF has been prepared by Inland Rail due to the need to construct the shunt neck works, which sits outside of the approved NMDC DREF boundary as outlined and assessed in the NMDC DREF, determined by ARTC and approved by Inland Rail on 20 June 2022.

This SREF has been prepared in accordance with Part 5, Division 5.1 of the EP&A Act and considers all matters affecting or likely to affect the environment as a result of the proposal. The potential impacts of the proposal have been assessed in accordance with clause 171(2) of the EP&A Regulation and the requirements of the EPBC Act.

The following key impacts have been identified should the proposal proceed:

- ▶ heritage impacts—no impacts predicted given the mitigation measures proposed
- ▶ biodiversity impacts—no impact predicted but additional mitigation proposed.

The following key actions to be implemented have been identified should the proposal proceed:

- ▶ during the N2N detailed design, Inland Rail to ensure that the design and construction of the N2N proposal and NMDC are coordinated to minimise potential impacts
- ▶ clear delineation and signage required where the gilgai boundary comes in close proximity to proposed works. This control needs to be applied to ensure work crews have a clear understanding of where ground disturbance is allowable and where it is restricted
- ▶ small parcels of PCT 88 (Pilliga Box) within the proposal footprint have been identified as 'no-go zones, and direct and temporary exclusion fencing and signage installed for protection
- ▶ all mitigation and protection measures identified in the NMDC DREF and this SREF must be incorporated into Martinus Construction Environmental Management Plan and implemented for the works.

Mitigation and management measures have been recommended to address the identified potential impacts. They are based on the impacts of the current design of the proposal and, through the application of these recommended mitigations, the predicted impacts of the proposal can be appropriately managed.

8.1 Significance of impact under NSW legislation

The amended proposal would not result in a change to the findings of the project REF, submissions report and environmental management report, and would be unlikely to cause a significant impact on the environment; therefore, it is not necessary for an EIS to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required.

8.2 Significance of impact under Australian legislation

The amended proposal would not cause a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of Agriculture, Water and the Environment is not required.

This assessment concludes that it would be appropriate for the proposal to proceed.

9. REFERENCES

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Department of Planning, Industry and Environment (DPIE). (2020). Hygiene guidelines for wildlife Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants. Available at: environment.nsw.gov.au/research-and-publications/publications-search/hygiene-guidelines

E OGara, K Howard, B Wilson and GEstJ Hardy. (2005). *Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia: Part 2 National Best Practice Guidelines*. A report funded by the Commonwealth Government Department of the Environment and Heritage by the Centre for Phytophthora Science and Management, Murdoch University, Western Australia.

Jacobs GHD. (2021a). Inland Rail Narromine to Narrabri Preferred Infrastructure/Amendment Report.

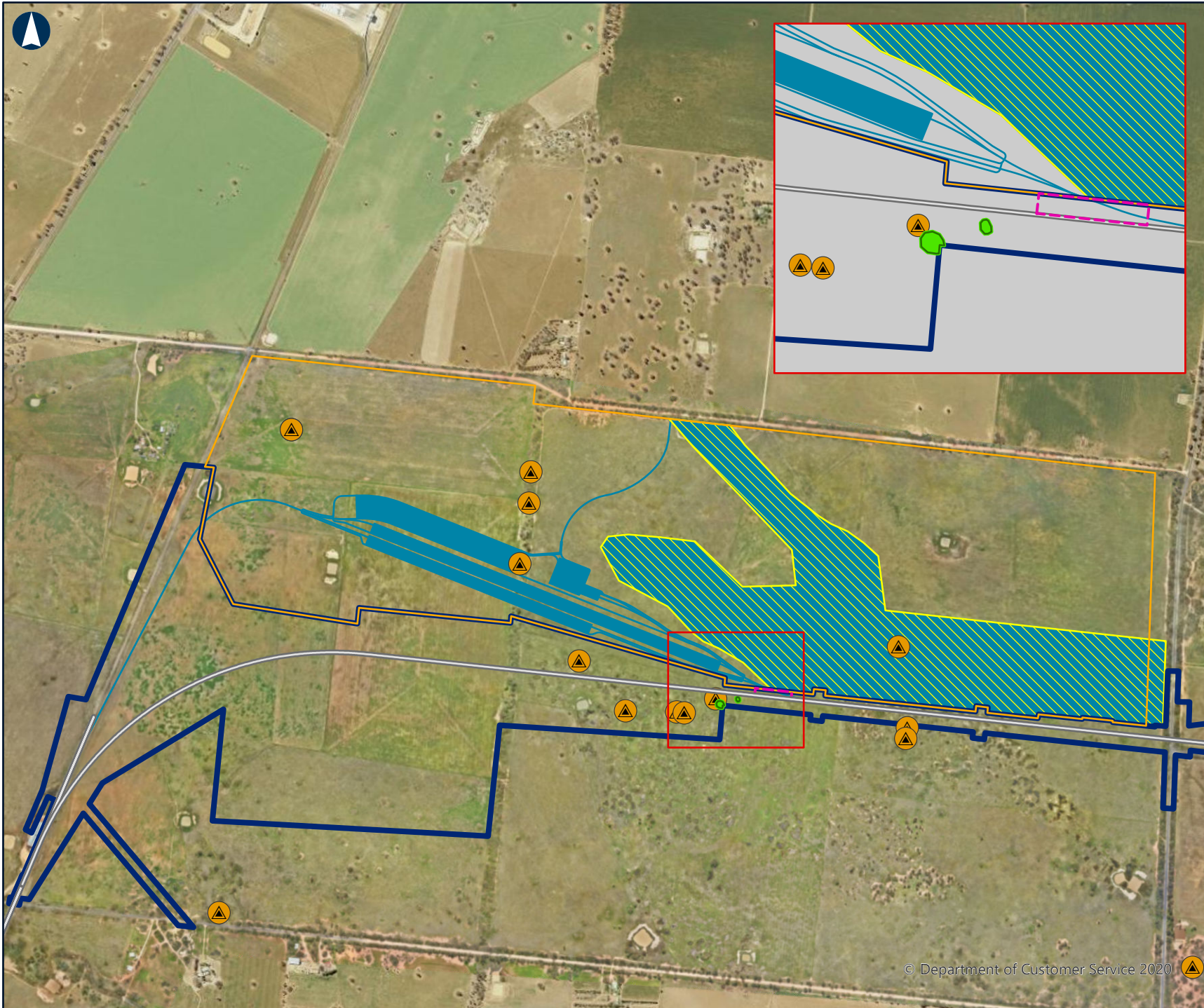
Jacobs GHD. (2021b). Response to Submissions Report

APPENDIX

A

Proposed Construction Impact Zone

NARWONAH MATERIAL DISTRIBUTION CENTRE
SUPPLEMENTARY REVIEW OF ENVIRONMENTAL FACTORS: SHUNT NECK WORKS



INLAND RAIL

Narwonah Material Distribution Centre (NMDC)

PROPOSAL FOOTPRINT Shunt Neck Works

- IR Track Alignment
- SREF Construction Impact Zone (CIZ)
- N2N Project CIZ
- Existing REF CIZ
- Cultural Heritage Gilgai Area
- NMDC Concept Site Layout
- NSW Aboriginal Heritage AHIMS
- Plant Community Type:
Pilliga Box - White Cypress Pine -
Buloke shrubby woodland in the
Biglow Belt South Bioregion (PCT 88)



0 500 Metre

Coordinate System: GDA 1994 MGA Zone 56

This data is provided for information purposes only. As this GIS plan has been prepared from material provided to IR by an external source, IR cannot and does not attest to its completeness, accuracy or suitability. While every care is taken to ensure the accuracy of the data, IR makes no representation or warranty and assumes no duty of care or other responsibility as to the completeness, accuracy or suitability of the information contained in this GIS plan. IR will not be responsible for any loss or damage suffered as a result of any person whosoever placing reliance upon the information contained within this GIS plan.

Date: 27/02/2024

Paper: A4

Author: IR GIS

Scale: 1:20,000

Rev: 0

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Data Sources: JGHD, Martinus, IR Survey, IR GIS

APPENDIX

B

Aboriginal Heritage Information Management System

NARWONAH MATERIAL DISTRIBUTION CENTRE
SUPPLEMENTARY REVIEW OF ENVIRONMENTAL FACTORS: SHUNT NECK WORKS

SMEC

Date: 30 January 2024

74 Hunter Street
Newcastle New South Wales 2300

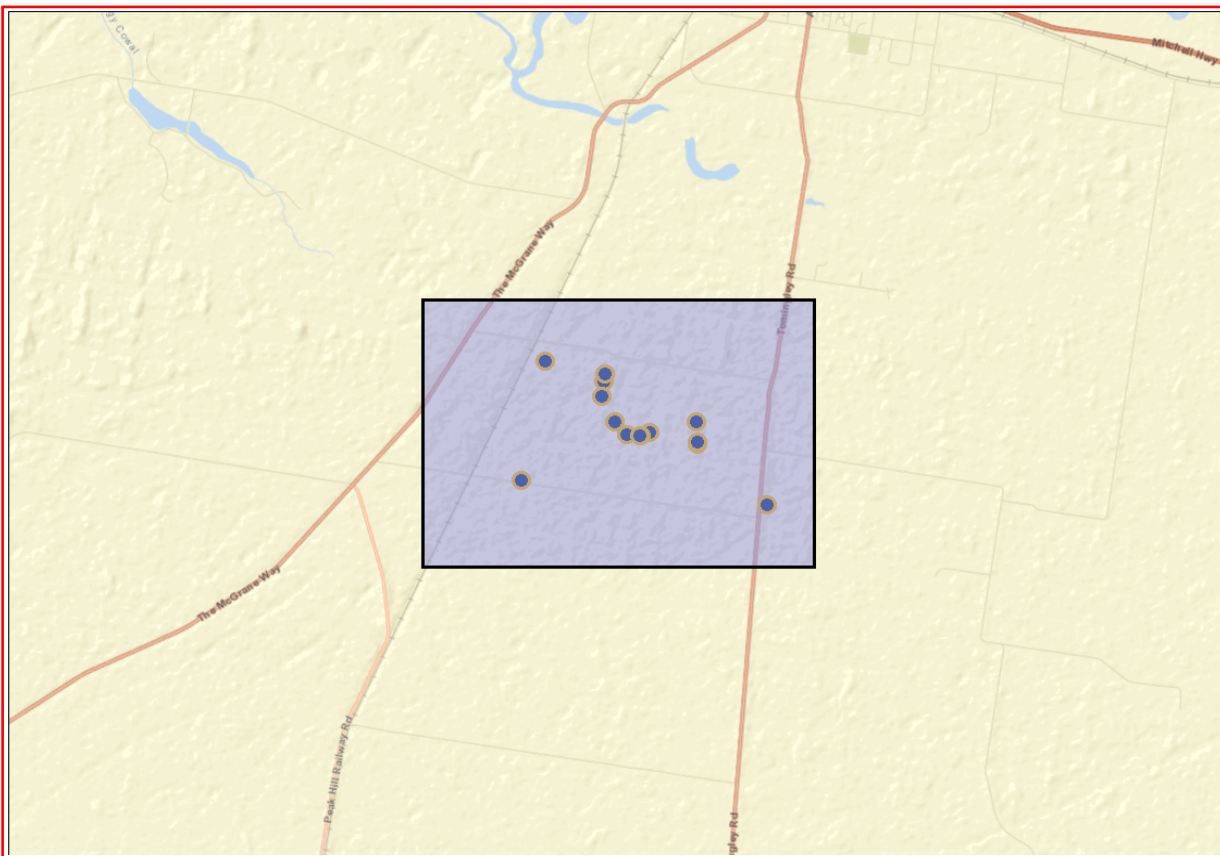
Attention: Brendan Shannon

Email: brendan.shannon@smec.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -32.3208, 148.1828 - Lat, Long To : -32.2845, 148.2447, conducted by Brendan Shannon on 30 January 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

15	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

APPENDIX

C

Narromine to Narrabri Environmental Impact Statement Aboriginal Heritage Extract

NARWONAH MATERIAL DISTRIBUTION CENTRE
SUPPLEMENTARY REVIEW OF ENVIRONMENTAL FACTORS: SHUNT NECK WORKS

PART B
Impact assessment
proposal infrastructure



CHAPTER B6
Aboriginal heritage



Narromine to Narrabri
Environmental Impact Statement



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

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B6. Aboriginal Heritage

This chapter provides a summary of the potential impacts of the Narromine to Narrabri project (the proposal) on Aboriginal heritage. A full copy of the assessment results is provided in Technical Report 6—Aboriginal cultural heritage assessment.

B6.1 Approach

A summary of the approach to the assessment is provided in this section, including the legislation, guidelines and/or policies driving the approach, and the methodology used to undertake the assessment. Further information is provided in Technical Report 6.

B6.1.1 Legislative and policy context to the assessment

Relevant legislation, policies and guidelines

The assessment was undertaken in accordance with the SEARs and with reference to the requirements of relevant legislation, policies and/or assessment guidelines, including:

- ▶ The EP&A Act, the *National Parks and Wildlife Act 1974* (NSW), the EPBC Act, the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth), the *Native Title Act 1993* (Cth) and the *Aboriginal Land Rights Act 1983* (Cth)
- ▶ *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* (DECCW, 2010a)
- ▶ *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010b)
- ▶ *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010c)
- ▶ *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011).

Secretary's Environmental Assessment Requirements

The SEARs relevant to Aboriginal heritage, together with a reference to where they are addressed in the EIS, are provided in Appendix A.

B6.1.2 Methodology

Study area

The study area for the Aboriginal heritage cultural assessment included the proposal site (described in chapter A2) and the immediate vicinity of the proposal site (for any indirect impacts that could occur as a result of the proposal).

Key tasks

The Aboriginal cultural heritage assessment was undertaken in accordance with the guidelines and requirements described in section B6.1.1, and sections 2 and 6.1 of Technical Report 6 and involved:

- ▶ A desktop review of archaeological literature and data, including a search/review of:
 - ▶ Aboriginal Heritage Information Management System (AHIMS) in January 2019 and March 2020 for a 2-km wide corridor around the proposal site
 - ▶ EPBC Act Protected Matters Search Tool
 - ▶ Local environmental plans
 - ▶ Previous archaeological investigations.
- ▶ Developing a predictive model in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010c) to identify areas likely to be of cultural sensitivity within the study area that require survey
- ▶ Field surveys (where access was available) of areas considered to be moderately to highly sensitive (with respect to Aboriginal culture and heritage), areas identified from the predictive model, and areas where known Aboriginal heritage sites and Aboriginal cultural places were identified from the desktop study (see below)
- ▶ Consultation with key Aboriginal stakeholders in the area (see below)

- ▶ Assessing the significance of sites/areas of potential sensitivity within the proposal site
- ▶ Assessing the potential impacts on Aboriginal sites, places and objects
- ▶ Providing management and mitigation measures.

Aboriginal consultation

Aboriginal consultation has been undertaken in accordance with the requirements of *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010b). This included:

- ▶ Identifying key Aboriginal stakeholders, including native title claimant groups and local Aboriginal land councils (LALCs)
- ▶ Sending letters to relevant organisations requesting details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or place within and adjacent to the proposal site
- ▶ Notification of the proposal, assessment, and registration of interest (a total of 33 Aboriginal parties registered interest in the proposal)
- ▶ Presentation of information about the proposal and invitations to participate in targeted field surveys.

Further information on the consultation process is provided in chapter 4 of Technical Report 6.

Site survey

A series of surveys were undertaken between September 2018 and October 2019. The first stage of surveys involved preliminary surveys of publicly accessible land and geotechnical investigation sites, to assess the nature and extent of Aboriginal sites and to identify potentially sensitive areas. This enabled a rapid survey to ground truth areas identified during the preliminary desktop review and to inform the predictive modelling. The preliminary surveys were accompanied by representatives from the LALCs and native title applicant groups.

These were followed by targeted surveys of areas predicted to have moderate-to-high sensitivity based on the results of the predictive modelling, where property access was available. The targeted surveys were accompanied by Registered Aboriginal Parties (RAPs) in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010b).

Additional surveys were undertaken of borrow pit locations and construction access routes.

The targeted surveys were undertaken in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010c) and consisted of vehicle and pedestrian surveys. The vehicle surveys were used to obtain a broader understanding of the general environment and were considered appropriate given the disturbed nature of large parts of the proposal site (cleared agricultural land). The pedestrian surveys focused on sensitive areas. The surveys were designed to assess an adequate sample of landforms within the study area and identify any visible surface evidence of Aboriginal heritage sites and landforms.

Archaeological surveys were completed in a large number of areas identified as culturally sensitive; however, eight areas of moderate-to-high sensitivity were not able to be surveyed in the proposal site due to property access restrictions.

These access constraints have been addressed in discussion with registered Aboriginal parties during field surveys. Some culturally sensitive areas (at Wallaby, Ewenmar, Marthaguy, Gulargambone, Tenandra and Baradine creeks, and the Castlereagh and Namoi rivers) would require physical examination prior to construction commencing. The mitigation measures (see section B6.5) provide for a targeted archaeological survey of these areas.

For the purposes of the assessment, these areas have been conservatively assumed to contain moderate-to-high archaeological potential and the areas that fall within the proposal site have been assumed to be impacted by the proposal.

Test excavations

Test excavations were undertaken on 10 April 2019 at two geotechnical investigation locations near the Macquarie River identified to be of high cultural significance.

Further detail is provided in section 6.3 of Technical Report 6.

B6.1.3 Risks identified

An environmental risk assessment for the proposal (Appendix E) included consideration of potential Aboriginal heritage risks. Aboriginal heritage risks with an overall assessed risk rating of medium or above, identified by the environmental risk assessment, included:

- ▶ Potential impacts on registered Aboriginal heritage items/sites in the proposal site
- ▶ Impacts on unrecorded Aboriginal sites and/or areas of archaeological sensitivity or cultural value
- ▶ Impacts on areas predicted to have moderate-to-high archaeological potential.

The Aboriginal heritage assessment considered the potential risks identified by the environmental risk assessment in addition to potential risks and impacts identified by the scoping report (see section A9.1), the SEARs and relevant guidelines and policies (as appropriate).

B6.1.4 How potential impacts have been avoided/minimised

As described in section A6.2, the shortlist of route options was subject to a detailed assessment, which included assessment of a broad study area to identify key constraints early in the design process and assist with avoiding and minimising impacts. Potential impacts on Aboriginal heritage were minimised, as far as practicable, by:

- ▶ Relocating the alignment to the west in the vicinity of Cumbil Creek, to avoid direct impacts on grinding grooves located on the rocky creek bed
- ▶ Extending bridges beyond watercourses to include flood storage areas and avoid areas with the potential to affect sensitive areas on creek banks
- ▶ Locating the proposed bridge over Macquarie River with consideration of known Aboriginal heritage sites and, where practicable, avoiding sites.

B6.2 Existing environment

B6.2.1 Aboriginal historical context

The northern portion of the study area falls within the traditional lands of the Gomeroi People who are one of the largest language groups in Australia. Gomeroi people have traditional territory that extends north to the townships of Quirindi, Tamworth, and Narrabri, Moree and Mungindi in northern NSW, south to Muswellbrook, and west to Walgett.

The southern part of the study area includes people from the Ngemba, Ngiyampaa, Wangaayuwun and Wailwan communities. The Ngemba community is located in and around the townships of Brewarrina, Lightning Ridge, Walgett and Bourke, on the banks of the Barwon River in north-western NSW. The Ngiyampaa, Wangaayuwun and Wailwan people are focused on the areas around Gulargambone and Gilgandra.

Further detail on the Aboriginal historical context is provided in section 4.2 of Technical Report 6.

B6.2.2 Aboriginal sites and places

Listed sites

The results of the AHIMS search identified five registered sites within 10 metres (m) of the proposal site, including three scarred trees, one artefact scatter and one confirmed archaeological deposit. Three sites (35-3-0175, 35-3-0195 and 35-3-0196) are reported to be located within the proposal site.

The previously listed sites, and their reported locations with respect to the proposal site, are listed in Table B6.1. The results have been limited to sites within 10 m of the proposal site as they are considered to be most vulnerable to impact.

A full list of sites identified within 400 m of the proposal site are provided in Technical Report 6. The location of one previously listed site (35-3-0021) was confirmed during the field surveys. The other registered sites would need to be confirmed prior to construction commencing (see Table B6.7).

TABLE B6.1 LISTED ABORIGINAL SITES PREVIOUSLY RECORDED WITHIN 10 METRES OF THE PROPOSAL SITE

AHIMS site	Catchment	Site type	Reported distance from the proposal site
35-3-0175 ¹	Backwater Cowal	Modified (scarred) tree	Within the proposal site
35-3-0021	Macquarie River	Modified (canoe) tree	10 m from the proposal site
35-3-0195 ¹	Macquarie River	Artefact scatter	Within the proposal site
35-3-0196 ¹	Macquarie River	Confirmed archaeological deposit	Within the proposal site
35-3-0200 ¹	Macquarie River	Modified (scarred) tree	10 m from the proposal site

Note: 1. Indicates site was not able to be confirmed in the reported location.

Aboriginal places

No Aboriginal places declared under section 84 of the NPW Act, or Aboriginal places of heritage significance defined by the *Standard Instrument—Principal Local Environmental Plan*, are located within or near the proposal site. Bridge Reserve and Mack Reserve are located about 5 km to the west of the proposal site. Both places are listed on the NSW State Heritage Register and are historic camping places that were occupied by Aboriginal people.

New sites identified during the survey

A total of 152 sites and 13 areas of potential archaeological deposit (PAD) were identified during surveys and have been registered on AHIMS. Sites identified within 10 m of the proposal site (including sites within the proposal site) are listed in Table B6.2.

The distribution of sites reflects the use of waterways as primary transit and camping areas within the lowland alluvial plains and river terraces. The dominant site type was confirmed to be culturally modified trees. Stone tools and raw material types were confirmed to be dominated by quartz and sandstone grinding implements. The importance of vantage points was also confirmed, as was the rarity of grinding groove sites.

TABLE B6.2 ABORIGINAL SITES IDENTIFIED DURING FIELD SURVEYS LOCATED WITHIN 10 METRES OF THE PROPOSAL SITE

AHIMS site ¹	Catchment	Site type	Proximity to proposal site
35-3-0254	Macquarie River	Modified (scarred) tree	Within 10 m of the proposal site
35-3-0276	Macquarie River	Artefact scatter	Partially within the proposal site
27-6-0035	Ewenmar Creek	Modified (scarred) tree	Within the proposal site
27-6-0036	Ewenmar Creek	PAD	Within the proposal site
27-6-0042	Boothaguy Creek	Modified (scarred canoe) tree	Within the proposal site
27-6-0041	Boothaguy Creek	Modified (scarred) tree	Within the proposal site
27-6-0037	Boothaguy Creek	Modified (scarred) tree	Within the proposal site
28-1-0060	Gulargambone Creek	Artefact scatter and PAD	On the boundary and PAD likely to extend through the proposal site
28-1-0090	Gulargambone Creek	Artefact scatter and PAD	On the boundary and PAD likely to extend through the proposal site
28-4-0283	Castlereagh River	Modified (scarred) tree	Within 5 m of the proposal site
28-4-0280	Castlereagh River	Artefact scatter and PAD	Partially within the proposal site
28-1-0063	Baronne Creek	Modified (scarred) tree	Within the proposal site
28-1-0064	Baronne Creek	Modified (scarred) tree	Within the proposal site
28-1-0062	Baronne Creek	Modified (scarred) tree	Within the proposal site
28-1-0087	Mungery Creek	Modified (scarred) tree	Within the proposal site
28-1-0084	Mungery Creek	Modified (scarred) tree	Within the proposal site
28-1-0086	Mungery Creek	Modified (scarred) tree	Within the proposal site
28-1-0083	Mungery Creek	Modified (scarred) tree	Within the proposal site

AHIMS site ¹	Catchment	Site type	Proximity to proposal site
28-1-0059	Calga Creek and Looking Glass Creek	Artefact scatter and PAD	Within the proposal site
28-1-0095	Calga Creek and Looking Glass Creek	Artefact scatter	Within the proposal site
28-1-0096	Noonbar Creek	Artefact scatter	Within the proposal site
19-5-0226	Baradine Creek	Artefact scatter	Within the proposal site
19-5-0223	Baradine Creek	Isolated find	Within 10 m of the proposal site
19-5-0224	Baradine Creek	Isolated find	Within 10 m of the proposal site
19-5-0230	Baradine Creek	PAD	Partially within the proposal site
19-6-0180	Bohena Creek	Artefact scatter	Within the proposal site

Note 1: **Red bold font** indicates sites within (or partially within) the proposal site.

B6.2.3 Native title

A review of the Native Title Tribunal records identified two current native title claims in the study area, including:

- ▶ The Gomeroi People claim, which covers about 11 million hectares (ha) of northern NSW and extends for about 182 km along the proposal site between the Kamilaroi Highway and the Castlereagh Highway
- ▶ The Ngemba, Ngiyampaa, Wangaaypuwan and Wailwan claim, which covers about 10 million ha of western NSW and extends for about 16 km along the proposal site between the Oxley Highway and the Castlereagh Highway.

B6.2.4 Archaeological potential

An assessment of archaeological potential was undertaken as part of the predictive modelling. The model was based on the distribution of known sites, sensitive landscape, resource areas and waterways. The likelihood of Aboriginal heritage sites occurring in the study area is influenced by a range of factors, including the durability of the material evidence and the subsequent level of disturbance.

Areas with moderate or higher archaeological potential are shown in Figure B6.1.

B6.2.5 Significance of identified sites

The Burra Charter defines cultural significance in terms of aesthetic, scientific, historic and social values. Aboriginal cultural heritage is typically assessed according to its social and scientific significance; however, other values may also be important. The assessment of significance provides a guideline for determining appropriate mitigation and management strategies. The relationship between levels of significance and management strategies can be summarised as follows:

- ▶ High significance—the site should be conserved and protected from the impacts of development, where possible
- ▶ Moderate significance—the site should be protected if possible; however, if impacts on the site are unavoidable, appropriate mitigation strategies should be implemented prior to impact
- ▶ Low significance—the site should be protected if possible; however, if impacts on the site are unavoidable, the presence of the site should not impede the proposed development.

The significance of sites within or directly adjacent to the proposal site were assessed; however, as the nature and presence of Aboriginal objects associated with a PAD are unknown, it is not possible to assess the significance of a PAD without archaeological testing. As such, significance assessments for the two PADs (27-6-0036 and 19-5-0230) were not undertaken. The four artefact scatter sites that have PADs associated with them (sites 28-4-0280, 28-1-0090, 28-1-0060 and 28-1-0059) have been included; however, significance assessments have only been completed on the artefact scatter elements of the site in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* (DECCW, 2010a). Archaeological testing of the PADs would need to be undertaken prior to construction to establish the extent and nature of any subsurface deposits in accordance with the due diligence guidelines (see section B6.5).

The assessment results found that the overall significance rating was:

- ▶ Moderate to high at five sites
- ▶ Moderate at 14 sites
- ▶ Low to moderate at four sites
- ▶ Low at five sites.

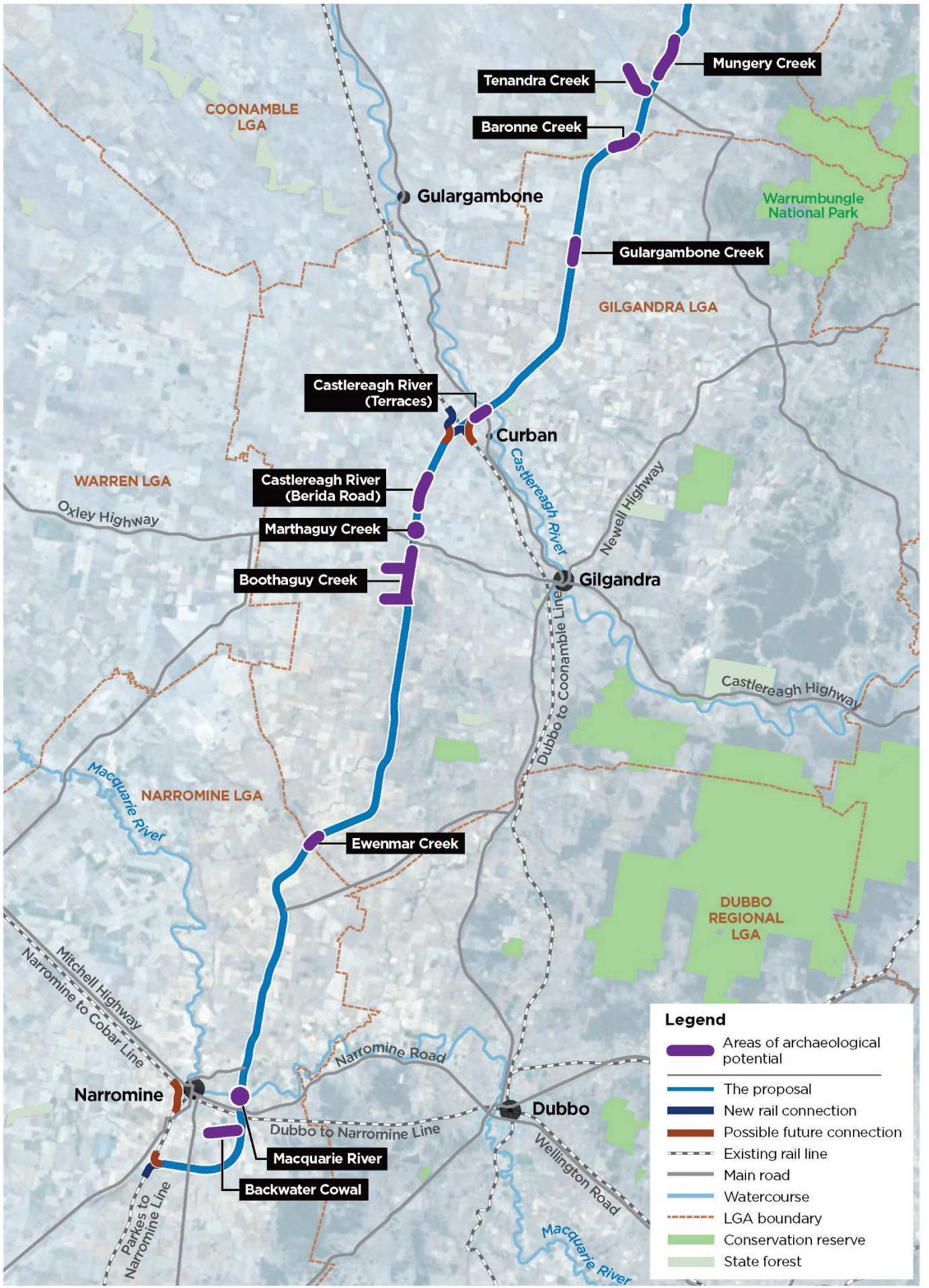


Figure B6.1 Areas of moderate or higher archaeological potential (map 1)

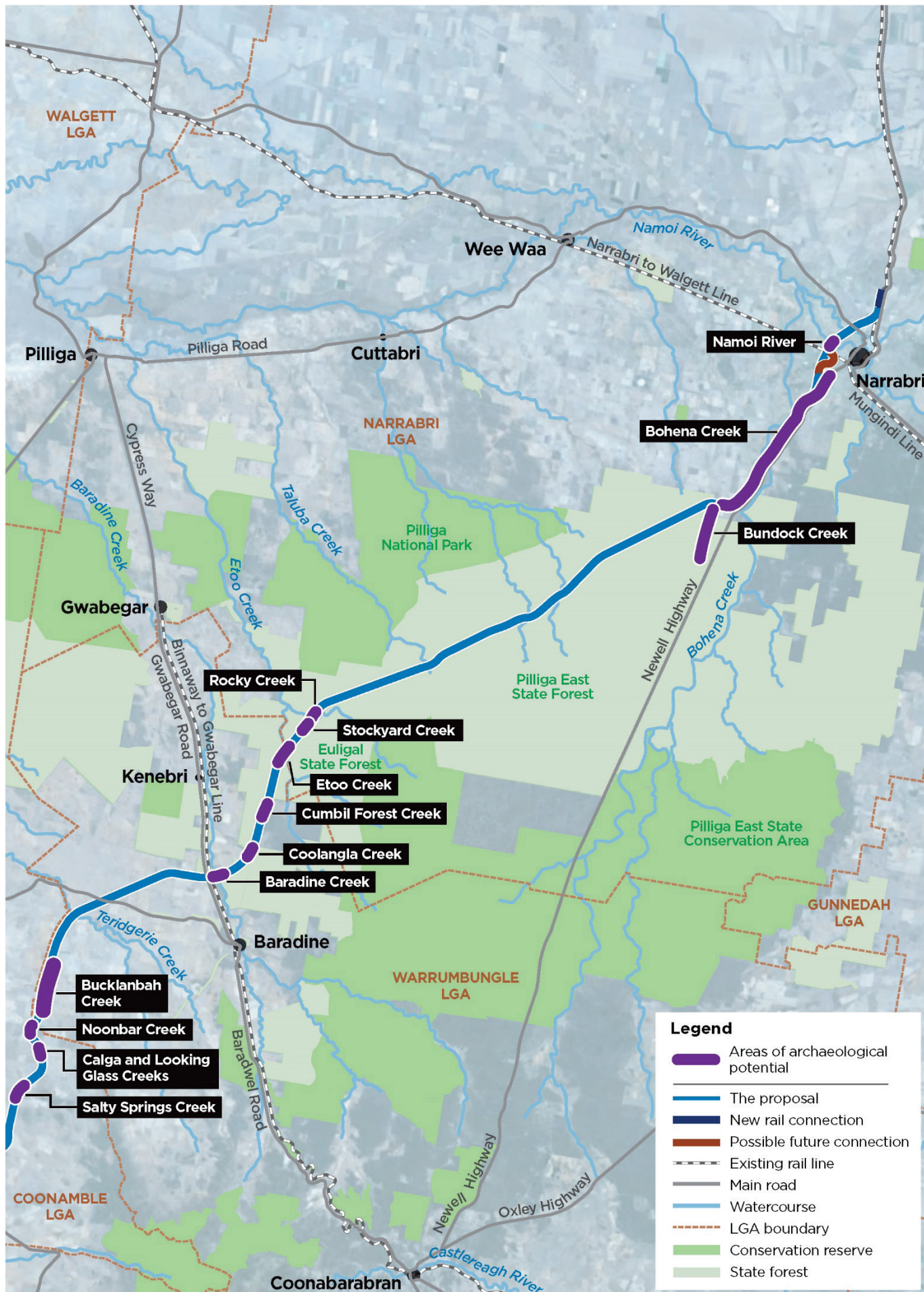


Figure B6.1 Areas of moderate or higher archaeological potential (map 2)

The archaeological significance for sites within 10 m of the proposal site is provided in Table B6.3.

TABLE B6.3 SIGNIFICANCE ASSESSMENTS FOR ABORIGINAL SITES IDENTIFIED WITHIN 10 METRES OF THE PROPOSAL SITE

AHIMS site REF	Social significance	Historical significance	Scientific significance	Aesthetic significance	Overall significance
35-3-0175	High	n/a	Low	Moderate	Low
35-3-0021	High	Low	Moderate	Moderate	Moderate to high
35-3-0195	High	Low	Moderate	Moderate	Moderate
35-3-0196	High	Low	Moderate	Moderate	Moderate
35-3-0200	High	n/a	Moderate	Moderate	Moderate
35-3-0254	High	n/a	Moderate	Moderate	Moderate
35-3-0276	High	n/a	Moderate	Moderate	Moderate
27-6-0035	High	n/a	Moderate	Moderate	Moderate
27-6-0042	High	n/a	Moderate	Moderate	Moderate to high
27-6-0041	High	n/a	Moderate	Moderate	Moderate to high
27-6-0037	High	n/a	Moderate	Moderate	Moderate to high
28-1-0060 ¹	High	n/a	Low to moderate	Moderate	Low to moderate
28-1-0090 ¹	High	n/a	Low to moderate	Moderate	Low to moderate
28-4-0283	High	n/a	Moderate	Moderate	Moderate to high
28-4-0280 ¹	High	n/a	Low to moderate	Moderate	Low to moderate
28-1-0063	High	n/a	Moderate	Moderate	Moderate
28-1-0064	High	n/a	Moderate	Moderate	Moderate
28-1-0062	High	n/a	Moderate	Moderate	Moderate
28-1-0087	High	n/a	Moderate	Moderate	Moderate
28-1-0084	High	n/a	Moderate	Moderate	Moderate
28-1-0086	High	n/a	Moderate	Moderate	Moderate
28-1-0083	High	n/a	Moderate	Moderate	Moderate
28-1-0059 ¹	High	n/a	Moderate	Moderate	Moderate
28-1-0095	High	n/a	Low	Low	Low
28-1-0096	High	n/a	Low	Low	Low
19-5-0226	High	n/a	Low	Moderate	Low to moderate
19-5-0223	High	n/a	Low	Low	Low
19-5-0224	High	n/a	Low	Low	Low
19-6-0180	High	n/a	Low	Moderate	Low

Note:

1. For PADs associated with artefact scatters, significance assessments have been undertaken for the artefact scatter element as described in section B6.2.5.

B6.3 Impact assessment—construction

B6.3.1 Impact on Aboriginal sites and places

Direct impacts

The main risks relating to Aboriginal heritage would occur during construction. Construction activities have the potential to disturb identified Aboriginal sites and areas of archaeological potential as a result of:

- ▶ Vegetation clearing
- ▶ Excavation to install infrastructure and utilities
- ▶ Construction vehicle movements.

Construction of the proposed rail infrastructure would directly impact 25 Aboriginal sites/items including:

- ▶ 12 modified (scarred) trees (one of which is a scarred canoe tree)
- ▶ Six artefact scatters
- ▶ Four artefact scatters and associated PADs
- ▶ Two PADs
- ▶ One confirmed archaeological deposit.

A full list of these items, including the level of impact, is provided in Table B6.4.

Most of the sites that have the potential to be impacted have been assessed as having a significance rating of moderate or lower. Five sites have been assessed as having moderate-to-high overall significance.

No known Aboriginal cultural heritage sites or places would be directly impacted by the proposed road works.

TABLE B6.4 SITES WITH THE POTENTIAL TO BE IMPACTED BY THE PROPOSAL

Site ref	Type	Status	Overall significance	Degree of impact
35-3-0175 ¹	Modified (scarred) tree	Previously listed	Moderate to high	Whole
35-3-0195 ¹	Artefact scatter	Previously listed	Moderate	Whole
35-3-0196 ¹	Confirmed archaeological deposit	Previously listed	Moderate	Whole
35-3-0276	Artefact scatter	New	Moderate to high	Partial
27-6-0035	Modified (scarred) tree	New	Moderate	Whole
27-6-0036	PAD ²	New	N/A	Whole
27-6-0042	Modified (scarred canoe) tree	New	Moderate to high	Whole
27-6-0041	Modified (scarred) tree	New	Moderate to high	Whole
27-6-0037	Modified (scarred) tree	New	Moderate to high	Whole
28-1-0060	Artefact scatter and PAD ²	New	Low to moderate	Potential ³
28-1-0090	Artefact scatter and PAD ²	New	Low to moderate	Potential ³
28-1-0063	Modified (scarred) tree	New	Moderate	Whole
28-1-0064	Modified (scarred) tree	New	Moderate	Whole
28-1-0087	Modified (scarred) tree	New	Moderate	Whole
28-1-0084	Modified (scarred) tree	New	Moderate	Whole
28-4-0280	Artefact scatter and PAD ²	New	Low to moderate	Partial
28-1-0062	Modified (scarred) tree	New	Moderate	Whole
28-1-0086	Modified (scarred) tree	New	Moderate	Whole
28-1-0083	Modified (scarred) tree	New	Moderate	Whole
28-1-0059	Artefact scatter and PAD ²	New	Moderate	Whole
28-1-0095	Artefact scatter	New	Low	Whole
28-1-0096	Artefact scatter	New	Low	Whole
19-5-0226	Artefact scatter	New	Low	Whole
19-5-0230	PAD ²	New	N/A	Partial
19-6-0180	Artefact scatter	New	Low	Whole

Notes:

1. Site was not able to be confirmed in the reported location due to access restrictions.
2. As noted in section B6.2.5, archaeological examination of subsurface deposits would need to be undertaken prior to assigning significance ratings to PADs. For PADs associated with artefact scatters, significance assessments have been undertaken for the artefact scatter element only.
3. Extent of the PAD and degree of impact unknown.

Inadvertent impacts

Sites located near the proposal site have the potential to be inadvertently impacted by the movement of machinery and/or construction vehicles if appropriate management measures are not implemented. The highest potential for inadvertent impact would be to those items within 10 m of the site—these are listed in Table B6.5.

Potential inadvertent impacts would be managed by implementing the measures provided in section B6.5.

TABLE B6.5 SITES LOCATED CLOSE TO THE PROPOSAL SITE (WITHIN 10 METRES) THAT MAY BE VULNERABLE TO IMPACT

Site ref	Type	Status	Overall significance
35-3-0021 ¹	Modified (scarred) tree	Previously listed	Moderate to high
35-3-0200	Modified (scarred) tree	Previously listed	Moderate
35-3-0254	Modified (scarred) tree	New site	Moderate to high
28-4-0283	Modified (scarred) tree	New	Moderate to high
28-4-0284	Modified (scarred) tree	New	Moderate to high
19-5-0223	Isolated find	New	Low
19-5-0224	Isolated find	New	Low
19-5-0239	Modified (scarred) tree	New	Moderate

Note:

1. Indicate sites that were not able to be confirmed in the reported locations due to access restrictions.

B6.3.2 Impacts on areas of archaeological potential

As shown in Figure B6.1, the proposal would have the potential to affect areas predicted to have moderate-to-high archaeological potential (based on assessed cultural sensitivity).

As described in section B6.1.2, sections of the following areas of archaeological potential would need to be surveyed prior to construction:

- ▶ Wallaby Creek
- ▶ Ewenmar Creek
- ▶ Marthaguy Creek
- ▶ Castlereagh River
- ▶ Gulargambone Creek
- ▶ Tenandra Creek
- ▶ Baradine Creek
- ▶ Namoi River.

Six PADs (two standalone and four associated with artefact scatters) are located within the proposal site and would be impacted during construction. These sites would require archaeological testing prior to the commencement of construction to confirm the extent of the PADs. This would involve test excavation and potential salvage. Any findings would require detailed analysis and reporting of any cultural material collected. All investigations would be undertaken in consultation with the RAPs, in accordance with the archaeological survey and test excavation methodologies approved for the proposal, once property access is available.

Impacts on cultural heritage values

In addition to archaeological features, such as artefact scatters or culturally modified trees, Aboriginal cultural heritage values include those associated with permanent water sources, traditional thoroughfares, burial sites and those associated with Aboriginal culture and dreaming.

Consultation with registered Aboriginal parties identified that all Aboriginal cultural heritage values are considered to be of high cultural (social) significance. An assessment of potential impacts on places of cultural value identified in the proposal site is summarised in Table B6.6. The management of impacts on items of cultural significance would be considered with input from the registered Aboriginal parties (see section B6.5.2).

TABLE B6.6 POTENTIAL IMPACTS ON ABORIGINAL CULTURAL HERITAGE VALUES

Site type	Cultural values
Camp sites	Traditional campsites demarcated by artefact scatters and association with low gradient alluvial landforms were identified as having cultural significance. Sites identified as potentially directly impacted by the proposal include: Macquarie River (35-3-0195, 35-3-0196 and 35- 3- 0276), Castlereagh River (28-4-0280), Gulargambone Creek (28-1-0090 and 28-1-0060), Calga Creek and Looking Glass Creek (28-1-0059 and 28-1-0095), Noonbar Creek (28-1-0096), Baradine Creek (19-5-0226) and Bohena Creek (19-6-0180).
Resource gathering locations and techniques	Resource gathering locations were noted by RAPs to be potentially impacted at the Backwater Cowal, Macquarie River, Cumbil Forest Creek and at the confluence of Calga Creek and Looking Glass Creek.
Modified (scarred) trees	Scarred trees are of great importance to knowledge holders as they are tangible links to the past. Bark was a useful and versatile material that could be used for a range of commonplace tasks, including the construction of shelters, watercraft and containers. All scarred trees identified within the study area are considered as culturally sensitive. As described in section B6.3.1, 12 scarred trees are located within the proposal site and may be directly impacted during construction. Scarred trees located immediately adjacent to the proposal site are also vulnerable to inadvertent impacts during construction. Mitigation measures provided in Table B6.7 would be implemented to minimise impacts on scarred trees as far as practicable.
Aboriginal plants and animals	Aboriginal plants and animals are significant to Traditional Owners. During field work, the fauna and flora were often mentioned in the context of spiritual importance. Throughout the consultation process, plants and animals were often mentioned in discussion with resource collection.
Aboriginal culture and dreaming	Registered Aboriginal knowledge holders identified areas of spiritual and cultural significance marked by prominent landforms, such as Table Top Mountain and Cumbil Forest Creek, and expressed a desire for implementation of cultural protocols in respect to these places during construction, as part of the heritage induction.

B6.4 Impact assessment—operation

Access to the rail corridor would be required during routine maintenance and repairs. As these areas would have been previously assessed and disturbed during construction, further impacts on Aboriginal heritage are considered unlikely. The potential for any impacts on Aboriginal sites outside the operational footprint would be managed in accordance with ARTC’s standard operational environmental management procedures.

B6.5 Mitigation and management

B6.5.1 Approach

Approach to mitigation and management

Approach to managing the key potential impacts identified

ARTC is committed to minimising the environmental impact of the proposal and is investigating opportunities to reduce actual impact areas where practicable. The area that would be directly impacted by construction would depend on factors such as presence of significant vegetation, constructability, construction management and safety considerations, landform, slopes and anticipated sub-soil structures. Direct impacts would be reduced where practicable.

There are two options to mitigate the potential impacts on artefact scatters in the proposal site. The first option is to avoid the site. Where this is not practicable, the second option is to salvage artefacts from the site prior to construction. In this instance, the collected items would be stored at an appropriate keeping place identified in consultation with registered Aboriginal parties.

For significant archaeological sites located outside the proposal site, the extent of the site would be identified with high-visibility fencing to avoid construction impacts. The sites would also be clearly marked on all mapping and plans used by construction contractors.

If impacts on Aboriginal objects are unavoidable, archaeological examination may be required to clarify the extent and nature of any subsurface deposits in consultation with relevant Aboriginal stakeholders.

There are two options to mitigate the potential impacts on areas of PADs. The first option is to modify the construction footprint so that impacts would be avoided; however, in many cases, this may not be feasible as the area of PAD is likely to continue for some distance either side of the area of potential impacts. The second option would be to undertake further archaeological examination in the form of subsurface testing. This would enable the nature and extent of archaeological deposits to be determined. If archaeological testing confirms that the PAD is a heritage site, and has the potential to be impacted by the proposal, the site would be managed in consultation with the Department of Planning, Industry and Environment and registered Aboriginal parties. Depending on the results of these investigations, it may also be necessary to undertake a program of salvage excavations at some or all of these sites.

A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be included in the Aboriginal cultural heritage management plan (see Table B6.7) to ensure any artefacts salvaged are managed in accordance with the requirements of the *National Parks and Wildlife Act 1974* (NSW).

Salvage excavation would be undertaken by qualified archaeologists with the participation of Aboriginal stakeholders. The aim of the salvage excavations is to identify any Aboriginal heritage objects present and, if any are found, to remove the objects from the area of potential impact. Consultation with the Aboriginal community would be undertaken regarding the salvage methodology and the process for the temporary and long-term care and management of any Aboriginal objects retrieved.

Detailed analysis and reporting of cultural material collected would be provided to the Department of Planning, Industry and Environment.

Approach to managing other impacts

The potential for impacts during construction would be managed in accordance with a proposal-specific Aboriginal cultural heritage management plan, which would be prepared and implemented as part of the CEMP. The plan would detail processes, relevant requirements and responsibilities to minimise potential impacts on Aboriginal heritage during construction. It would be prepared in accordance with relevant guidelines, standards and Technical Report 6. The plan would also include the unexpected finds procedure and the proposed salvage methodology.

Further information on the CEMP is provided in chapter D5. The requirements for the Aboriginal cultural heritage management plan are provided in the CEMP outline in Appendix I.

Expected effectiveness

The preferred heritage outcome is to avoid all Aboriginal cultural heritage items; however, this is not always feasible. During the development of the design, impact to Aboriginal heritage sites, places and objects was avoided where practicable but not all impacts on Aboriginal heritage can be avoided entirely as this would result in additional impacts in other areas. Therefore, further measures to mitigate impacts are required. The measures provided in Table B6.7 have been identified as an outcome of the Aboriginal heritage assessment and through considering best-practice approaches to managing potential impacts as defined by relevant heritage guidelines.

The Aboriginal cultural heritage assessment (including the proposed mitigation measures) was prepared by specialist Aboriginal heritage consultants and qualified archaeologists. As a result, the measures are expected to be effective.

The potential loss of intrinsic Aboriginal cultural value linked to these impacted sites cannot be offset; however, any salvaged material will increase understanding, strengthen interpretation, and improve ongoing and future management of Aboriginal heritage in the area. The proposed approach to management is considered to be effective in reducing the potential impacts of the proposal on Aboriginal heritage, as far as practicable, and providing for the appropriate management of Aboriginal heritage in the event that it is encountered.

The proposal has been designed to provide an important piece of national infrastructure that will provide local, state and national benefits once operational. In the context of the strategic benefit of the overall proposal, it is considered that the Aboriginal heritage impacts are acceptable.

Interaction between measures

There are no expected interactions between mitigation measures for Aboriginal heritage and other measures.

B6.5.2 List of mitigation measures

Measures that will be implemented to address potential impacts on Aboriginal heritage are listed in Table B6.7.

TABLE B6.7 ABORIGINAL HERITAGE MITIGATION MEASURES

Stage	Ref	Impact/issue	Mitigation measures
Detailed design, pre-construction	AH1	<i>Avoiding and minimising impacts on Aboriginal heritage</i>	<p>Detailed design and construction planning would avoid direct impacts on identified items/sites of Aboriginal heritage significance as far as reasonably practicable.</p> <p>The location of construction compounds and associated access routes would be reviewed to ensure, as far as practicable, they are not located in areas of medium or high archaeological potential.</p>
	AH2	<i>Management of salvaged items</i>	<p>A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be included in the Aboriginal cultural heritage management plan (mitigation measure AH8) to ensure any artefacts salvaged are managed in accordance with the requirements of the <i>National Parks and Wildlife Act 1974</i> (NSW).</p> <p>The methodology would include the process for consultation with the Department of Planning, Industry and Environment and registered Aboriginal Parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010c) the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (DECCW, 2010b), and the <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i> (OEH, 2011). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects.</p> <p>Registered Aboriginal parties would be engaged to assist in the salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process.</p> <p>Detailed analysis and reporting of cultural material collected would be provided to the Department of Planning, Industry and Environment.</p>
	AH3	<i>Management of salvaged items</i>	<p>A targeted archaeological survey would be undertaken for areas identified as culturally sensitive, requiring further investigation, including:</p> <ul style="list-style-type: none"> ▶ Wallaby Creek ▶ Ewenmar Creek ▶ Marthaguy Creek ▶ Castlereagh River ▶ Gulargambone Creek ▶ Tenandra Creek ▶ Baradine Creek ▶ Namoi River. <p>The additional investigation would be undertaken with registered Aboriginal parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW, 2010a).</p> <p>Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the targeted survey. The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH8).</p> <p>If additional sites or items are identified that cannot be avoided, salvage of artefacts would be undertaken prior to construction, in accordance with the salvage methodology (mitigation measure AH2).</p>

Stage	Ref	Impact/issue	Mitigation measures
Detailed design, pre-construction (continued)	AH4	<i>Management of salvaged items</i>	<p>A pre-construction survey would be undertaken to confirm the locations of the previously listed AHIMS sites that could not be located during the site survey.</p> <p>Surveys would be undertaken with registered Aboriginal parties in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW, 2010c).</p> <p>If the sites are located, impacts would be avoided as far as practicable and protection measures put in place in accordance with the Aboriginal cultural heritage management plan (mitigation measure AH8).</p> <p>Any sites with the potential to be impacted would be managed in accordance with the salvage methodology (mitigation measure AH2).</p>
	AH5	<i>Impacts on PADs</i>	<p>Detailed archaeological investigations would be undertaken at the following six PADs that may be directly impacted by the proposal:</p> <ul style="list-style-type: none"> ▶ Ewenmar Creek 27-6-0036 ▶ Castlereagh River 28-4-0280 (and associated artefact scatter) ▶ Gulargambone Creek 28-1-0060 and 28-1-0090 (and associated artefact scatters) ▶ Calga and Looking Glass creeks 28-1-0059 (and associated artefact scatter) ▶ Baradine Creek 19-5-0230. <p>Sub-surface archaeological test excavations would be undertaken to confirm the nature (and extent, if verified) of any archaeological deposits. The test excavations would be carried out in accordance with the approved methodology prepared for the proposal.</p> <p>If test excavation confirms that the PAD has heritage significance and has the potential to be impacted by the proposal, the site would be managed in consultation with DPIE and registered Aboriginal parties. If salvage is required it would be managed in accordance with the agreed salvage methodology (mitigation measure AH2).</p>
	AH6	<i>Direct impacts on modified trees</i>	<p>Impacts on the following modified trees would be avoided as far as practicable:</p> <ul style="list-style-type: none"> ▶ Backwater Cowal 35-3-0175 ▶ Ewenmar Creek 27-6-0035 ▶ Boothaguy Creek 27-6-0042, 27-6-0037 and 27-6-0041 ▶ Baronne Creek 28-1-0062, 28-1-0063 and 28-1-0064 ▶ Mungery Creek 28-1-0083, 28-1-0084, 28-1-0086 and 28-1-0087. <p>If impacts are unavoidable, the tree would be photographed and catalogued prior to removal, in consultation with the registered Aboriginal parties, by an appropriately qualified archaeologist.</p> <p>The salvaged artefacts would be managed in accordance with the salvage methodology.</p>
	AH7	<i>Impacts on artefact scatters</i>	<p>Surface collection (salvage) of the following artefact scatters would occur prior to construction in accordance with the approved salvage methodology:</p> <ul style="list-style-type: none"> ▶ Macquarie River 35-3-0276 and 35-3-0195 ▶ Castlereagh River 28-4-0280 ▶ Gulargambone Creek 28-1-0090 and 28-1-0060 ▶ Calga and Looking Glass Creek 28-1-0059 and 28-1-0095 ▶ Noonbar Creek 28-1-0096 ▶ Baradine Creek 19-5-0226 ▶ Bohena Creek 19-6-0180.

Stage	Ref	Impact/issue	Mitigation measures
Construction	AH8	<i>Protecting Aboriginal heritage and minimising impacts during construction</i>	<p>An Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage, including:</p> <ul style="list-style-type: none"> ▶ A salvage methodology (mitigation measure AH2) ▶ An unexpected finds procedure (mitigation measure AH10) ▶ Plans and installation procedures for fencing and protective coverings ▶ Induction package for construction workers and supervisors (mitigation measure AH9) ▶ Measures to protect sites close to the proposal site from inadvertent impacts ▶ Outcomes of further investigations (mitigation measures AH3 and AH4). <p>The plan would be prepared in consultation with registered Aboriginal parties and the Department of Planning, Industry and Environment.</p>
	AH9	<i>Protecting Aboriginal heritage and minimising impacts during construction</i>	A requirement for cultural and historic heritage awareness training would be included in the Aboriginal cultural heritage management plan. Cultural heritage awareness training would be provided by an Aboriginal representative at the commencement of substantial works for the proposal.
	AH10	<i>Unexpected finds</i>	An unexpected finds procedure would be developed and included in the Aboriginal cultural heritage management plan to provide a consistent method for managing any unexpected Aboriginal heritage items discovered during construction, including potential heritage items or objects, and human skeletal remains.
	AH11	<i>Impacts on Aboriginal cultural values at Etoo Creek 19-5-0239</i>	<p>Prior to construction commencing, and once rehabilitation is complete, a smoking ceremony would be undertaken at the location of Etoo Creek 19-5-0239.</p> <p>Prior to construction commencing, the age of the culturally modified (scarred) tree would be verified by an arborist.</p>

B6.5.3 Managing residual impacts

Residual impacts are impacts of the proposal that may remain after implementation of:

- ▶ Design and construction planning measures to avoid and minimise impacts (see sections A7.2 and A8.1)
- ▶ Specific measures to mitigate and manage identified potential impacts (see section B6.5.2).

The key potential Aboriginal heritage issues and impacts originally identified by the environmental risk assessment (see section A9.1) are listed in Table B6.8. The (pre-mitigation) risks associated with these impacts, which were identified by the environmental risk assessment, are provided. Further information on the approach to the environmental risk assessment, including descriptions of criteria and risk ratings, is provided in section A9.1.

The potential issues and impacts identified by the environmental risk assessment were considered as part of the Aboriginal cultural heritage assessment, summarised in sections B6.3 and B6.4. The mitigation and management measures (listed in Table B6.7) that would be applied to manage these impacts are also identified. The significance of potential residual impacts (after application of these mitigation measures) is rated using the same approach as the original environmental risk assessment. The approach to managing significant residual impacts (considered to be those rated medium or above) is also described.

TABLE B6.8 RESIDUAL IMPACT ASSESSMENT—ABORIGINAL HERITAGE

Assessment of pre-mitigated risk (see section A9.1 and Appendix E)					Mitigation measure (see Table B6.7)	Residual impact assessment			
Phase	Potential impacts	Likelihood	Consequence	Risk rating		Likelihood	Consequence	Risk rating	How residual impacts will be managed ¹
Construction	Potential impacts on registered Aboriginal heritage items/sites in the proposal site	Possible	Major	High	AH1 to AH10 and AH12	Possible	Minor	Low	n/a
	Impacts on unrecorded Aboriginal sites and/or areas of archaeological sensitivity or cultural value	Possible	Major	High	AH1, AH3 to AH5, AH8 to AH11	Possible	Minor	Low	n/a
	Impacts on areas predicted to have moderate-to-high archaeological potential	Possible	Major	High	AH1, AH2 and AH8 to AH11	Possible	Moderate	Medium	Any areas identified as having heritage significance that have the potential to be impacted by the proposal would be managed in accordance with the mitigation measures. If salvage is required, it would be managed in accordance with the agreed salvage methodology. The Aboriginal cultural heritage management plan would detail the approach to managing Aboriginal sites and would be prepared in consultation with relevant stakeholders. This would minimise the potential for residual impacts as far as reasonably practicable.

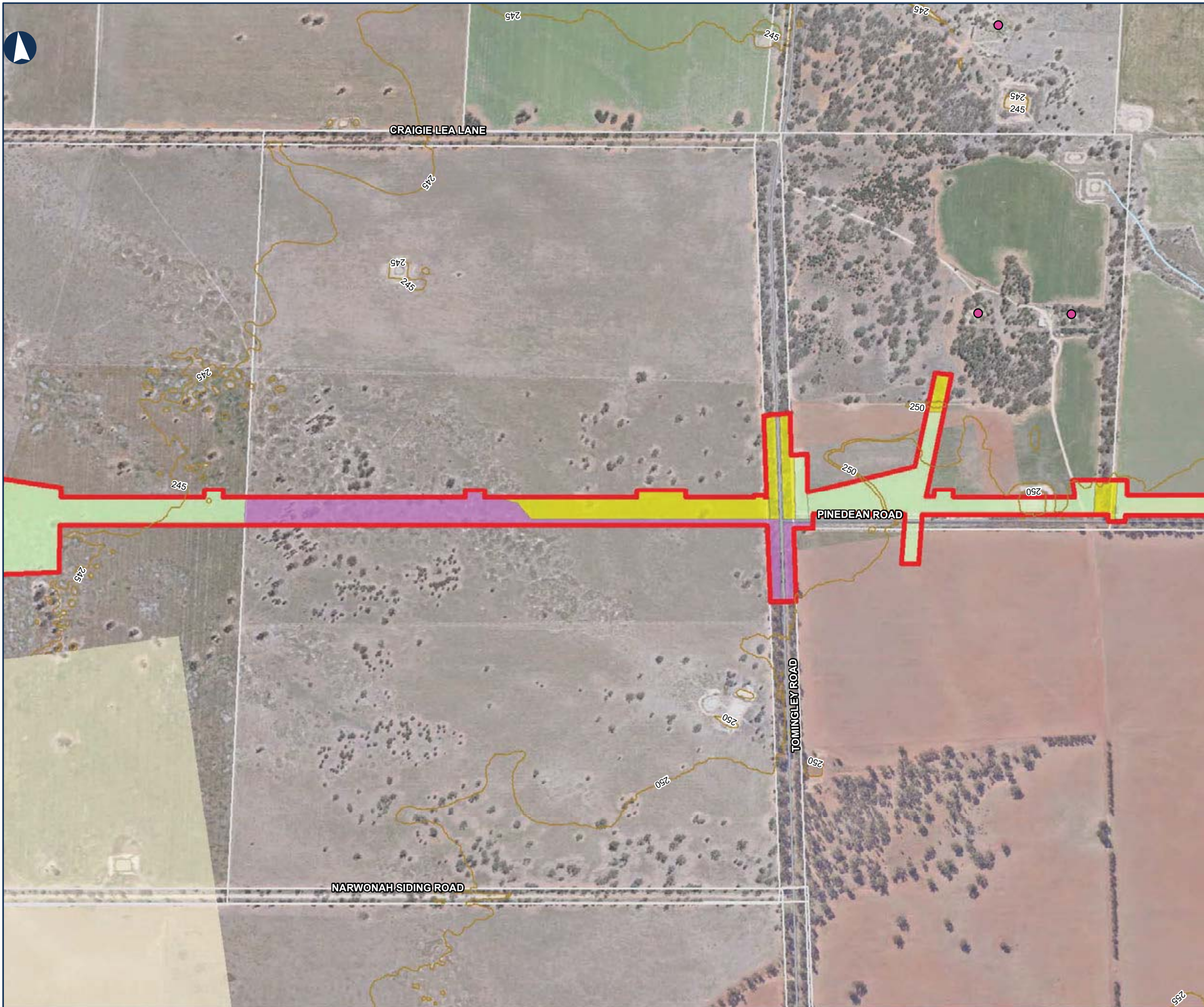
Note: 1. For residual impacts with a risk rating of medium or above.

APPENDIX

D

Narromine to Narrabri Vegetation Map

NARWONAH MATERIAL DISTRIBUTION CENTRE
SUPPLEMENTARY REVIEW OF ENVIRONMENTAL FACTORS: SHUNT NECK WORKS

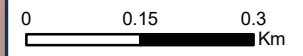
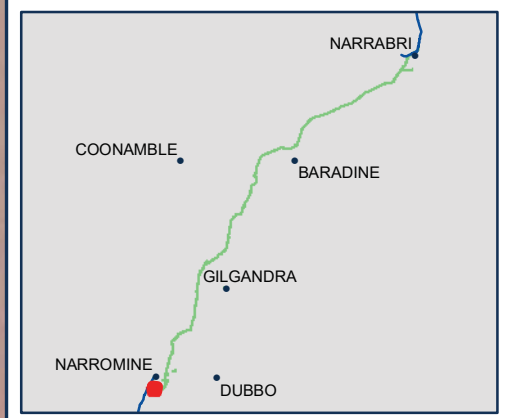


NARROMINE TO NARRABRI
Environmental baseline

MAP 2 OF 112

LEGEND

- The proposal site
- Contour (mAHD)
- Cadastre
- Sensitive receiver**
- Residential
- Plant community type**
- 0 - Crop and/or Introduced grassland
- 247 - Lignum shrubland wetland on regularly flooded alluvial depressions in the Brigalow Belt South Bioregion and Darling Riverine Plains Bioregion
- 49 - Partly derived Windmill Grass - Copperburr alluvial plains shrubby grassland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion
- 88 - Pilliga Box - White Cypress Pine - Buloke shrubby woodland in the Brigalow Belt South Bioregion



Coordinate System: GCS GDA 1994

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