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Review of Environmental Factors

Tarago Rail Corridor Remediation

Source: Ramboll EMP site visit 10 October 2024

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Review of Environmental Factors
Tarago Rail Corridor Remediation

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Checked by	**C Whitehill / S Taylor**
Approved by	**F Robinson**
Description	**This Review of Environmental Factors has been prepared to consider and address the potential environmental impacts associated with the remediation of the Tarago Rail Corridor.**

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v0.1	08/11/2024	HW	CW / ST	FR	Frist draft report issued to client for review
V1.0	14/05/2025	HW	CW / ST	FR	Final report issued to client

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Acknowledgement of Country

Ramboll acknowledges this Country and its Traditional Custodians. Aboriginal and Torres Strait Islander peoples have had a long and continuous spiritual relationship with Country. We would like to acknowledge and pay respects to the Traditional Custodians of the Country which is encompassed by the project, the Ngunnawal peoples.

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Glossary

Term	Definition
The Proposal	The remediation and validation of the Tarago Rail Corridor (Goulburn – Bombala rail corridor, Lot 22 DP1202608)
The Rail Corridor Site	Part of the Goulburn – Bombala rail corridor (Part Lot 22 DP1202608), at Tarago, NSW, as shown in **Figure 1-1.**
The remediation area	The Rail Corridor Site and Part Lot 1 DP595856, refer **Figure 1-1.**

Acronyms and abbreviations

Acronym/abbreviation	Definition
ABL	assessment background level
AHIMS	Aboriginal Heritage Information Management System
AQMP	Air Quality Management Plan
BOM	Bureau of Meteorology
Council	Goulburn Mulwaree Council
CEMP	Construction Environmental Management Plan
CLM Act	*Contaminated Land Management Act 1997*
dB	decibel
EIL	ecological-based investigation levels
EMP	Environmental Management Plan
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000 (NSW)*
EPA	New South Wales Environment Protection Authority
EPBC Act	*Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
GSW	General solid waste
Goulburn Mulwaree DCP	*Goulburn Mulwaree Development Control Plan 2009*
Goulburn Mulwaree LEP	*Goulburn Mulwaree Local Environmental Plan 2009*
HIL	health-based soil investigation levels

Acronym/abbreviation	Definition
ICNG	*Interim Construction Noise Guideline*
LEP	Local Environmental Plan
LGA	Local government area
LLS Act	*Local Land Services Act 2013*
mAHD	Metres Australian Height Datum
Mbgl	Metres below ground level
NML	Noise management level
NPfI	Noise Policy for Industry (NPfI) (EPA, 2017)
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
POEO Act	*Protection of the Environment Operation Act 1997*
POEO Regulation	*Protection of the Environment Operations (Waste) Regulation 2014*
PPE	Personal protective equipment
RAP	Remedial Action Plan Tarago Rail Corridor, Tarago (Ramboll, 2024b)
RBL	Rating background level
REF	Review of Environmental Factors
Resilience and Hazards SEPP	*State Environmental Planning Policy (Resilience and Hazards SEPP) 2021*
SEPP	State Environmental Planning Policy
SoHI	Statement of Heritage Impact
SMC	Former Station Master's Cottage (located at Lot 1 DP 816626)
SWMP	Soil and Water Management Plan
TAHE	Transport Asset Holding Entity
TfNSW	Transport for New South Wales
Transport and Infrastructure SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
TTIA	*Tarago Rail Corridor Remediation – Stage 2 Traffic and Transport Impact Assessment* (SCT Consulting, 2024b)
VMP	voluntary management proposal

Acronym/abbreviation	Definition
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
WM Act	*Water Management Act 2000*

1. Introduction

1.1 Proposal context and identification

As detailed in the Remedial Action Plan (Ramboll, 2024b), lead contamination was identified within one kilometre of the Goulburn – Bombala rail corridor (Lot 22 DP1202608), at Tarago, NSW (the Rail Corridor Site). During investigations into the lead contamination of the Rail Corridor Site, soil was found to contain lead at concentrations exceeding national guideline values for the protection of human health and the environment.

The Goulburn – Bombala rail corridor was historically used to transport lead, copper and zinc ore concentrates from the Woodlawn Mine to smelters in Newcastle and Port Kembla and to a concentrate berth at Port Kembla. A rail corridor loadout complex (the former Woodlawn siding), which has since been demolished, was located adjacent to the Rail Corridor Site to the west and was utilised as part of the ore distribution (Ramboll, 2024b). The former load-out complex was identified as the likely source of contamination (Ramboll, 2024b).

This Review of Environmental Factors (REF) assesses the remediation of contamination identified within the Rail Corridor Site and its validation, as detailed within the Remedial Action Plan (Ramboll, 2024b). The area assessed as part of this REF is presented in **Figure 1-1** and is referred to as 'the Rail Corridor Site'.

1.2 Purpose of the report

Transport for NSW (TfNSW) is required to prepare a review of environment factors (REF) for the remediation works in accordance with Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This REF has been prepared by Ramboll Australia Pty Ltd (Ramboll) on behalf of TfNSW. For the purpose of the REF, TfNSW is the determining authority.

The findings of this REF would be used to determine:

- if an environmental impact statement, species impact statement and/or biodiversity development assessment report is required
- if the proposal is likely to have a significant impact on the environment
- whether the proposal would impact on a matter of national environmental significance and a referral under the EPBC Act is required.

1.3 Associated works

The remediation and validation of the Rail Corridor Site is part of larger remediation works surrounding the Tarago Rail Corridor at Tarago NSW. Remediation works are also to occur at the Station Master's Cottage (SMC) (Lot 1 DP 816626) and on Lot 1 DP 595856, privately owned land adjacent to the rail corridor for the remediation of a contaminated Stockpile. All remediation works would be assessed under part 5 Division 5.1 of the EP&A Act.

For the purpose of the technical assessments undertaken for REFs, the remediation works have been divided into Stage 1 and Stage 2 activities based on the likely remediation program:

- Stage 1 includes demolition of the former SMC and the stockpile remediation activities
- Stage 2 includes remediation of the land within the former SMC (Lot 1 DP 816626) and remediation of the Rail Corridor Site.

This REF assessed the Rail Corridor Site within Stage 2 of the works. Assessment of Stage 2 works provides a worst-case, highest impact assessment of the land remediation activities within

the SMC and Rail Corridor Site occurring at the same time. This is a likely scenario to realise efficiencies in undertaking the remediation activities.

A voluntary management proposal (VMP) was prepared to define how risks presented by the Contaminant would be managed and this was approved by the NSW EPA on 28 May 2020. The Tarago Lead Management Action Plan (Ramboll, 2020b) was developed to describe interim management measures to mitigate contaminant exposure risks until a long-term remediation strategy can be implemented. Interim measures included capping of the Stockpile, implementation of an exclusion zone in areas of contamination identified onsite, application of a polymer sealant to the surface of lead impacted areas, and the installation and maintenance of sediment controls. Commitments made under the VMP relevant to remediation were to:

- assess remedial options to address risks from the Contaminant on, or originating from, the Rail Corridor Site.
- select a preferred remedial option(s) integrating consultation with the community and other stakeholders.
- prepare a RAP(s) to define how the selected remedial option would be implemented and validated.

The Remedial Action Plan – Tarago Rail Corridor (Ramboll, 2024b) has been prepared for the Rail Corridor Site remediation.

RAMBOLL AUSTRALIA - GIS MAP file - 318001376_GIS_P009_RailCorridorREF | F001_Layout_V03 | 31/07/2024

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Legend

- Station Masters Cottage
- Rail corridor site
- Rail corridor
- Former loadout complex building footprint
- Redundant Woodlawn siding - propopsed excavation depth 0.5 mbgl
- Lead impacted area surrounding the siding (excluding all rail formation) - proposed excavation depth 0.3 mbgl

Historic heritage items

- State heritage register curtilage (DCCEEW)
- Local LEP general heritage item (DPHI)

Figure 1-1 | Proposal layout

2. Need and options considered

2.1 Need and objective of the Proposal

Lead contamination, and to a lesser extent zinc and copper have been identified within the Rail Corridor Site. To address the risk to human health and the environment, the Rail Corridor Site requires remediation. The objective of the proposal is to remove the contaminated material and validate the Rail Corridor Site to address the risk to human health and the environment.

2.2 Alternatives and options considered

2.2.1 Do nothing

The 'do nothing' scenario is not a feasible option due to the risk to human health and the environment.

2.2.2 Alternatives considered

Eleven possible remediation options were preliminary considered with eight options that were considered permissible and feasible shortlisted for detailed assessment. The detailed assessment considered options for remediation or management of excavated contaminated soils and were assessed through workshops between Ramboll and TfNSW subject matter experts. The eight remediation options were evaluated using the Ramboll SURE tool that calculated 26 inputs groups under economic, environmental and social sustainability (Ramboll, 2024b). The eight options considered included the following (Ramboll, 2024b):

- onsite containment at Tarago Rail Yard (underground)
- onsite containment elsewhere in CRN (underground)
- onsite treatment (screen and immobilise) and offsite disposal
- onsite screening and offsite disposal
- offsite disposal of unsegregated waste
- onsite above-ground capping
- onsite bury and cap
- offsite containment at Lake George Mine, Captains Flat, NSW.

2.2.3 Preferred option – offsite disposal of unsegregated wastes

The Remediation Options Assessment (Ramboll, 2024c) determined offsite containment at the former Lake George Mine as the most sustainable option based on the assessment completed. This was initially TfNSW's preferred option however the construction schedule of the containment cell does not align with the remediation schedule of the Rail Corridor Site and therefore is not a viable option.

The offsite disposal of unsegregated waste was the second highest scoring disposal method and therefore the preferred method to be adopted by TfNSW.

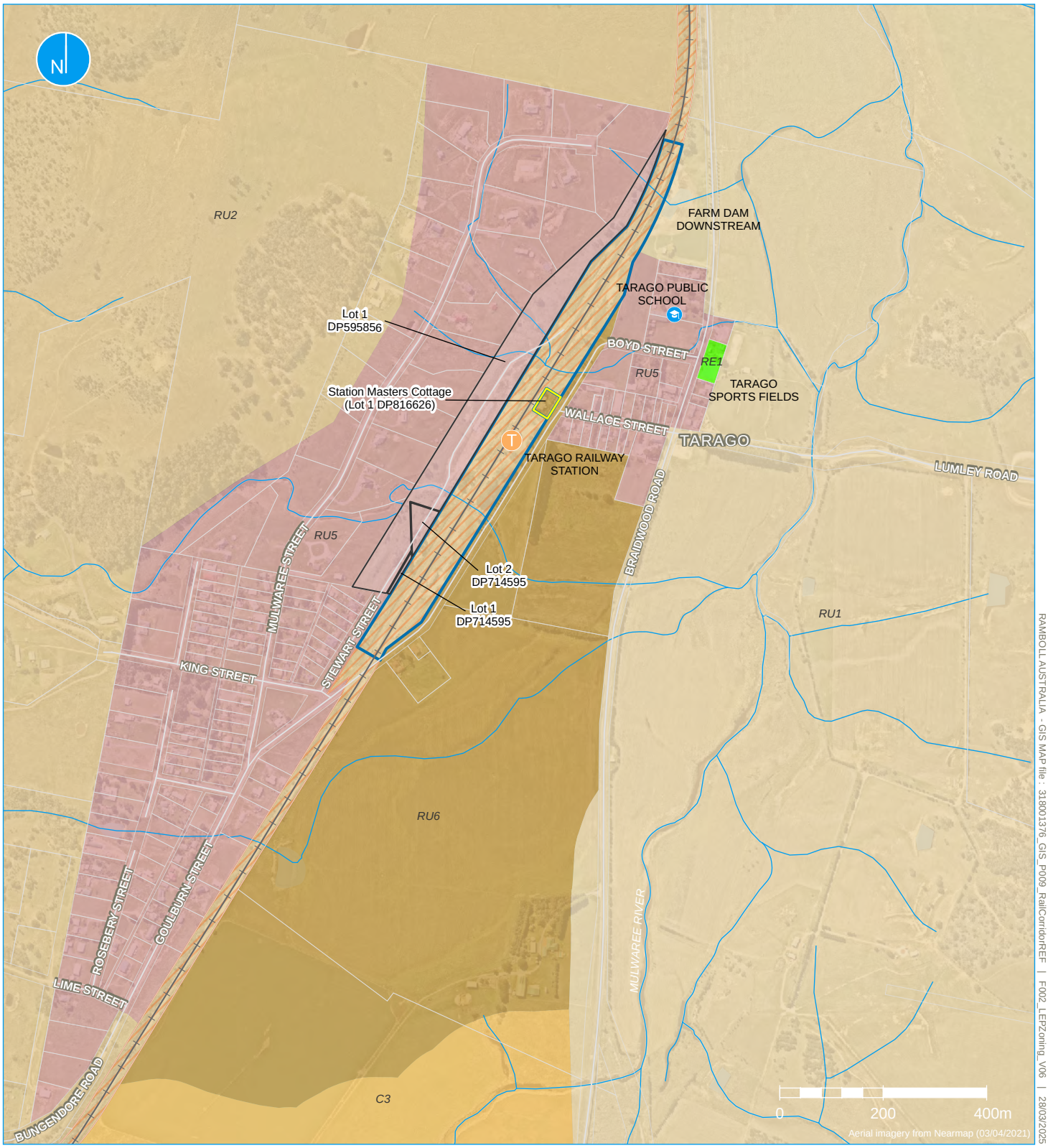
3. Description of the proposal

3.1 Proposal location and area

The remediation area details are provided in **Table 3-1** with the zoning of the area shown in **Figure 3-1**.

Table 3-1: Site details

Information	Description
Identifier:	Part Lot 22 DP1202608 (rail corridor) Part Lot 1 DP 595856 (adjacent privately owned land)
Street access:	Stewart Street to access from the west Goulburn Street to access from the east or south
Location and volumes:	The location and volumes of material have been detailed in **Table 3-2**
Local government:	Goulburn Mulwaree Council
Owner:	Transport Asset Holding Entity (TAHE)
Current site use:	Lot 22 DP1202608 – Forms part of the Goulburn to Bombala rail line and the CRN Lot 1 DP 595856 – Vacant land used to access the Goulburn to Bombala rail line and the CRN
Zoning under the Goulburn LEP:	RU2 Rural Landscape (Lot 22 DP1202608) RU5 Village (Lot 1 DP 595856)



RAMBOLL AUSTRALIA - GIS MAP file - 318001376_GIS_P009_RailCorridorREF | F002_LEPZoning_V06 | 28/03/2025

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Legend

- Rail corridor site
- Rail corridor
- Station Masters Cottage

Land zoning (DCCEEW)

- C3 - Environmental Management
- RE1 - Public Recreation
- RU1 - Primary Production
- RU2 - Rural Landscape
- RU5 - Village
- RU6 - Transition

Figure 3-1 | LEP land zoning

3.2 Proposal scope/remediation activities

The Proposal includes the remediation, validation and reinstatement of the remediation area, which comprises part of the Rail Corridor Site and part of Lot 1 DP595856, refer **Figure 3-2a-e.** The following activities would be completed as part of the Proposal and would utilise existing contaminant distribution information and be guided by real time field testing for contaminants (fpXRF):

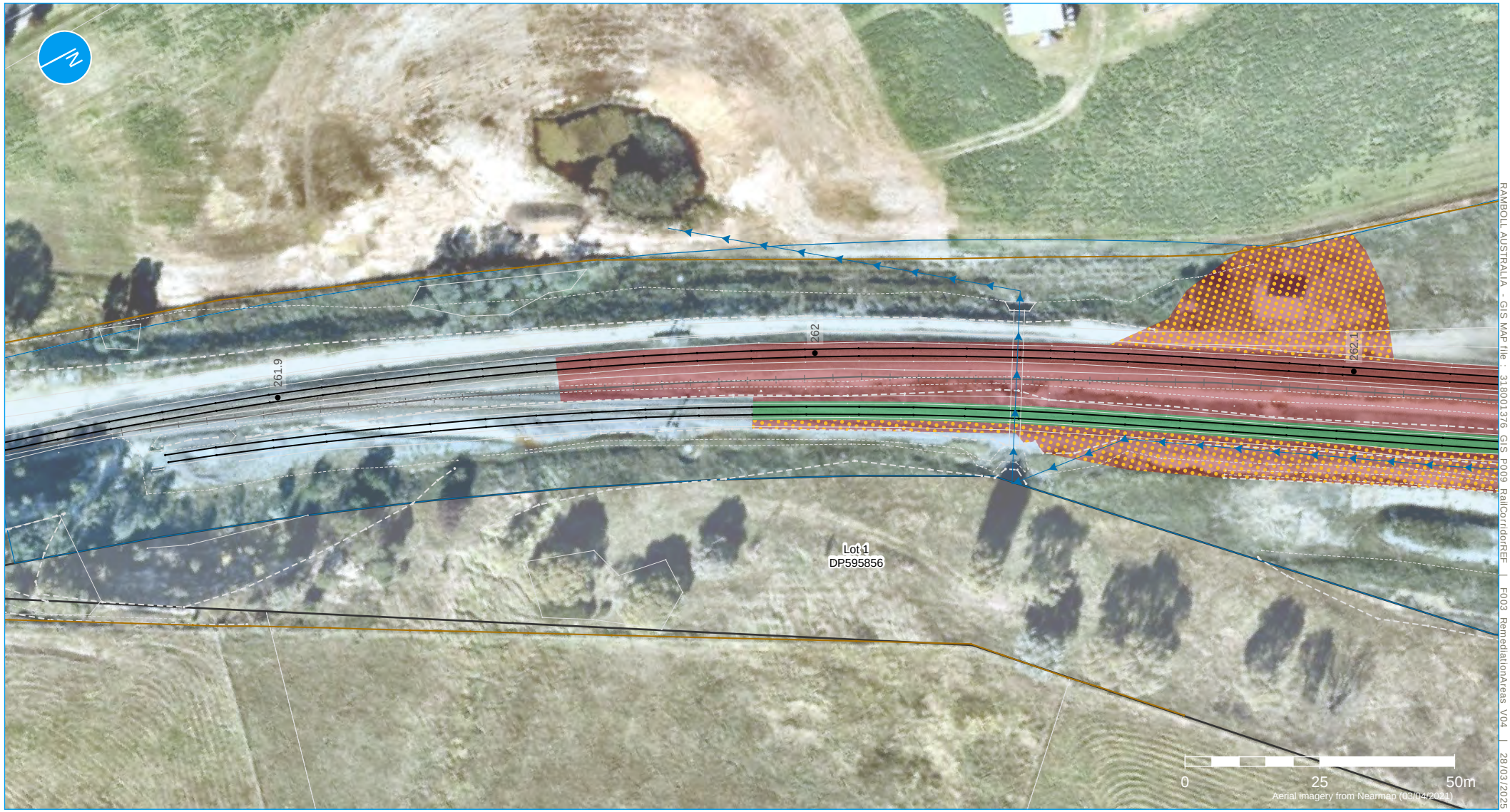
- notification of Category 2 remediation
- site mobilisation
- survey of the site before excavation, after excavation and after remediation
- dispose of railway sleepers as General Solid Waste (GSW)
- create a stockpiling area for load-out comprising appropriate controls for managing contaminated spoil
- using existing contaminant distribution information and guided in the field by the fpXRF:
  - excavate lead contaminated soils from the redundant Woodlawn Siding in fouled ballast from surface to approximately 0.5 metres below ground level (mbgl) and in soils surrounding rail lines to approximately 0.3 mbgl and create a contaminated spoil stockpile within the Rail Corridor Site.
  - consolidate soils from 106 Goulburn Street (former Station Master's Cottage) with contaminated excavation spoil in the Rail Corridor Site where lead is greater than health-based soil investigation level (HIL) D.
  - complete validation sampling of excavated areas to confirm soils above the remediation criteria are removed
  - reinstate the remediated areas with imported material appropriate for the site use, being residential use for remediated areas of Lot 1 DP595856 and industrial use for the Rail Corridor Site.
- transport lead contaminated excavation spoil by truck to an appropriately licensed facility located north in Western Sydney
- prepare a long-term management plan for the management of residual contamination retained at the Rail Corridor Site in the operational rail formation and around the former load-out complex beneath 1 – 1.5 metres of existing capping
- demobilisation from the remediation area.

In addition to the remediation of the Rail Corridor Site, the Proposal would include the acceptance of material from the adjacent SMC Site, at 106 Goulburn Street, that would be undergoing remediation works concurrently to the rail corridor. The following would occur as part of the Proposal:

- excavated soils above HIL D criteria from SMC Site would be relocated to the contaminated spoil stockpile within the rail corridor
- excavated soils from the SMC Site that are less than HIL D but greater than HIL A would be relocated within the Rail Corridor Site for reuse.

Soil excavation to occur at the SMC Site would be guided by real time testing. However, the excavated soils estimated to be transported to an appropriately licenced facility from the SMC Site is in the order of 250 cubic metres.

The estimate volumes of materials requiring excavation from the Rail Corridor Site, as detailed in the Remedial Action Plan (Ramboll, 2024b), are provided in **Table 3-2.** In additional to the excavated material, approximately 100 square metres of lead contaminated rail sleepers, classified as GSW would require disposal (Ramboll, 2024b).



Legend

- Rail corridor site
- Rail corridor fence
- 0.1km chainage point
- Surface water flow (indicative)

Survey lines

- Rail track
- Top of bank
- Bottom of bank
- Other elements

- Lead impacted area to remain
- Lead impacted area surrounding the siding (excluding all rail formation) - proposed excavation depth 0.3 mbgl
- Area of excavation during loop extension (no further excavation proposed)

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Location

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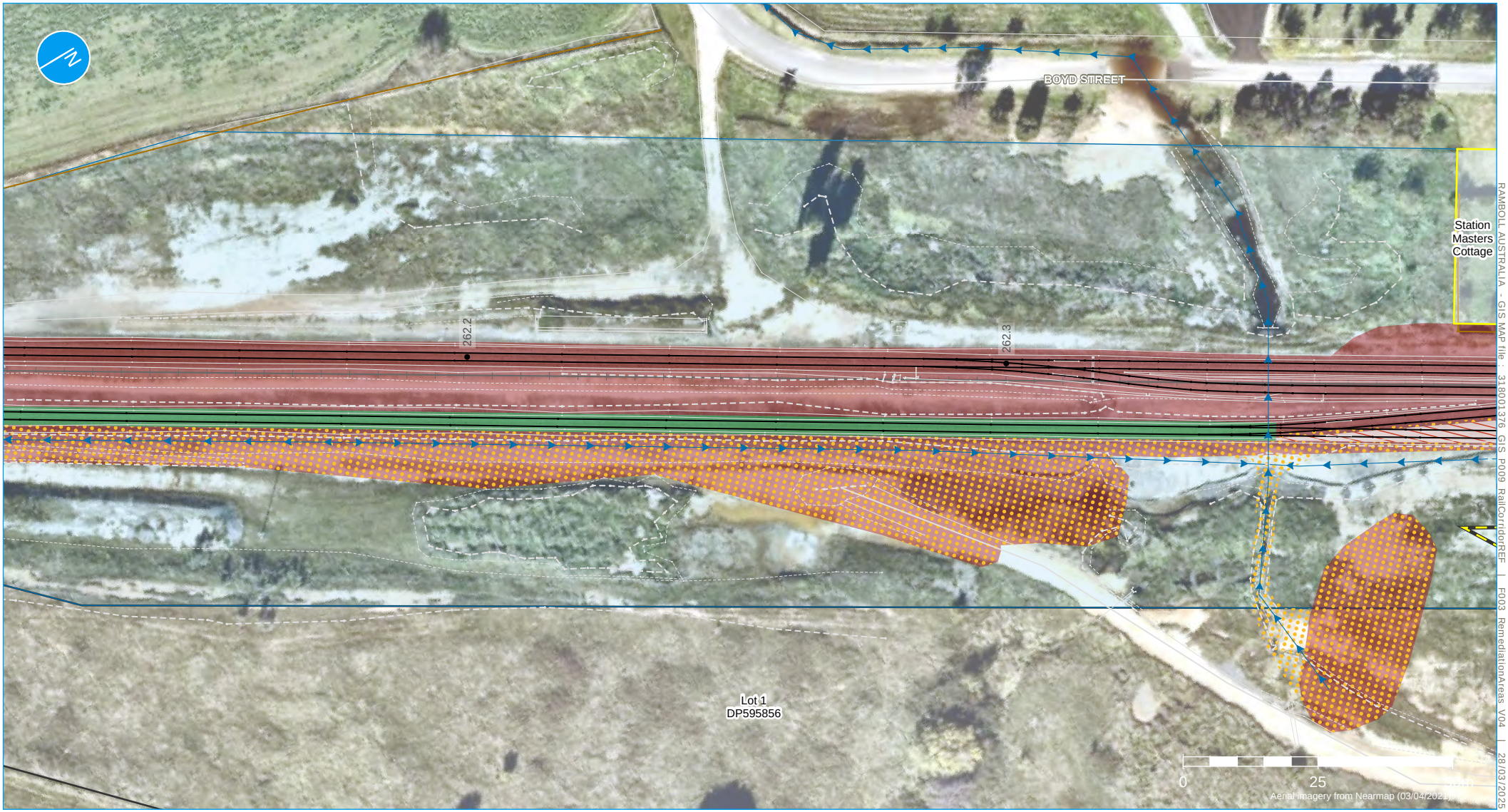
Figure 3-2a | Site Plan



RAMBOLL AUSTRALIA - GIS MAP file : 318001376 GIS P009 RailCorridorREF | F003 RemediationAreas V04 | 28/03/2025

Legend

- Station Masters Cottage
- Rail corridor site
- Rail corridor fence
- 0.1km chainage point
- Surface water flow (indicative)
- Former loadout road (approximate)

Survey lines

- Rail track
- Top of bank
- Bottom of bank
- Other elements

- Lead impacted area to remain
- Redundant Woodlawn siding - propopsed excavation depth 0.5 mbgl
- Lead impacted area surrounding the siding (excluding all rail formation) - proposed excavation depth 0.3 mbgl
- Area of excavation during loop extension (no further excavation proposed)

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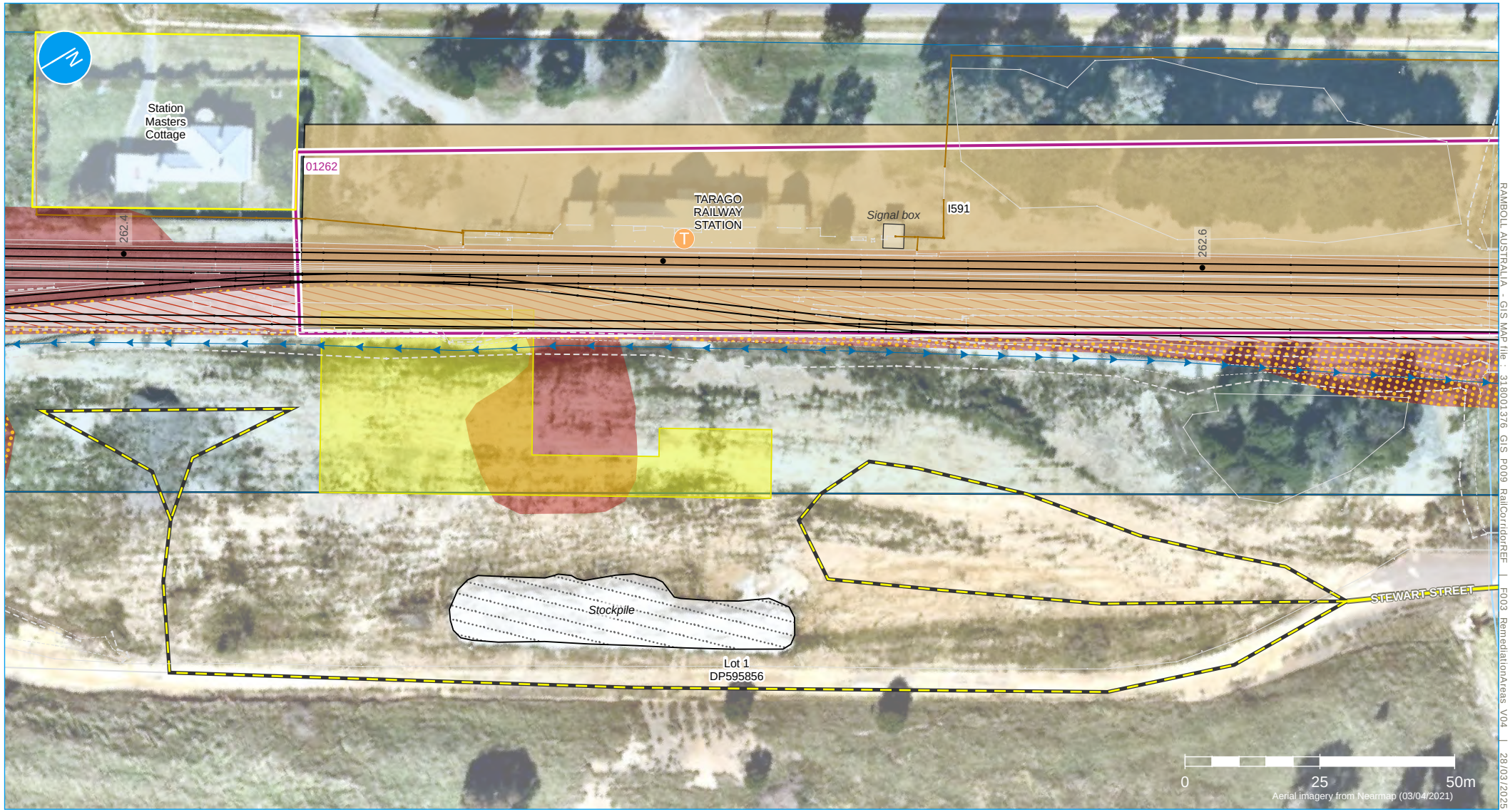
Location

Figure 3-2b | Site Plan



Legend

- Station Masters Cottage
- Rail corridor site
- Rail corridor fence
- 0.1km chainage point
- Surface water flow (indicative)
- Former loadout road (approximate)
- Former loadout complex building footprint

Survey lines

- Rail track
- Top of bank
- Bottom of bank
- Other elements

- Lead impacted area to remain
- Redundant Woodlawn siding - propopsed excavation depth 0.5 mbgl
- Lead impacted area surrounding the siding (excluding all rail formation) - proposed excavation depth 0.3 mbgl
- State heritage register curtilage (DCCEEW)
- Local LEP general heritage item (DPHI)

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Location

Figure 3-2c | Site Plan

Legend

- Rail corridor site
- Rail corridor fence
- 0.1km chainage point
- Surface water flow (indicative)

Survey lines

- Rail track
- Top of bank
- Bottom of bank
- Other elements

- Lead impacted area to remain
- Redundant Woodlawn siding - proposed excavation depth 0.5 mbgl
- Lead impacted area surrounding the siding (excluding all rail formation) - proposed excavation depth 0.3 mbgl
- State heritage register curtilage (DCCEEW)
- Local LEP general heritage item (DPHI)

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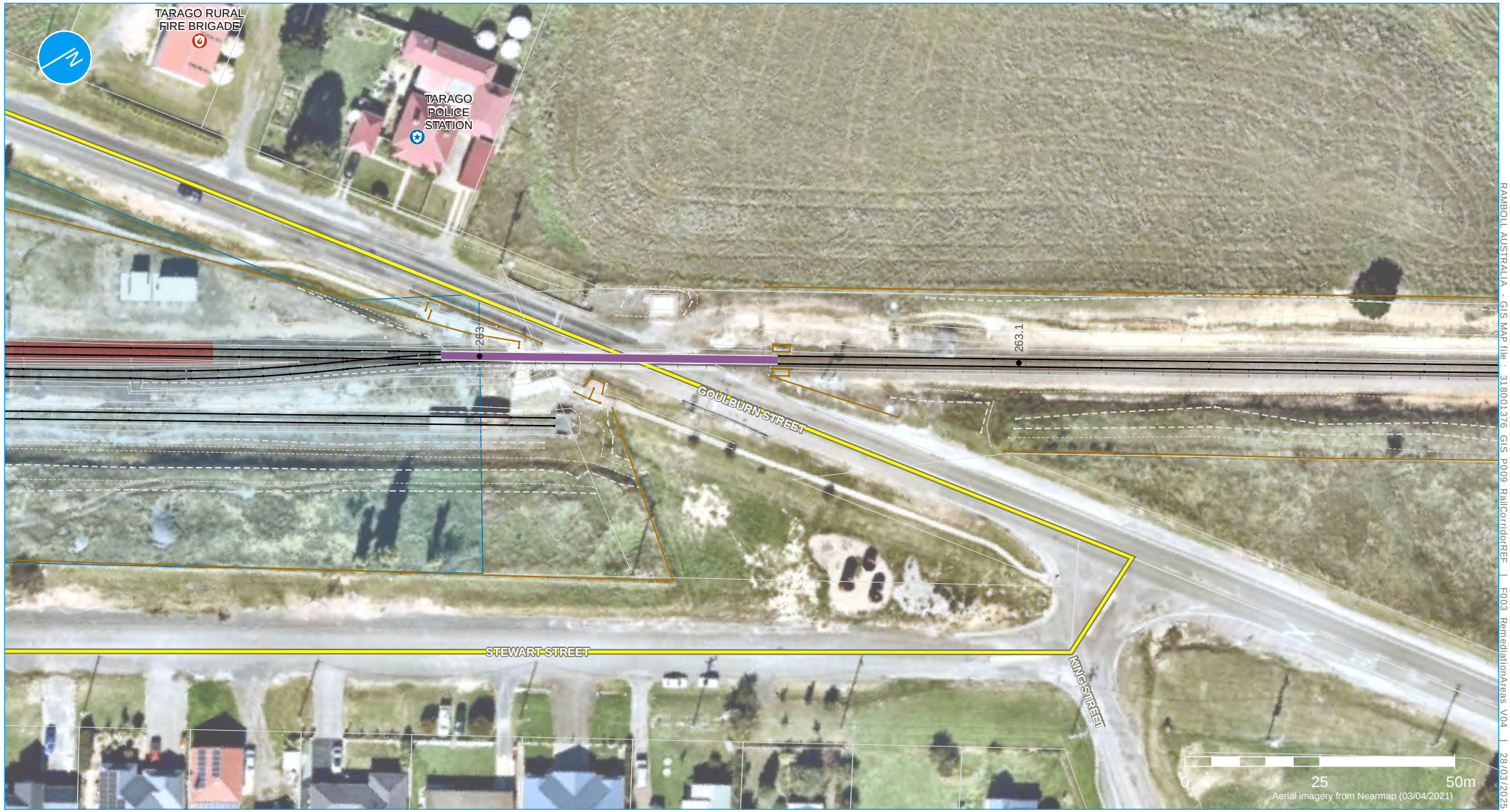
Location

Figure 3-2d | Site Plan



Legend

- Rail corridor site
- Rail corridor fence
- 0.1km chainage point
- Goulburn Street level crossing

Survey lines

- Rail track
- Top of bank
- Bottom of bank
- Other elements

- Lead impacted area to remain

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Location

Figure 3-2e | Site Plan

Table 3-2: Excavation volume projections for the remediation area

Location on Site	Area (m^2)	Depth (mbgl)	Volume (m^3)
Redundant Woodlawn siding proposed excavation	4,000	0.5	2,000
Lead impact area surrounding the siding	6,300	0.3	1,890
Total	**10,300**		**3,890**

3.2.1 Site establishment

The remediation worker compound for the proposal would be contained within the Rail Corridor Site lot boundary (Part Lot 22 DP1202608). Prior to commencement of demolition and remediation activities, Site establishment would occur.

Site establishment would require implementation of specific measures to manage lead risk work. The site is currently managed under the Tarago Lead Management Action Plan (Ramboll, 2020b) which addresses risks from exposure to lead from the site that would remain in place, including but not limited to:

- measures to prevent further offsite migration of contamination via airborne dust or surface water
- measures to prevent members of the public accessing the site
- controls for rail workers accessing the site.

Additional site establishment requirements specific to the remediation works include:

- refinement of excavation extents through field-portable x-ray fluorescence (fpXRF), measurement of surface lead concentrations in and around proposed excavation areas and mark-out excavation areas onsite
- retention of exclusion zones so that only persons involved in the remediation works and adequately inducted have access to such areas
- establishment of facilities that are clean and dust free workers area for eating and drinking
- establishment of toilet facilities and wash up areas for decontamination
- disposal of any work-related contaminated material such as dust masks, disposable gloves and overalls
- development of Proposal management documentation, including:
  - remedial works plan providing specific detail on the remediation requirements
  - work health and safety management plan which would include health and safety procedures for the Proposal activities and include specific requirements relating to lead risk work
  - environmental management plan (EMP) that details the controls to minimise impacts on the community and the environment during remediation works.
- installation of environmental controls, including:
  - erosion, sediment and dust controls
  - monitoring equipment (as required)
  - waste management and tracking protocols
- demarcation of haul route and preparation of haul road (as required)
- demarcation of stockpile areas
- protection of infrastructure and heritage (refer **Section 6.5**).

Site environmental controls will continue to be inspected, managed and maintained throughout remediation in accordance with the EMP. Site management plans are to be reviewed and approved by the Site Auditor as per the section 13.8 of the RAP (Ramboll, 2021a).

3.3 Construction hours and duration

Unless in the event of an emergency, the Proposal would be undertaken under normal construction hours as recommended by the *Interim Construction Noise Guideline (ICNG)*, as follows:

- Between the hours of 7:00 am and 6:00 pm Monday to Friday
- Between the hours of 8:00 am and 1:00 pm Saturday
- Not on Sundays or public holidays.

The transportation of material would only occur between 9:00 am and 3:00 pm Monday to Friday to avoid school bus operations.

The duration of remediation has been estimated to be 12 weeks. A commencement date is unknown at the time of finalising the REF, however, likely to commence in 2025.

3.4 Plant, equipment and resources

The plant and equipment required to complete the remediation works includes:

- 30 tonne excavator
- heavy vehicles, likely truck and dog combination
- water cart
- water trucks
- dozer
- roller
- light vehicles.

Up to twenty workers are required to facilitate the remediation activities.

Traffic control requirements will be detailed within the Traffic Management Plan developed prior to commencement of the proposal.

3.4.1 Rail Corridor Site access

The remediation area would be accessed from Goulburn Street via Boyd Street and Stewart Street via Lot 1 DP 595856 and Lot 2 DP714595.

3.5 Environmental management

Prior to the commencement of works, a number of management plans are required to be developed by the RAP (Ramboll, 2024b) and approved by the Site Auditor. The management plans required at a minimum include:

- Remedial works plan providing specific detail on how the remedial strategy would be implemented
- Construction Environmental Management Plan (CEMP) that details the controls proposed by the Remediation Contractor to minimise impacts on the community and the environment during works. The CEMP will include the following sub-plans:
  - soil and water management plan
  - dust management plan
  - noise and vibration management plan

  - traffic management plan.
- Worker health and safety plan that includes specific details for working with the contaminated materials
- Validation report at completion of remediation stating the suitability of the Site for its intended future use.

Section 7.1 details specific measures to minimise or mitigate the identified impacts of the Proposal in relation to the individual environmental aspects and where inclusion of these measures requires incorporation into the specified management plans listed above.

4. Statutory and planning considerations

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The Commonwealth EPBC Act is the core piece of legislation protecting Matters of National Environmental Significance (MNES) and Commonwealth land. There are nine MNES identified under the EPBC Act:

- World Heritage Properties
- National Heritage Places
- wetlands of international importance
- listed threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- nuclear actions
- a water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, a referral is required to be submitted to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for any 'action' that is considered likely to have a significant impact on any MNES. If DCCEEW determines the action to be a 'controlled activity', approval is required from the Minister of the Environment.

Consideration of the MNES is included in **Section 6.7**. A search of the EPBC Act Protected Matters Search Tool was undertaken on 16 July 2024. The search results are provided in **Appendix 1**.

It was concluded that the Proposal is unlikely to significantly impact on any MNES and approval for a controlled action would not be required.

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

The EP&A Act is the principal piece of environmental legislation which provides for development planning and control in NSW. The REF has been prepared under Part 5 Division 5.1 of the EP&A Act and describes and considered, to the fullest extent possible, the level of impact of the proposed work. The REF has been prepared in accordance with the EP&A Act.

4.3 *Environmental Planning and Assessment Regulation 2000 (NSW)* (EP&A Regulation)

Under Section 5.5 of the EP&A Act, prior to carrying out an activity TfNSW, as the determining authority, has a duty to examine and consider all matters affecting or likely to affect the environment. Section 171(2) of the EP&A Regulation defines the factors that must be considered when determining the likely impact of an activity on the environment. Section 171(2) factors are assessed in **Section 8.2** of this REF.

4.4 State Environmental Planning Policies (SEPPs)

The State Environmental Planning Policies (SEPPs) were consolidated from 45 different SEPPs to 11 SEPPs and came into effect on 1 March 2022. The following SEPPS have been identified as applicable to the Proposal:

- *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP)
- *State Environmental Planning Policy (Transport and infrastructure) 2021* (Transport and Infrastructure SEPP)

4.4.1 *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP)

Chapter 4 of the Resilience and Hazards SEPP defines a framework for management of contamination in NSW. It defines requirements for engagement with consent authorities and local Councils according to whether remediation is considered Category 1 (requiring development consent) or Category 2 (requiring notification 30 days before remediation). Ramboll consider the remediation works to be Category 2 remediation. Category 2 remediation work is deemed remediation work that is not Category 1 remediation as described in Section 4.8 of Resilience and Hazards SEPP.

A Notification Letter as provided in appendix 3 of the RAP (Ramboll, 2024b) must be provided to Goulburn Mulwaree Council a minimum of 30 days before commencement of remediation.

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

The Proposal is regulated under the Transport and Infrastructure SEPP. Section 2.92 under Division 15 of the Transport and Infrastructure SEPP states:

> ***"2.92 Development permitted without consent – rail infrastructure generally***
>
> *(1) Development for the purpose of a railway or rail infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land…"*

Rail infrastructure facilities include signalling equipment and associated ancillary infrastructure. Development permitted without consent for rail infrastructure facilities includes construction works in connection with a railway or rail infrastructure facilities (section 2.92 (2)(a)).

TfNSW is defined as a public authority under the EP&A Act as prescribed by the EP&A Regulation (Schedule 1) and the proposed works are identified as a 'development' under Section 2.92(2)(a) of the Transport and Infrastructure SEPP. Development consent is therefore not required for the Proposal.

Division 1 under Part 2.2 of the Transport and Infrastructure SEPP contains requirements for public authorities to consult with Councils and other specified authorities for certain developments. The proposal does not meet any of the criteria detailed in 2.10 to 2.16 that would trigger the consultation requirements. A summary of how the proposal does not trigger each Section is provided as follows:

- the LEP listed heritage item in proximity to the proposal is also a State heritage item and therefore Section 2.11 of the SEPP does not apply
- there is no flood planning map/flood liable land mapping over Tarago, therefore Section 2.12 and Section 2.13 of the SEPP do not apply
- Tarago does not occur within the coastal zone therefore Section 2.14 of the SEPP does not apply
- the proposal does not conform with any of the 'specific development' noted within Section 2.15 of the SEPP and therefore Section 2.12 of the SEPP does not apply
- the proposal is not a health service facility, correctional centre nor residential accommodation; therefore Section 2.16 of the SEPP does not apply.

4.5 Local Environmental Planning Policies (LEPs)

The Proposal is located within the Goulburn Mulwaree Shire which is governed by the *Goulburn Mulwaree Local Environmental Plan 2009* (Goulburn Mulwaree LEP). As discussed in **Section 4.4.1**, the Hazards and Resilience SEPP removes consent requirements from Local Environment Plans (LEPs) for certain developments, including for Category 2 remediation, as such development consent from Goulburn Mulwaree Council is not required. Goulburn Mulwaree Council will be kept informed of the remediation activities as detailed in **Section 5**.

The Proposal would take place within the identified heritage curtilage (I591) of the Tarago Railway Station, Signal Box and Good Shed listed under the *Goulburn Mulwaree Local Environment Plan 2009.* The Statement of Heritage Impact assessment (SoHI) (OzArk, 2024) concluded that the Proposal has an inconsequential impact on the local heritage values of the station building. In accordance with the Transport and Infrastructure SEPP, consultation with Council is not required to carry out works that would have a minor or inconsequential impact to the heritage values of a locally listed item. Therefore, no further consultation is required with Council regarding the historic heritage item.

4.6 Other relevant NSW Legislation

4.6.1 *Protection of the Environment Operations Act 1997* (POEO Act)

The POEO Act provides a licencing system for certain activities to be undertaken within NSW. The activities to which an environment protection licence (EPL) is required are listed in Schedule 1 of the POEO Act. Most activities in Schedule 1 of the POEO Act specify thresholds above which a licence is required.

The excavation of contaminated material and remediation of a site is not included as a scheduled activity under Schedule 1 of the POEO Act.

Schedule 1, Clause 48 identifies the transportation of trackable waste as an activity that requires an EPL and includes transportation of category 1 trackable waste of more than 200 kilograms in any load within NSW. TfNSW, as the consignor of the waste (being category 1 trackable waste due to the lead content), is required by Part 4, Division 2 of the *Protection of the Environment Operations (Waste) Regulation 2014* (POEO Regulation) to ensure the transporter of the waste holds an EPL to transport the waste.

TfNSW appointed UGL Regional Linx Pty Ltd (UGL Regional Linx) the operations and maintenance manager role of rail infrastructure within the Country Rail Network (CRN) in January 2022. UGL Regional Linx holds an existing EPL 13421 (the EPL) for railway infrastructure operations and is applicable to all railway infrastructure operations undertaken within the licenced area.

The Proposal is classified as development under the EPL and is therefore authorised under the existing EPL. A modification to EPL 3142 would not be required.

4.6.2 *Protection of the Environment Operations (Waste) Regulation 2014* (NSW) (POEO Regulation)

The POEO Regulation relates to the regulation of waste and resource recovery in NSW. The stockpile has been classified as hazardous waste in accordance with the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (NSW EPA, 2014 ac). Part 4 of the POEO Regulation specifies the tracking of certain wastes, including hazardous wastes, within, out of and

into NSW. Specific wastes to which waste tracking requirements under Part 4 apply are detailed in Schedule 1 of the regulation.

All material handled during excavation of the Rail Corridor Site will require tracking and input into the Integrated Waste Tracking Solution (IWTS) which has replaced the EPA's online waste track system.

4.6.3 *Biodiversity Conservation Act 2016* (BC Act)

The *Biodiversity Conservation Act 2016* provides a framework for the assessment of a proposal's potential impacts on threatened species, population and Threatened Ecological Communities (TECs).

Based on review of publicly available species data, vegetation mapping and aerial imagery, significant impacts to threatened species, populations or communities have not been identified for the Proposal. Potential impacts to flora and fauna and appropriate management measures are detailed in **Section 6.7.2**.

4.6.4 *Biosecurity Act 2015*

The *Biosecurity Act 2015* provides a framework for the prevention, elimination and minimisation of biosecurity risks. Part 3 of the Act contains a General Biosecurity Duty (GBD) which applies to anyone dealing with a biosecurity matter or a carrier, who knows (or ought to reasonably know) of the biosecurity risk posed or likely to be posed. This person has a duty to ensure that the risk is prevented, eliminated or minimised. Weed management for the Proposal has been considered in **Section 6.7.2**.

4.6.5 *Contaminated Land Management Act 1997* (CLM Act)

In November 2019 the Site was notified to the NSW Environment Protection Authority (EPA) under Section 60 of the *Contaminated Land Management Act 1997* (CLM Act) and on 25 March 2020 the NSW EPA declared the Site to be significantly contaminated under Section 11 of the CLM Act (Declaration Number: 20201103; Area Number 3455). The Site was published on the EPA's list of notified sites as "contamination is regulated by the EPA under the CLM Act". The declaration defines the substance of concern in soil ("the Contaminant") to be lead.

A VMP was prepared to define how risks presented by the Contaminant would be managed and this was approved by the NSW EPA on 28 May 2020.

Commitments made under the VMP relevant to remediation were to:

- Assess remedial options to address risks from the Contaminant on, or originating from, the Site
- Select a preferred remedial option(s) integrating consultation with the community and other stakeholders
- Prepare a RAP(s) to define how the selected remedial option would be implemented and validated.

The following RAPs have been prepared for the remediation works within Tarago:

- *Remedial Action Plan – Stockpile Associated with Tarago Rail Corridor, Tarago* (Ramboll, 2024d)
- *Remedial Action Plan – Tarago Rail Corridor* (Ramboll, 2024b).

The Remedial Action Plan – Stockpile Associated with Tarago Rail Corridor, Tarago (Ramboll, 2024d) describes the remediation works of the Stockpile. These works are not included within this REF and are subject to a separate Part 5 assessment under the EP&A Act.

4.6.6 *Fisheries Management Act 1994* (FM Act)

The FM Act provides for the conservation and management of fish and marine habitats, threatened species, populations and ecological communities.

The Proposal involves works within a watercourse including the excavation of water land as defined by the Part 7 of the FM Act as dredging work. Prior to carrying out of dredging work TfNSW must:

a) give the Minister written notice of the proposed work, and
b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after giving the notice.

4.6.7 *Heritage Act 1977*

The *Heritage Act 1977* provides protection of places and items of heritage significance including places, building, works, relics, moveable objects and precincts.

A State and local heritage listed precinct is located within the rail corridor. The adjacent SMC is not a local or State listed heritage place. Potential impacts to non-indigenous heritage are discussed in **Section 6.5**.

The remediation works within the curtilage of the State heritage listing are exempt under section 57 (2) of the Heritage Act. The s57(2) Exemption was endorsed by TfNSW Heritage on 16 October NSW. A copy of the endorsement has been provided in **Appendix 2**.

4.6.8 *Local Land Services Act 2013* (LLS Act)

The LLS Act manages land, natural resources, and agricultural service across the NSW region, including clearing of native vegetation on regulated rural land. Under the LLS Act the Proposal is located on land mapped as:

- Category 2 – regulated land (rail corridor)
- Category 2 - vulnerable regulated (rail corridor northern extent)
- exempt land (Lot 1 DP595856).

Native vegetation located on exempt land can be cleared within approval from the Local Land Services. Land identified as Category 2-regulated land under the LLS Act generally requires approval from the Local Land Services for clearing of native vegetation. Schedule 5A, Part 2 of the Act includes clearing of native vegetation for certain allowable activities. Environmental protection works is included as an allowable activity (Schedule 5A, Part 2, Clause 19).

Environmental protection works is defined as '*works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes re-vegetation or bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works (within the meaning of the* Coastal Protection Act 1979*).* The remediation activities align with the definition of environmental protection works and is therefore an allowable activity which does not require authorisation to clear native vegetation.

Schedule 5A, part 4, Clause 35 details clearing that is authorised on Category 2 – vulnerable regulated land and includes environmental protection works (Clause 35(3)). Clause 36 states that clearing of native vegetation that is authorised under Part 4 of the LLS Act only relates to '*…clearing that achieves the purpose of the clearing in a manner that minimises the risk of soil erosion*.'

The Proposal does not require authorisation to clear native vegetation on the regulated rural land it is located on as long as the clearing is undertaken to enable the remediation of the land in a manner that minimises the risk of soil erosion.

4.6.9 *National Parks and Wildlife Act 1974* (NPW Act)

An Aboriginal Heritage Impact Permit (AHIP) is required under Section 90 of the NPW Act for works that would disturb Aboriginal Sites or relics. An Aboriginal heritage due diligence assessment was undertaken for the Proposal and is discussed in **Section 6.5**. Provisions under the NPW Act apply for unexpected finds.

4.6.10 Roads Act 1993

The *Roads Act 1993* is administered by Transport for NSW, local government or the Minister as delegated under the *Crown Land Management Act 2016*. Transport for NSW has jurisdiction over major roads, local government over minor roads and the Minister over Crown roads. The Roads Act sets out the rights of the public in regard to access to public roads.

Under Section 138 or Part 9, Division 3 of the Roads Act, a person must not undertake any works that impact on a road, including connecting a road (whether public or private) to a classified road, without approval of the relevant authority, being either Transport for NSW, local council, or the Minister depending upon classification of the road.

No modifications to any roads are required as part of the Proposal and therefore a consent from Council is not required.

4.6.11 *Water Management Act 2000* (WM Act)

The WM Act aims to provide for the sustainable and integrated management of the State's water in accordance with ecologically sustainable development (ESD) principles. The licensing and approvals provisions of the WM Act apply (in general terms) to water sources that are subject to a Water Sharing Plan (WSP). The following approvals are generally required under the WM Act:

- a water access licence under section 60a to allow water to be taken from a water source
- a water use approval under section 89 to authorise the use of water for a particular purpose at a particular location
- a controlled activity approval under section 91E for works undertaken on waterfront land
- an aquifer interference approval under section 91F.

TfNSW as a public authority is exempt from Section 91(E)1 of the WM Act under Clause 41 of the *Water Management (General) Regulation 2018* in relation to all controlled activities carried out on or under waterfront land. The Proposal is located 40 metres from a watercourse however TfNSW is exempt from requiring approval under Section 91(E)1.

4.7 Summary of Approvals and Licences

The transportation of trackable waste is a scheduled activity under Schedule 1 of the POEO Act. TfNSW is required to ensure the transporter engaged to transport the waste from the Site holds the relevant EPL, the waste is tracked and input into the EPA's IWTS.

Notification requirements, consistent with Sections 4.13 to 6.16 of the Resilience and Hazards SEPP are to be met.

4.8 Confirmation of Statutory Position

TfNSW is defined as a public authority under the EP&A Act as prescribed by the EP&A Regulation (Schedule 1) and the Proposal is identified as 'development' under Section 2.92(2)(a) of the Transport and Infrastructure SEPP. Development consent is therefore not required for the Proposal.

The Proposal is subject to assessment under Division 5.1 of the EP&A Act. The current EPL 3142 applies and TfNSW is the determining authority for the Proposal.

5. Stakeholder and community consultation

5.1 Consultation strategy

TfNSW has managed community relations through assessment and interim management of contamination at Tarago. TfNSW will continue to manage community relations through remediation according to a formalised community relations plan.

A dedicated webpage has been created and updated regularly for the Tarago rail yards lead contamination. The website is updated with the status of assessment results, management measures and remediation works at the site and can be access at https://www.transport.nsw.gov.au/projects/current-projects/tarago-rail-yards-lead-contamination.

Community notifications were provided on a monthly basis between March and July 2020 regarding the identification of lead contamination with the Tarago rail corridor (Transport for NSW, 2024). Community information sessions were held in March, April, May and December 2020 to update the community on the investigations and answer questions. Community and stakeholder consultation undertaken regarding the remediation works has been summarised in Table **5-1**.

Table 5-1: Stakeholder consultation undertaken

Stakeholder	Consultation Method / Date	Issues / Comments
Community and business	July 2022 Email to project database and webpage notification on updated plans to remediate the rail corridor and community update to provide information on the progress of plans to remediate the rail corridor in Tarago.	Questions received relating to project progress and remediation options.
	August 2022 Two community information sessions held to update the community on progress.	Presentation slides, recording and responses to actions provided on webpage.
	October 2022 Email to project database and webpage notification on progress and response to EPA issued Prevention Notice.	NA
	November 2022 Email to project database and webpage notification of community information session to be held in December and submission of report to EPA on 7 October addressing Prevention Notice.	NA
	December 2022 Community information session held in Tarago to update the community and answer questions. Feedback requested on the proposed changes to the VMP.	Presentation slides provided on webpage. No feedback received from community on the proposed changes to the VMP.
	February 2023 Community drop-in session held in Tarago to seek community views on future land uses for the Tarago Former Station Master's Cottage.	Community members provided a range of suggestions that were considered as part of the

Stakeholder	Consultation Method / Date	Issues / Comments
		Future Land Use Strategy.
	May 2023 Email to project database and webpage notification regarding community drop-in session held in February 2023.	Published the questions and answers from the February information session on webpage.
	September 2023 Email to project database and webpage notification regarding the Former Station Master's Cottage - Outcome of the Future Land Use Assessment and information on the upcoming September community information session.	NA
	20 September 2023 Community information session held to inform the community on the decision to demolish the Tarago former Station Master's Cottage and provide an update on the Remediation Options Assessment.	Published the presentation slides and project FAQs on webpage.
	December 2023 Email to project database and webpage notification regarding the September community information session.	Published the summary report for the September community information session on webpage.
	March 2024 Email to project database and webpage notification regarding the next steps for the demolition proceeding of the Former Station Master's Cottage, Remediation Options Assessment and Remedial Action Plan.	NA
	April 2024 Two online community information sessions held for Tarago Rail Corridor Remediation Options Assessment.	NA
	April 2024 Public exhibition of the Tarago Rail Corridor Remediation Options Assessment on website and have your say.	Transport received a total 37 submissions during the public exhibition phase: • A total of 6 submissions either supported Transport's preferred option or were neutral. • A total of 31 submissions opposed the preferred remediation option to remove the contaminated waste from Tarago and take it to the containment cell at Lake George Legacy

Stakeholder	Consultation Method / Date	Issues / Comments
		Mine in Captains Flat. Transport held a post public exhibition workshop with internal stakeholders to consider and assess the community feedback and re-score the options.
	July 2024 Email to project database and webpage notification for the Event summary report from the online information session held in April 2024.	NA
	November 2024 Email to project database and webpage notification for the Outcome of Tarago Rail Corridor Remediation Options Assessment.	NA
Environment Protection Authority (EPA)	November 2019 Notification of site under Section 60 of CLM Act.	NA
	March 2020 Site declared to be significantly contaminated under Section 11 of CLM Act.	Declaration number 20201102 and site published on EPA's list of notified sites.
	May 2020 Submission of VMP and subsequent approval by EPA.	To define how the Contaminant and associated risks would be managed.
	September /October 2022 EPA issued Prevention Notice (Notice Number 3503607). Prevention notice was implemented and closed out with EPA.	Directive to take preventative action following an EPA inspection. Actions were implemented and closed out.
	April 2024 / July 2024 TfNSW submitted VMP amendment application under section 44 of the CLM Act. Notice of Approval obtained from EPA.	Amendment to timelines within VMP due to changes in remediation works methodology.
	January / April 2024 Consultation regarding monitoring program.	NA
Veolia	TfNSW is currently negotiating an agreement to undertake remediation works on Lot 1 DP595856. The agreement will also include use of Lot 2 DP714595 to access the stockpile.	NA

The communication and stakeholder engagement activities to date have provided the opportunity for the community to be informed on the Proposal, as well as allowing TfNSW to understand the community and other stakeholder issues to be addressed and remedial activity planning.

TfNSW acknowledges the potential impacts of the Proposal to several stakeholders and members of the community and as such is committed to:

- keeping potentially affected residents, property owners, interested stakeholders and the broader community informed before and during the work
- implementing mitigation measures that would reduce the risk of impacts to human health and the environment resulting from remediation works
- implementing a complaints management process to resolve complaints as soon as possible and develop jointly agreed solutions where feasible.

5.2 Ongoing or future consultation

As detailed within the Remedial Action Plan (Ramboll, 2024b), a Notification letter (refer appendix 3 of the Remedial Action Plan), will be provided to Goulburn Mulwaree Council a minimum of 30 days before commencement of remediation.

TfNSW is committed to updating the community before and during the remediation work. TfNSW will use a range of communication tools including sending letters to surrounding residents, email updates to the project database and updating through the Tarago rail yard webpage.

6. Environmental impact assessment

This section of the REF provides an assessment of the potential environmental impacts associated with the Proposal. This section includes consideration of the following:

- items requiring assessment under section 171 of the EP&A Regulation and identified under the Guidelines for Division 5.1 assessments (Department of Planning and Environment, 2022). A summary of the items requiring assessment under section 171 and where they are addressed in provided in **Section 8.2**.
- potential impacts on matters of national environmental significance under the EPBC Act
- site specific management and mitigation measures have been provided for identified potential impacts.

6.1 Contamination

The desktop assessment included a review of previous reports prepared by Ramboll relevant to the Proposal. The following reports were reviewed:

- *Remedial Action Plan - Tarago Rail Corridor* (Ramboll, 2024b)
- *Remedial Options Assessment* (Ramboll, 2024c)
- *Tarago Rail Corridor and Tarago Area Detailed Site Investigation* (Ramboll, 2020c)
- *Tarago Rail Corridor and Tarago Area Detailed Site Investigation Addendum* (Ramboll, 2020d)
- *Tarago Lead Management Action Plan* (Ramboll, 2020b).

6.1.1 Existing environment

The Rail Corridor Site which was historically utilised for the transportation of lead, copper and zinc ore concentrates from the Woodlawn Mine to smelters in Newcastle and Port Kembla. A load-out complex was located approximately 20 metres north of the Tarago Station adjacent to the rail corridor to the west. The historic load-out of ore concentrates was identified as the main potential source of the contamination identified at the Rail Corridor Site (Ramboll, 2024b).

As detailed in **Section 1.1** in November 2019 the Rail Corridor Site was notified to the NSW EPA under section 60 of the CLM Act. On 25 March 2020 the NSW EPA declared the Rail Corridor Site to be significantly contaminated under section 11 of the CLM Act (Declaration Number: 20201103; Area Number 3455). The Rail Corridor Site was published on the EPA's list of notified sites as "contamination is regulated by the EPA under the CLM Act". The declaration defines the substance of concern in soil to be lead (Ramboll, 2024b).

A summary of the Rail Corridor Site condition and surrounding environment detailed within the RAP (Ramboll, 2024b) have been provided in **Table 6-1.**

Table 6-1: Site condition and surrounding environment

Site	Description
Conditions at Site Boundary	Evidence of contamination was identified at several locations near the eastern site boundary and is summarised on figures 2a – 2e, appendix 1 of the RAP (Ramboll, 2024b). The site was observed to be fenced on the western boundary and partially fenced on the eastern boundary. Access remained feasible from Tarago Station and the Goulburn Street level.
Visible Signs of Contamination	Visible evidence of contamination was observed as green and orange staining of silt within fouled ballast in the areas of lead impact identified on figures 2a – 2e, appendix 1 of the RAP (Ramboll, 2024b). Potential relationship between stressed vegetation and contamination was most notable along the haul route from the mine to the corridor. Vegetative stress was observed along

Site	Description
	localised areas of road verge compared to the road verge generally which was vegetated with grass. Within the corridor areas of contamination (e.g.: rail formation, adjacent soils, cess drains) generally align with areas where routine maintenance would include removal of vegetation. An exception to this was the former load-out complex where little vegetation was observed. Historic assessment of this area however identified low contaminant concentrations and the absence of vegetation is likely associated with low organic carbon content within the clay surface soils, recent trafficking by heavy machinery and low rainfall over the longer term. Additionally, stress to trees and shrubs at 106 Goulburn Street observed in December 2019 (i.e.: in soils impacted by the Contaminant) appeared consistent with other areas of Tarago (not impacted by the Contaminant). Based on these observations vegetative stress is not considered a reliable indicator of impact from the Contaminant.

Source: Remedial Action Plan (Ramboll, 2024b)

The criteria proposed for the remediation of soil contamination detailed within the RAP (Ramboll, 2024b) were sourced from the following references:

- National Environment Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPM) (National Environment Protection Council, 2013)
- *Tarago Loop Extension Preliminary Human Health Risk Assessment* dated 17 October 2019 by Ramboll (Ramboll, 2019).

The NEPM (National Environment Protection Council, 2013) provides health-based soil investigation levels (HILs) and ecological-based investigation levels (EILs) for various land uses. Based on the current and future use of the Site, and the surrounding land, the guidelines adopted for the Proposal are as follows:

- HIL A – Health investigation level for residential use including residential with garden/accessible soil (home grown produce grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools.
- HIL D – Health investigation level for commercial/industrial such as shops, offices, factories and industrial sites. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3 m below the surface for industrial use. HIL D is applicable to the rail corridor including the Train Station.
- EIL for urban residential and public open space (applicable to 106 Goulburn Street, Tarago) and EIL for commercial/ industrial use (applicable to the rail corridor within the site) – ecological investigations levels applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and generally apply to the top 2 m of soil.
- Ramboll determined a site-specific trigger level for lead protective of current and future onsite workers of 2,200 mg/kg and a site-specific EIL for lead of 1,800 mg/kg.

The human health and ecological criteria adopted for the RAP (Ramboll, 2024b) are provided in **Table 6-2.**

Table 6-2: Soil Remediation Criteria – Human Health and Ecological Investigation Levels (mg/kg)

Contaminant	HIL A – Low density residential	HIL D – Commercial/ Industrial	EIL – Urban Residential and Public Open Space	EIL -Commercial/ Industrial
Aluminium	-	-	-	-
Arsenic	100	3,000	100	160
Barium	-	-	-	-
Beryllium	60	500		
Cadmium	20	900	-	-
Chromium	100[a]	3,600[a]	430[b,c]	710[b,c]
Cobalt	100	4,000	-	-
Copper	6,000	240,000	110[c]	160[c]
Iron	-	-	-	-
Lead	300	2,200[d]	1,100	1,800
Manganese	3,800	60,000	-	-
Mercury	40[e]	730[e]	-	-
Nickel	400	6,000	200[c]	340[c]
Zinc	7,400	400,000	250[c]	370[c]

[a] HIL for chromium (VI).

[b] EIL for chromium (III).

[c] Site specific EIL (calculated during Ramboll 2019d).

[d] site-specific trigger level for lead (Ramboll 2019d).

[e] HIL for inorganic mercury.

Source: Remedial Action Plan (Ramboll, 2024b)

The RAP (Ramboll, 2024b) summarised the finding from historic contamination reports for the Rail Corridor Site and provided the following summary:

> *Results from previous assessments informed delineation of the Contaminant within the rail formation and adjacent soils across an area of approximately two hectares and to a maximum depth of 0.5 mbgl. Concentrations of lead were observed to be highest in shallow soils and generally decreased below assessment criteria from 0.5 mbgl. Continued reduction in lead concentrations was observed from 0.5 – 4.5 mbgl. Exceptions to this vertical extent were noted around the former Load-out Complex where lead exceeded assessment criteria at depths of around 1 mbgl. The elevated concentrations reported occurred in material including asphalt and ballast; and are indicative of the site surface during operation of the Load-out Complex (i.e.: before historic application of capping).*
> *Qualitative assessment indicates a relationship between concentrations of lead and other metals such as copper and zinc.*
>
> *Visual evidence of ore concentrate was observed in surface soils adjacent a drainage line upstream of the middle culvert in June 2020 as shown on Figure 2b, Appendix A. These impacts may have occurred during the rail loop extension as this evidence was not observed during previous assessment of the area. Assessment by field portable X-ray fluorescence (fpXRF) identified concentrations of the Contaminant and other metals above assessment criteria for the site and reported concentrations that adversely impact the receiving environment for downstream surface waters.*

Soils were analysed surrounding the siding (excluding rail formation) at 0.1 mbgl at three locations where concentrated lead was reported at the surface (PIA2, PIA4, PIA5 – Figure 2b, Appendix A). Metals concentrations were observed to be much lower at 0.1 mbgl compared to the surface and this supports conclusion that the observed impacts are limited to surface soils.

The RAP (Ramboll, 2024b) identified that the lead contamination exceeded human health and ecological guideline values at three of the locations sampled at the former load-out complex within the Rail Corridor Site. The locations that exceeded guideline values were at varying depths between 1 and 1.6 mbgl with lead concentrations ranging from 3,600 -6,900 parts per million (during two rounds of sampling). The results indicate that lead contamination is present at depth beneath a clay capping layer approximately 1 metre thick and therefore would remain and be managed in situ (Ramboll, 2024b). The remediation area has been shown in **Figure 3-2a-e** and comprises of the lead impacted area surrounding the siding (excluding the rail formation) and the redundant Woodlawn siding. The remediation area volumes projected to require excavation are detailed within **Table 3-2**.

Contamination within the rail formation is not accessible and would therefore remain and be managed in situ. A long-term management plan will be developed and implemented as per the RAP (Ramboll, 2024b) to maintain and manage the residual contaminated material.

6.1.2 Potential impacts

If not appropriately managed, potential impacts may result from the existing contamination:

- the spread of contaminants to uncontaminated areas
- exposure of unknown airborne contaminants i.e. asbestos
- contaminants above the specified criteria remaining within the remediation area
- air quality impacts, if soil and dust are inappropriately managed
- environmental and human health impacts associated with the potential spread to uncontaminated areas and contaminants remaining within the remediation area
- contamination from oil and/or fuel spills resulting from plant and machinery used as part of the proposal.

A temporary contaminated spoil stockpile would be created within the Rail Corridor Site, comprising excavated material to be transported to an appropriately licensed facility. Additionally, excavated material from the SMC (above HIL A criterion and below the HIL D criterion) may be temporarily stockpiled within the Rail Corridor Site prior to being utilised within the Rail Corridor Site. Stockpiles would be limited to designated areas within the Rail Corridor Site and be adequately protected to prevent surface water infiltration, migration offsite and into surface drainage lines or dispersal of stockpile materials via air. Erosion and sediment, and dust controls would be established to manage any stockpile areas, as further discussed in **Section 6.4** and **Section 6.9** respectively. As detailed within the RAP (Ramboll, 2024b), appropriate material handling tracking would be utilised for all excavated material to prevent the potential misplacement of contaminated materials.

In accordance with the Remedial Action Plan (Ramboll, 2024b)., the measures provided in **Table 6-3** will be implemented to reduce the likelihood of spreading the contamination or contamination remaining within the remediation area after remedial activities have been completed.

6.1.3 Management measures

In addition to the measures identified within the RAP (Ramboll, 2024b), management measures to be implemented are provided in **Table 6-3**.

Table 6-3: Management measures - contamination

ID	Management measure	Responsibility	Timing
C1	Remediation of the Site will occur in accordance with the Remedial Action Plan Tarago Rail Corridor (version 7 June 2024) and any updated revisions that may follow.	Remediation Contractor	Prior to and during remediation
C2	Transportation of the contaminated material, being Category 1 trackable waste, will be undertaken by a suitably qualified contractor that holds the relevant EPL.	Remediation Contractor	Prior to and during remediation
C3	The CEMP will include incident management and spill response procedures detailing procedures for responding to and manage chemical/fuel spills and should include: • Procedure for dealing with fire/ spills/ containment • Contact details of responsible Site personnel • Contact details for emergency services.	Remediation Contractor	Prior to and during remediation
C4	All site equipment will be appropriately cleaned to reduce the likelihood of spreading contamination	Remediation contractor	During remediation

6.2 Traffic and transport

The Proposal's traffic and transport impacts were assessed under the *Tarago Rail Corridor Remediation – Stage 2 Traffic and Transport Impact Assessment* (TTIA) (SCT Consulting, 2024b). The TTIA is provided in **Appendix 3** and summarised below. The Stage 2 TTIA assessed the potential impacts of the Proposal and the remediation of the SMC.

The TTIA was conducted for all three aspects of the Tarago Rail Corridor remediation, and included the following tasks:

- review of any previous development consents and traffic impact assessments in the area
- review of existing traffic and transport conditions, including traffic survey at the traffic survey at the Broadwood Road/Wallace Street intersection and on Goulburn Street
- review of the light and heavy vehicle generation from the sites
- assessment of traffic and transport impacts, including access locations and proposed routing
- review of any road safety impacts.

6.2.1 Existing environment

6.2.1.1 Road network operation

Key roads in proximity of the Site are described as follows (shown in **Figure 1-1**):

- **Braidwood Road** is a State Road that extends to Goulburn in the north and the Kings Highway in the south. Braidwood Road is a two-way road with one lane in each direction. Within Tarago, the posted speed limit is 60km/h, with a 40km/h school zone enforced north of Boyd Street. The road is an approved 25/26m B-double route
- **Goulburn Street** is a regional arterial road that runs through Tarago. It extends from Wallace Street adjacent to Tarago Station to Lime Street, beyond which it continues south as

Bungendore Road. To the north, it continues as Wallace Street. The road is a two-way road with one lane in each direction and a posted speed limit of 50km/h between Wallace Street and King Street and 60km/h south of King Street. The road is an approved 25/26m B-double route

- **Stewart Street** is a local street that runs from the intersection of Goulburn Street / King Street south of Tarago Station on the west side of the rail corridor. It is a two-way road with no lane markings and a carriageway width of between 8 – 10 metres for the sealed section of the road that runs from the intersection with King Street to just south of the station. North of the station, the road continues as unsealed, forming the proposed access road for the west side of the rail corridor. Stewart Street has a speed limit of 50km/h.

The key intersections that accommodates for traffic generate by the Proposal has been identified as Braidwood Road/Wallace Street and Goulburn Street/King Street intersections, the characteristics of the intersections are described in **Table 6-4** and **Table 6-5** respectively. The intersections were found to have peak hours of 7 am - 8 am and 4 pm - 5 pm.

Table 6-4: Braidwood Road/Wallace Street intersection

Aspect	Description
Intersection control	Stop-sign priority control
Braidwood Road (north approach)	One lane entry and one lane exit
Braidwood Road (south approach)	One lane entry and one lane exit
Lumley Road (east approach)	One lane entry and one lane exit with no line markings
Wallace Street (west approach)	One lane entry and one lane exit
Active transport amenities	Footpaths along both sides of the north approach and the northern side of the west approach; no pedestrian crossings provided
Heavy vehicle routes	Approved 25/26 metre B-double routes along the north, south, and west approaches

Source: (SCT Consulting, 2024a; SCT Consulting, 2024b)

Table 6-5: Goulburn Street/King Street intersection

Aspect	Description
Intersection control	Give-way priority control
Goulburn Street (northeast approach)	One lane entry and one lane exit
Goulburn Street (southwest approach)	One lane entry and one lane exit
King Street (west approach)	One lane entry and one lane exit with a short median and no line markings
Active transport amenities	A footpath on the northwestern side of the northeast approach; no pedestrian crossings provided
Heavy vehicle routes	Approved 25/26m B-double route along the northeast and southwest approaches

Aspect	Description
Intersection control	Give-way priority control

Source: (SCT Consulting, 2024a; SCT Consulting, 2024b)

It is noted that all roads used for the transport routes except for Stewart and King Streets are approved 25/26m B-double roads under the National Heavy Vehicle Regulator (National Heavy Vehicle Regulator, 2024).

6.2.1.2 Road Safety

From 2018 to 2022 the area recorded a total of 11 road crashes. Five crashes occurred mid-block on Braidwood Road and two crashes at its intersection with Wallace Street (Transport for NSW, 2023a). The mid-block crashes involved vehicles driving off the carriageway into an object and one head-on collision. Both crashes at the intersection were a result of cross-traffic movements.

6.2.1.3 Public and active transport

Public transport services in the area include the NSW TrainLink train services and local school buses. Tarago Station is a stop along the Southern NSW rail route between Sydney and Canberra. While there are no regular bus services, school buses operate between the area and several destinations, with five school buses operating between 7am – 9am and between 3pm – 5pm. The nearest school bus stops from the sites are on King Street and Braidwood Road.

There is a railway level crossing on Goulburn Street, north of its intersection with King Street. The crossing is controlled by active protection using flashing lights and boom gates.

Active transport infrastructure is limited, given the rural nature of the area. There are footpaths along the northwestern side of Goulburn Street, the northern side of Wallace Street, and on both sides of Braidwood Road for about 200 metres to Tarago Public School and Tarago Community Playground.

6.2.2 Potential impacts

The remediation area would primarily be accessed via an existing access track from Stewart Street and passing through Lot 1 DP 595856 and Lot 2 DP714595. Goulburn Street onto Boyd Street would also be utilised to access the portion of the remediation area located on the eastern side of the railway tracks.

The potential impacts identified relate only to the site access and do not include haulage of the contaminated material to the disposal facility. Transportation of the contaminated material to the disposal location has not been assessed within this REF however impacts within the township of Tarago have been addressed.

The TTIA concluded that Stage 2 (including the remediation of the Rail Corridor Site and the SMC) of the proposed works would not have significant impacts on the operation of the road network, road safety, and public transport and active transport networks adjacent to the sites.

<u>Road network operation</u>

The remediation area would be accessed via Stewart Street with traffic generated from the Proposal utilising Goulburn Street, Wallace Street and Braidwood Road.

It is anticipated that five light vehicles would travel to and from the Rail Corridor Site each day and an approximate total of 5 truckloads of railway sleepers (approximately 100 cubic metres), 167 truckloads of contaminated soils (approximately 3,890 cubic metres), and 81 truckloads of fill material (approximately 1,890 cubic metres) would require transportation as part of the Proposal, refer **Table 6-6.**

The three phases of remediation works would occur sequentially, while the removal of contaminated material from the SMC and the remediation area are planned to occur concurrently. This section has addressed the traffic impacts of the Proposal, while the cumulative assessment provided in **Section 6.13** discusses the potential impacts from the concurrently occurring remediation works of the SMC.

Table 6-6: Material transport routes from the remediation area

Materials	Disposal location	Route	Total trucks required (vehicles)
Railway sleepers	Western Sydney or Goulburn	Stewart St → King St → Goulburn St → Wallace St → Braidwood Rd (North)	5
Contaminated soils	Western Sydney	Stewart St → King St → Goulburn St → Wallace St → Braidwood Rd (North)	167
Fill material	Western Sydney or Goulburn	Braidwood Rd (North) → Wallace St → Goulburn St → King St → Stewart St	81

Source: (SCT Consulting, 2024b)

Working hours for the Proposal will be between 7am – 6pm on weekdays and 8am – 1pm on Saturdays. To reduce the impact of the Proposal, the removal of material by truck will only take place between 9am – 3pm Monday to Friday to avoid coinciding with school traffic and school bus operations.

An increase in the number of workers required to facilitate the Proposal occurred following the finalisation of the TTIA (SCT Consulting, 2024b). Due to the minor nature of the change, a revision to the TTIA (SCT Consulting, 2024b) was not undertaken but rather SCT confirmed via email on 5 May 2025 that the increase in private light vehicles travelling to and from the Rail Corridor Site would not result in a significant impact. As noted in the TTIA (SCT Consulting, 2024b), the worker traffic is expected to be generated before 7 am and after 6 pm and therefore was not included within the intersection modelling for the potential traffic and transport impacts of the Proposal. While there may be some light vehicle movements to a site office or between sites, the Proposal is not anticipated to generate any light vehicle traffic during the AM and PM peak hours.

While Proposal is not expected to generate truck movements at the intersection peak hours, a worst-case traffic impact scenario was assessed and assumed the following peak-hour movements:

- AM peak hour: five incoming trucks to the Rail Corridor Site
- PM peak hour: five outgoing trucks from the Rail Corridor Site.

The intersection modelling indicated that the traffic generated by the Stage 2 works (which included the traffic generated by the Rail Corridor Site and the SMC Site) would have minimal impact on the operation of the intersections during both peak hours. All performance metrics at the Goulburn Street/King Street intersection remaining unchanged, though there would be a negligible increase in the average delay at the Braidwood Road/Wallace Street intersection during PM peak hour.

Road Safety

The Stage 2 works are expected to take approximately 12 weeks. The short-term increase in traffic volumes is not expected to have a substantial effect on the safety of the road network around the sites. Both workers' commute traffic and material transport traffic are planned to be outside of school start and end times. The impacts on road safety for all users during the works will be further mitigated through a traffic management plan developed in consultation with the Goulburn Mulwaree Council. The traffic management plan will include strategies to minimise conflicts between different road users with clear advance identifiers of work activities and vehicles, especially around the site access points.

Public and active transport

All workers are expected to commute by private cars and, hence, no impacts on the public transport and active transport networks are expected from the increased travel demand generated by the Stage 2 works.

Given the low volumes of generated traffic and the existing train services, no impacts associated with the proposed works are expected on and from the level crossing.

6.2.3 Management measures

Management measure to be implemented to reduce the potential traffic and transport impacts identified are provided in **Table 6-7.**

Table 6-7: Management measures - traffic and transport

ID	Management measure	Responsibility	Timing
T1	The CEMP will include a traffic management plan developed in consultation with the Goulburn Mulwaree Council and reviewed and approval by the TfNSW before remediation commences.	Remediation Contractor	Prior to remediation
T2	The waste transporter will hold an EPL to transport category 1 trackable waste in accordance with the POEO Act.	Remediation Contractor	Prior to remediation
T3	An agreement with Veolia will be arranged to facilitate use Lot 1 DP595856 and Lot 2 DP714595 for access to the Rail Corridor Site.	Remediation Contractor	Prior to remediation
T4	The transportation of remediation materials will be managed to maximise vehicle loads to minimise vehicle movements, where practicable.	Remediation Contractor	Prior to and during remediation
T5	Adequate traffic control measures are to be implemented to ensure site safety and take into consideration the entry and egress of vehicles from the main site entrance or other approved access points.	Remediation Contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
T6	General signposting of the remediation vehicle routes with appropriate heavy vehicle and construction warning signs to be agreed between Goulburn Mulwaree Council and Transport for NSW.	Remediation Contractor	Prior to remediation
T7	All personnel required to drive on the site will be informed during the site induction of the access restrictions and transport routes within the site.	Remediation Contractor	Prior to remediation
T8	A speed limit of 20km/hr will be imposed on internal roads.	Remediation Contractor	Prior to and during remediation
T9	Warning signs will be installed along the local road network impacted by the Proposal to warn existing road users of entering and exiting Proposal traffic.	Remediation Contractor	Prior to remediation
T10	All personnel required to transport remediation materials on public roads will be informed during the site induction of the required transport routes.	Remediation Contractor	Prior to and during remediation
T11	Carpooling is to be promoted for workers, and other shared transport initiatives.	Remediation Contractor	Prior to and during remediation
T12	The internal access restrictions and transport routes will be altered as required to reflect the progression of the remediation works.	Remediation Contractor	During remediation
T13	All vehicles or trailers used to transport the excavated material will be covered before leaving the Rail Corridor Site.	Remediation Contractor	During remediation
T14	All vehicles will utilise the existing access tracks when accessing the site via Stewart Street.	Remediation Contractor	During remediation
T15	Heavy Vehicle Chain of Responsibility Plan is required to comply with TfNSW requirements. The Remediation Contractor must provide the Heavy Vehicle Chain of Responsibility Plan with the traffic management plan for Principal approval.	Remediation contractor	Prior to and during remediation

6.3 Noise and vibration

An Acoustic Assessment was completed by RAPT Consulting (RAPT Consulting, 2024)(refer **Appendix 4**). The Acoustic Assessment was conducted for Stage 2 of the Tarago Remediation, and included the following tasks:

- initial desk top review to identify noise sensitive receptors from aerial photography
- undertake noise measurements to determine ambient and background noise levels
- establish project noise goals for the construction / remediation of the Proposal
- identify the likely principal noise sources during construction and their associated noise levels
- assessment of potential noise, vibration and sleep disturbance impacts associated with construction aspects of the Proposal

- provide recommendations for feasible and reasonable noise and vibration mitigation and management measures, where noise or vibration objectives may be exceeded.

The policies and guidelines considered during the preparation of the assessment include:

- *Interim Construction Noise Guideline* (ICNG) (Department of Environment and Climate Change, 2009)
- *Construction Noise and Vibration Strategy* (Transport for NSW, 2019)
- *Assessing Vibration: A Technical Guideline* (Department of Environment and Conservation, 2006)
- *British Standard BS7385.2 - 1993 Evaluation and Measurement for Vibration in Buildings, Part 2 - Guide to damage levels from ground borne vibration*
- *DIN 4150: Part 3-1999 Structural vibration – Effects of vibration on structures*
- *NSW Road Noise Policy* (Department of Environment, Climate Change and Water, 2011)
- *Noise Policy for Industry* (NPfI) (EPA, 2017).

6.3.1 Existing environment

The land surrounding the remediation area is utilised for large lot residences to the west and residential land to the east. The closest sensitive receptors to the Rail Corridor Site are located approximately 40 metres west and 20 metres east at the southernmost portion of the Rail Corridor Site.

Background and ambient noise measurements undertaken by RAPT Consulting between 6 to 12 December 2022 from Lot 1 DP816626 (the location of the SMC) were utilised for the acoustic assessment. The 2022 measurements were utilised in this assessment as it was determined that the ambient noise environment in the vicinity of the Rail Corridor Site had not substantially changed since measurements were undertaken. The ambient noise environment experienced during site visits was noted to be occasional road and rail traffic, distant road traffic and natural wildlife, and is indicative of a rural noise environment.

The L_{A90} descriptor is used to measure the background noise level. This descriptor represents the noise level that is exceeded for 90 percent of the time over a relevant period of measurement. In line with the procedures described in the EPA's NPfI (EPA, 2017), the assessment background level (ABL) is established by determining the lowest tenth-percentile level of the L_{A90} noise data acquired over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night-time assessment periods is based on the median of individual ABL's determined over the entire monitoring duration. The RBL is representative of the average minimum background sound level, or simply the background level.

The L_{Aeq} is the equivalent continuous noise level which would have the same total acoustic energy over the measurement period as the varying noise actually measured. The RBL and ambient L_{Aeq} levels are provided in **Table 6-8**.

Table 6-8: Summary of measures results dB(A)

Descriptor	NM1 106 Goulburn Street	Time Interval
$L_{A90\ (day)}$	35[1] (31)	7:00am - 6:00pm
$L_{A90\ (evening)}$	30[1] (25)	6:00pm - 10:00pm
$L_{A90\ (night)}$	30[1] (19)	10:00pm - 7:00am

Descriptor	NM1 106 Goulburn Street	Time Interval
$L_{Aeq\ (day)}$	61	7:00am - 6:00pm
$L_{Aeq\ (evening)}$	51	6:00pm – 10:00pm
$L_{Aeq\ (night)}$	54	10:00pm – 7:00am

Note 1 Table 2.1 of the NPfI specifies a minimum assumed rating background noise level of 35dB(A) for day and 30 dB(A) for evening and night-time. Number in brackets (XX) represents actual measured RBL determined for assessment period.
Source: Acoustic Assessment (RAPT Consulting, 2024)

6.3.2 Potential impacts

Surrounding noise receptors were selected in locations representative of the localised noise environment in the vicinity of the locations selected. The surrounding noise receptors are predominantly made up of residential receptors with one education receptor and one community centre. The assessed receptors are shown in **Figure 6-1** and detailed in Table 2-2 of the acoustic assessment provided in **Appendix 4.**

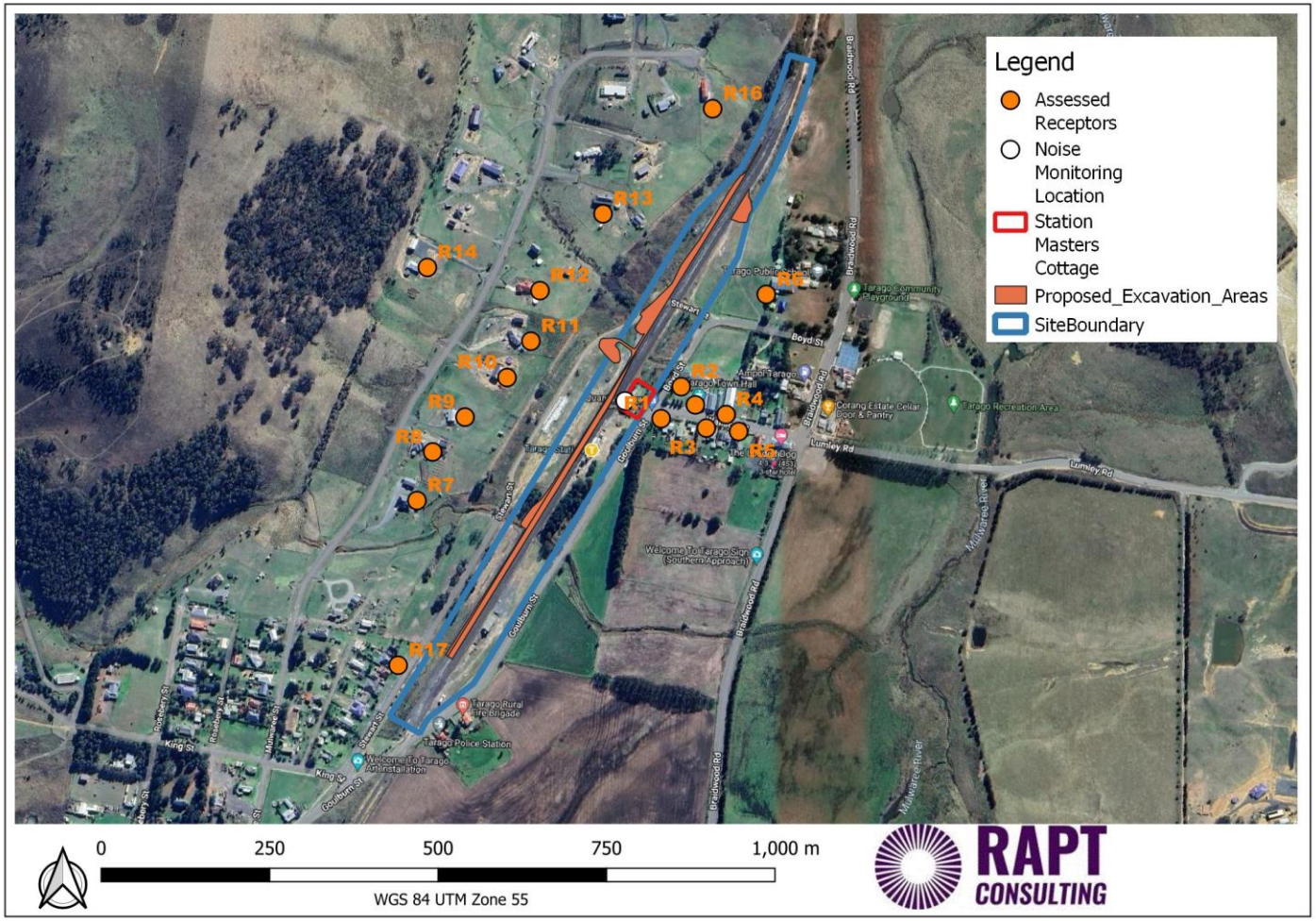

Figure 6-1: Assessed noise receptors

Source: Acoustic Assessment (RAPT Consulting, 2024)

The ICNG provides noise management levels (NML) for construction noise at sensitive receptors. These NML are calculated based on the adopted RBL, refer **Table 6-9**. The levels identified in **Table 6-9** apply at the boundary of the most affected residences / offices or within 30 metres from the residence where the property boundary is more than 30 metres from the residence. The RBL and construction NML derived for residential receptors are detailed in **Table 6-10**.

Table 6-9 ICNG Noise Guidelines at receptors

Period	Noise Management Level LAeq(15 min)
Residential Recommended standard hours	Noise affected level: RBL + 10 Highly noise affected level: 75 dB(A)
Residential Outside recommended standard hours	Noise affected level: RBL + 5
Classrooms at schools and other educational institutions	Internal Noise Level 45 dB(A) (applies when properties are being used Outdoor Noise Level 55 dB(A) (assumes 10 dB(A) loss through an open window)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	65 dB(A)
Offices, retail outlets (external)	70 dB(A)
industrial premises (external)	75 dB(A)

Source: Acoustic Assessment (RAPT Consulting, 2024)

Table 6-10 ICNG NML's for residential receptors Leq(15min) dB(A)

Period	RBL L_{A90}, dB(A)	Standard hours noise management levels, $LA_{eq,15min}$, dB(A)	Out-of-hours noise management levels, $L_{Aeq,15min}$, dB(A)
Day	35	45	40
Evening	30	-	35
Night	30	-	35

Source: Acoustic Assessment (RAPT Consulting, 2024)

6.3.2.1 Construction road traffic noise

Compliance is expected to occur for construction road traffic generated by the Proposal. To increase noise level by 2 dB(A) an increase in traffic volumes of 60% would be required. The Proposal's traffic generation is significantly lower than 60%. Therefore, negligible remediation road traffic noise would be generated because of the Proposal and was not considered further within the acoustic assessment.

6.3.2.2 Construction equipment and noise level

Unless in the event of an emergency, the Proposal would be undertaken under normal construction hours as recommended by the *Interim Construction Noise Guideline (ICNG)*, as follows:

- Between the hours of 7:00 am and 6:00 pm Monday to Friday
- Between the hours of 8:00 am and 1:00 pm Saturday
- Not on Sundays or public holidays.

The Proposal is anticipated to occur over a total of 12-week period and would occur over three phases: removal of railway sleepers, excavation and transportation of contaminated material, and reinstate the site with imported materials.

The indicative plant and equipment proposed for use and their typical noise levels, are provided in **Table 6-11**.

Table 6-11: Typical construction item sound power levels

Plant and equipment	Estimated % of use in 15 minutes[1]	Typical Sound Power Level dB(A)
Excavator	50	110
Front end loader	50	112
Light vehicles	50	103
Truck and dog	50	108
Water truck	50	103
Roller	50	109
Dozer	50	116

[1] The sound power levels for the individual plant items are worst-case levels representative of the equipment operating at maximum capacity. In practice, not all plant items would operate at maximum capacity at the same time and therefore the estimated usage has been adjusted to reflect this. This adjustment is consistent with RAPT Consulting experience on similar projects.

Source: Acoustic Assessment (RAPT Consulting, 2024)

Acoustic modelling was undertaken to predict the noise impact generated by the Proposal. The noise levels input into the model were based on the potential noise levels provided in **Table 6-11**. The noise level is representative of the worst-case impact that may occur from the Proposal works.

The model results indicate that there is the potential for NML to be exceeded at all assessed locations during the Proposal, as detailed in tables 4-2 to 4-6 and shown in Figures 4-3 to 4-13 of the Acoustic Assessment provided in **Appendix 4**. However, the modelling resulted in no exceedances of the highly affected noise level including the event of simultaneous remediation works occurring at the SMC and the Rail Corridor Site. Therefore, the Proposal is expected to comply with the highly affected noise level in all situations. The results indicate that receptors have the potential to experience varying levels of impacts based on the differing location of remediation works in a worst-case scenario, refer **Table 6-12**. As the acoustic modelling is based on a work-case scenario, it is important to note that machinery would generally operate at maximum sound power levels for only brief stages, and it is highly unlikely that all remediation equipment would be operating at their maximum sound power levels at any one time.

Table 6-12: Predicted cumulative construction noise results for each location by level of impact

Level of impact category	Location 1 and SMC	Location 2 and SMC	Location 3 and SMC	Location 4 and SMC	Location 5 and SMC
Generally marginal to minor impact (noise level 1-10 dB(A) above NML)	R6, R7, R8, R17	R8, R17	R6, R17	R6, R16	R6, R16
Generally moderate impact (noise level 11-20 dB(A) above NML)	R4, R5, R9, R11, R10, R12, R13, R14, R15	R4, R5, R6, R7, R9, R10, R11, R12, R13, R14, R15, R16	R5, R7, R8, R9, R12, R13, R14, R15, R16	R4, R5, R7, R8, R10, R11, R12, R13, R14, R15, R17	R4, R5, R7, R8, R9, R10, R11, R12, R13, R14, R15
Generally high impact (noise level >20 dB(A) above NML)	R1, R2, R3, R16	R1, R2, R3,	R1, R2, R3, R4, R10, R11	R1, R2, R3, R9	R1, R2, R3, R17

There is a risk for NML to be exceeded depending on work activities and locations. Therefore, a noise and vibration management plan would be developed and implemented as part of the Proposal to minimise the risk of adverse noise emanating upon the community. The requirements for inclusion in the noise and vibration management plan, as recommended by the Acoustic Assessment, have been detailed in **Table 6-13**.

6.3.2.3 Construction vibration

Determining the probability of causing damage to structures from vibration is complex due to a variety of factors including source, ground conditions, structure type and footings. The magnitude and attenuation of ground vibration is dependent on the following:

- efficiency of the energy transfer mechanism of the equipment (i.e. impulsive, reciprocating, rolling or rotating equipment)
- frequency content
- impact medium stiffness
- type of wave (surface or body)
- ground type and topography.

Due to the above factors, there is inherent variability in ground vibration predictions without site-specific measurement data.

As detailed in **Section 6.5**, listed heritage buildings are located within the Rail Corridor Site, on the eastern side of the railway tracks. The remediation works in close proximity to the heritage listed buildings would occur on the western side of the tracks. However, the distance from the heritage items that require remediation are approximately five metres west of the heritage listed items in some areas. The use of high vibration generating plant has the potential to cause damage to structures including these heritage buildings.

In accordance with the Construction Noise and Vibration Strategy (Transport for NSW, 2019) identified in the vibration assessment, the use of a vibratory roller of less than one tonne capacity is unlikely to impact the heritage buildings from great than 11 metres away. Therefore, a vibratory roller will not be used within 11 metres of any heritage listed buildings. As detailed within **Table 6-13**, the TfNSW Construction Noise and Vibration Strategy and DIN 4150 will be referred to when selecting vibration generating equipment.

6.3.3 Management measures

Management measures to be implemented to reduce the likelihood of potential noise and vibration impacts, and to be included within the CEMP, are provided in **Table 6-13.**

Table 6-13: Management measures - noise and vibration

ID	Management measure	Responsibility	Timing
NV1	The CEMP will include a noise and vibration management plan (NVMP) prepared prior to the commencement of works and implemented through all phases of the proposed construction works.	Remediation contractor	Prior to and during remediation
NV2	The TfNSW Construction Noise and Vibration Strategy (CNVS), DIN4150 and BS 7385 will be used when selecting plant and equipment.	Remediation contractor	Prior to and during remediation
NV3	A dilapidation assessment and report will be undertaken on all heritage listed buildings prior to the commencement of remediation activities. Recommendations of the assessment are to be implemented.	Remediation contractor	Prior to remediation activities
NV4	Affected neighbours to the construction works will be advised in advance of the proposed construction period at least one week prior to the commencement of works. Consultation and communication between the site and neighbours to the site will assist in minimising uncertainty, misconceptions and adverse reactions to noise.	Remediation Contractor	Prior to and during remediation
NV5	All site workers (including subcontractors and temporary workforce) will be advised of the potential for noise impacts upon residents during the induction and encouraged to take all practical and reasonable measures to minimise noise during their activities.	Remediation Contractor	Prior to and during remediation
NV6	A community liaison phone number and permanent site contact will be established so that the noise related complaints, if any, can be received and addressed in a timely manner.	Remediation Contractor	Prior to and during remediation

ID	Management measure	Responsibility	Timing
NV7	The constructor (as appropriate) will establish contact with the residents and communicate, particularly when noisy activities are planned.	Remediation Contractor	Prior to and during remediation
NV8	Works will adopt Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) practices as addressed in the ICNG.	Remediation Contractor	Prior to and during remediation
NV9	Where possible, reversing beepers on mobile equipment will be replaced with low-pitch tonal beepers (quackers). Alternatives to reversing beepers include the use of spotters and designing the site to reduce the need for reversing may assist in minimising the use of reversing beepers.	Remediation Contractor	During remediation
NV10	Where practical, simultaneous operation of dominant noise generating plant will be managed to reduce noise impacts, such as operating at different times or increase the distance between plant and the nearest identified receptors.	Remediation Contractor	During remediation
NV11	High noise generating activities will only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block.	Remediation Contractor	During remediation
NV12	Equipment which is used intermittently will be shut down when not in use.	Remediation Contractor	During remediation
NV13	All engine covers will be kept close while equipment is operating.	Remediation Contractor	During remediation
NV14	The site will be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receptors wherever possible, including material stockpiling and loading and unloading areas.	Remediation Contractor	During remediation
NV15	Where possible, trucks associated with the work area will not be left standing with their engine operating in a street adjacent to a residential area.	Remediation Contractor	During remediation
NV16	Vibratory rollers used for the Proposal will not exceed 1 tonne in size and vibratory rollers will not be used within 11 metres of a heritage listed building.	Remediation Contractor	During remediation

ID	Management measure	Responsibility	Timing
NV17	The Remediation Contractor shall only undertake remediation works inside the hours of 7am – 6pm Monday to Friday and 8am – 1pm Saturday	Remediation contractor	During remediation
NV18	Noise and vibration monitoring will be undertaken, in accordance with the measures identified in the Acoustic Assessment Tarago Stage 2 Remediation (RAPT Consulting, 2024), upon receipt of a complaint to identify and quantify the issue and determine options to minimise impacts. If valid noise and/or vibration data for an activity is available for the complainant property, from works of a similar severity and location, it is not expected that monitoring will be repeated upon receipt of repeated complaints for these activities, except where vibration levels are believed to be potentially damaging to the building.	Remediation contractor	During remediation

6.4 Soil and water

A desktop assessment was conducted that included a review of the following existing reports and mapping:

- *Remedial Action Plan Tarago Rail Corridor* (Ramboll, 2024b)
- *Tarago Rail Corridor and Tarago Area Detailed Site Investigation* (Ramboll, 2020c)
- *Tarago Rail Corridor and Tarago Area Detailed Site Investigation Addendum* (Ramboll, 2020d)
- *December 2023 Surface Water Monitoring Report Tarago, NSW* (Ramboll, 2024a)
- NSW Hydrology (Spatial Service (DCS), 2016) mapping.

6.4.1 Existing environment

A summary of the geology, hydrogeology, topography, and hydrology presented in the RAP (Ramboll, 2024b) is provided in **Table 6-14**.

Table 6-14: Summary of geology, hydrogeology, topography, and hydrology

Site	Details
Geology	Review of the Australian Geoscience Information Network (AUSGIN) portal (Raymond & Sexton, n.d.) identified regional geology including channel and flood plain alluvium (gravel, sand and clay) locally formed as calcrete overlying quaternary sedimentary rock (including some of low metamorphic grade).
Excavation logs	Excavation logs reviewed to assess site geology included a registered onsite groundwater well, one test pit west of the rail formation opposite Tarago Station and nine test pits through the rail formation. The bore log from the registered bore identified fill from surface to 0.6 mbgl overlying clay to 7 mbgl overlying sand to 12.2 mbgl (depth of bore). The test pit west of the rail formation identified silty gravel fill to 0.4 mbgl overlying clay to 0.8 mbgl (depth of test pit). The nine test pits within the rail formation identified a profile consistent with expected layers of ballast, capping and base

Site	Details
	formation materials. These included silty gravel (ballast) from surface generally to 0.5 mbgl overlying black gravelly clay (capping) and grey / brown gravelly clay to depth of test pits (generally 0.7 mbgl).
Location and extent of fill	Fill was identified progressively through site assessments (Ramboll, 2019a-e) broadly across the Rail Corridor Site including in the former load-out complex, the rail formation and adjacent the eastern side of the rail formation. At the load-out complex a maximum of approximately 1 metre of fill (battered to the road to the west, rail to the east and stormwater drain to the north) was observed during targeted test pitting (Ramboll, 2020d) consistent with anecdotal account of application of clay 'capping' following demolition of buildings. Localised stockpiles were identified east and west of the rail formation and north of Tarago Station. These stockpiles were present on an historic survey plan before loop extension works. Stockpiles of contaminated spoil (approx. 750 cubic metres of fouled ballast and approx. 100 cubic metres of timber sleepers) were also created west of the rail formation and opposite Tarago Station.
Onsite wells	One registered groundwater well and five unregistered monitoring wells (MW1 – MW5) are present onsite. Review of the NSW Department of Planning Industry Environment MinView portal identified well ref: GW053976 was installed in 1984 to a depth of 12.2 mbgl with a water bearing zone in sands from 7 mbgl. No other wells were identified onsite. Records indicate the well was constructed using 0.15 metre diameter steel casing with 2 mm wide vertical screen slots. Locations of MW1 – MW5 are presented on figure 4, appendix 1 of the RAP (Ramboll, 2024b) and reported a water bearing zone in gravelly clay from 5 to 6.5 mbgl (Ramboll, 2020c).
Groundwater bore search	Review of the NSW Department of Planning Industry Environment MinView portal (https://minview.geoscience.nsw.gov.au/) identified 12 wells within a 500 metre radius from the Rail Corridor Site.
Depth to groundwater flow	Review of drilling and construction details for registered wells indicates the shallowest regional aquifer is present in gravel layers from 5.5 – 18.6 mbgl with deeper aquifers present in fractures of underlying shale, siltstone and limestone from 50 – 74 mbgl.
Groundwater usage	Assessment of groundwater usage has occurred including: • a search for registered groundwater bores (described above) • a groundwater usage survey delivered by JHR to 94 letter boxes in Tarago. A total of 17 responses were received. • discussion with 43 private property owners during assessments of discrete properties Integrated findings of the groundwater usage survey and discussions with property owners included: • 20 properties were identified where groundwater bores had been installed. • at all properties, groundwater use included (or was assumed to include) watering gardens • at three properties groundwater was reported to include drinking and washing

Site	Details
	• at two properties groundwater use was reported for agriculture • at one property groundwater was reported to be used for filling a pool • at two properties groundwater use remained unclear.
Direction and rate of groundwater flow	It is considered likely that the shallower aquifer flows toward the Mulwaree River approximately 400 metres east of the Rail Corridor Site.
Direction of surface water runoff	Regional surface water runoff is expected to flow toward the Mulwaree River approximately 400 metres east of the Rail Corridor Site.
Topography	Review of Google Earth satellite imagery identifies the Rail Corridor Site elevation of approximately 688 mAHD and slopes down to the east. The rail formation, former load-out complex and unsealed access roads along the west side of the rail formation were observed to be free of vegetation. Some trees were observed west of the rail formation along Stewart Street and east of the rail line to the south of Tarago Station. Grass was generally observed across the remainder of the site. Some vegetative stress was observed though across the Rail Corridor Site and in the surrounding offsite areas of assessment (Goulburn Street footpaths and Tarago Public School) though appeared consistent with the surrounding environment and with stress that could be expected from recent drought conditions.
Background groundwater quality	Review of drilling and construction details indicates groundwater salinity is low.
Preferential water courses	Review of satellite imagery identified the Mulwaree River as the main water course close to site. Three culverts direct surface water beneath the rail formation onsite and then offsite to the east. Each culvert receives water from contaminated areas of site via cess drains on the west side of and running parallel to the rail line as described below: c) The southernmost culvert is located at CH 262.660 and directs a local water course through the rail corridor. This water course is an unnamed tributary to the Mulwaree River. Water discharging from site flows (after high rainfall events only) under the Goulburn Street bridge and through agricultural land before discharging to the Mulwaree River. d) The middle culvert is located at CH 262.354 and directs water to a shallow pond within the corridor and then offsite through a causeway on Boyd Street. From the Boyd Street causeway surface water is partly directed into a drain along the eastern side of Boyd Street and partly discharges into an adjacent paddock. e) The northern culvert is located at CH 262.040 and directs water along an informal flow path to a dam on an adjacent agricultural property. During the routine December 2023 Surface Water Monitoring, the landholder of the farm dam (SW7), refer **Figure 6-2**, indicated that a surface water drain had been constructed to divert water around their property and that the dam was being filled in (Ramboll, 2024a).

Source: Adapted from the Remedial Action Plan (Ramboll, 2024b).

6.4.1.1 Hydrology

The Rail Corridor Site is located within the Wollondilly catchment which forms part of the broader Hawkesbury- Nepean catchment (Water NSW, n.d.). The Mulwaree River, a perennial river which flows to the north, is located approximately 400 metres to the east of the Site. The Mulwaree River starts just east of the Lake George escarpment below Mount Fairy and flows generally north for approximately 66 km to Goulburn, where it joins the Wollondilly River.

Three rail culverts occur within the Rail Corridor Site to facilitate the flow of surface water through the site, refer **Figure 1-1,** from a generally west to east direction. Indicative surface water flows within the Rail Corridor Site have been shown on **Figure 3-2a-d**. Two of the culverts (southern and middle) align with mapped fourth and second Strahler order streams respectively. While the mapped first order Strahler stream is approximately 85 metres north of the northern culvert.

The Rail Corridor Site appears to suffer from some erosion, such as the western entry to the middle culvert, refer **Plate 1** and **Plate 2.**

Surface water usage within the downstream receiving environment has been conservatively assessed as including recreational use and agriculture (irrigation and stock watering) (Ramboll, 2020c).

Plate 1: Western entry to middle rail culvert facing north-east

Source: Ramboll site visit 2019

Plate 2: Western side of southern rail culvert facing north east toward the Tarago Railway Station

6.4.1.2 Surface water quality

Between August 2019 and December 2023, fourteen monitoring events have been complete for surface water upstream and downstream of the Rail Corridor Site (Ramboll, 2024a). The monitoring events were conducted after a period of rainfall as water is generally only present within the drainage lines post rainfall events.

In December 2023 (Ramboll, 2024a), surface water monitoring was undertaken at seven locations on or near the Rail Corridor Site, and three locations at the Mulwaree River, refer **Figure 6-2**. Monitoring of total lead concentrations and dissolved lead concentrations from surface water at locations on and near the site have all reported levels of lead below the site-specific human health (7mg/L) and ecological (0.1mg/L) criterion (Ramboll, 2024a). However, the monitoring did contain results of exceedance for metals other than lead at some sites and concluded the following (Ramboll, 2024a):

- *Two samples from the December 2023 monitoring round (SW3 and SW4 – upstream and downstream of the middle culvert) slightly exceeded ecological criteria for cadmium and cobalt. Statistical assessment indicates temporal trends in concentrations of these contaminants either do not exist or are stable and concentrations within the off-site receiving environment were below ecological criteria. For these reasons risk to ecology associated with these metals is considered low.*
- *Dissolved copper exceeded the Ecological Screening Criteria (ANZG 95% Protection) Fresh Water (0.0014 mg/L) at off-site location SW9 in the Mulwaree River during the December 2023*

monitoring round. SW9 is upstream of the site and was collected as an indicator of background concentrations, therefore is not representative of impacts from the site.

6.4.1.3 Flooding

Due to the topography of the area surrounding the Rail Corridor Site and its proximity to the Mulwaree River, there is a potential for risk of flooding. Currently there are no publicly available flood studies for the Tarago locality, however it was noted within the Draft Tarago Village Strategy (Goulburn Mulwaree Council, 2021) that the "*location of the Mulwaree River to the east of the village and the extent of the flood plain around the river is suggestive of potential flood risk*" (p.19). The Wollondilly and Mulwaree Rivers Flood Study (2016) does not include assessment of the upper extents of the Mulwaree River, such as at Tarago, with the study area only encompassing approximately four kilometres upstream of the Hume Highway. However, the Flood Study (Gouldburn Mulwaree Council, 2016) does describe the Mulwaree River catchment as flat with a wide/dispersed floodplain. This description of the Mulwaree River catchment is supported through the mapping of 'land subject to inundation' that is up to approximately 550 metres wide is areas surrounding the Mulwaree River immediately east of Tarago (Spatial Service (DCS), 2022).

Figure 6-2: Surface Water Monitoring Locations (December 2023)

Source: *December 2023 Surface Water Monitoring Report* (Ramboll, 2024a)

6.4.2 Potential impacts

6.4.2.1 Groundwater

The Proposal involves the remediation of the contaminated areas within the Rail Corridor Site. Excavation works will be guided by field testing, however, are anticipated to occur to a depth of approximately 0.5 mbgl at the redundant Woodlawn Siting and approximately 0.3 mbgl in soils surrounding rail lines. As detailed in **Table 6-14**, details from registered wells indicated the shallowest regional aquifer is present from 5.5 mbgl (Ramboll, 2024b), therefore, it is unlikely that the excavation would be to a depth that would intercept groundwater.

6.4.2.2 Erosion and sedimentation

Excavation of the contaminated soil has the potential to create further onsite contamination and offsite migration of contaminants if not appropriately managed. Potential causes include:

- stockpiling of material prior to discharge off site has potential to create further surficial contamination of soils on site
- runoff from stormwater and dust suppression water has the potential to transport sediments and other particulates off site into the surface water drainage
- excavation, stockpiling and transportation of material has potential to disperse dust, soils and other particulates beyond the remediation works
- oil or fuel spills from onsite machinery and plant has potential to cause surficial surface contamination.

Temporary stockpiling of material would be required during remediation works and would consist of consolidated soils of excavated material from the Rail Corridor Site and the SMC Site where lead is greater than HIL D. The stockpiles will be limited to designated areas within the Rail Corridor Site and be adequately protected to prevent surface water infiltration, migration into surface drainage lines or dispersal of stockpile materials via air. Erosion and sediment controls will be established to manage any stockpile areas.

Runoff from stormwater and dust suppression water has the potential to collect and disperse dust, soils and other particulates beyond the remediation area and into the surface water drainage. The existing surface water drainage lines would continue to collect surface water within the site. Sediment and erosion controls will be installed at appropriate locations to capture and collect these dusts and particulates. Transportation routes internally within the Rail Corridor Site will be established to minimise vehicle movements over exposed soils and unsealed access tracks. Restoration of the Rail Corridor Site with clean imported fill has potential to disperse dust, soils and other particulates beyond the remediation works. The remediation area will be progressively stabilised with topsoil and spray seed as soon as practicable.

In accordance with the RAP (Ramboll, 2024b), the Remediation Contractor will prepare a Soil and Water Management Plan (SWMP) endorsed by a Certified Practitioner in Erosion and Sediment Control and in accordance with the TfNSW (2008) *Erosion and Sediment Management Procedure* to manage soil and water during the works. The Remediation Contractor must define and implement controls to prevent offsite contaminant migration above criteria protective of the receiving environment. Preliminary guidance provided in the Lead Management Action Plan (Ramboll, 2020b) must be addressed.

6.4.2.3 Flooding

While there is a potential risk of flooding at the Rail Corridor Site, due to the nature of the Proposal and the addition of fill material in excavated areas, the Proposal would not increase the

likelihood of flooding and is unlikely to increase the impacts of flooding to the Rail Corridor Site or surrounding properties.

6.4.3 Management measures

Management measure to be implemented to reduce the potential soil and water impacts identified are provided in **Table 6-15.**

Table 6-15: Management measures - soil and water

ID	Management measure	Responsibility	Timing
SW1	A Soil and Water Management Plan (SWMP) will be prepared by a suitably qualified person, in accordance with the TfNSW (2008) *Erosion and Sediment Management Procedure* and the *Tarago Lead Management Plan* (Ramboll, 2020b). The SWMP will be endorsed by a Certified Practitioner in Erosion and Sediment Control.	Remediation Contractor	Prior to and during remediation
SW2	The SWMP will include details on type and location of appropriate sedimentation controls to prevent erosion and runoff that will be installed prior to the commencement of the Proposal and the maintenance schedule of each.	Remediation Contractor	Prior to remediation
SW3	All personnel will be informed during the site induction of their obligations to minimise erosion and protect water quality.	Remediation Contractor	Prior to and during remediation
SW4	Erosion and sediment controls will be checked on a weekly basis and after a rain event (>10mm) in a 24 hour period and maintained as required.	Remediation Contractor	During remediation
SW5	Sediment controls will be installed and maintained in/or adjacent to each rail formation culvert onsite.	Remediation Contractor	Prior to and during remediation
SW6	Meteorological conditions will be monitored daily with remediation activities adjusted to suit conditions. During periods of high wind remediation will be suspended. During period of high rainfall (greater than or equal to 10 millimetres of rain within a 24 hour period) remediation will be suspended.	Remediation Contractor	Prior to and during remediation
SW7	The Remediation Contractor will define and implement controls to prevent offsite contaminant migration above criteria protective of the receiving environment.	Remediation Contractor	During remediation
SW8	Vehicle refuelling (if undertaken on site) will be undertaken using mobile refuelling vehicles equipped with spill containment equipment and a spill kit.	Remediation Contractor	During remediation
SW9	All chemicals and fuels on site will be stored in accordance with the applicable Safety Data Sheet.	Remediation Contractor	During remediation

ID	Management measure	Responsibility	Timing
SW10	An appropriate spill kit is to be on site at all times and any spillage is to be immediately cleaned up. In the event of a large or hazardous spill, the fire brigade, police, ambulance and EPA will be contacted as appropriate.	Remediation Contractor	During remediation
SW11	Vehicles exiting the Proposal site onto public roads will be inspected for mud and dirt. If required vehicles will be manually cleaned prior to exiting the Proposal site.	Remediation Contractor	During remediation
SW12	Double handling of material will be avoided, and material transfers optimised to limit time material is stockpiled or handled.	Remediation Contractor	During remediation
SW13	Stockpile management as per section 7.3 of the Tarago Lead Management Action Plan (Ramboll, 2020b) (Ramboll Rev 7 27/10/2023) must be addressed as a minimum.	Remediation Contractor	Prior to, during and post remediation
SW14	Equipment cleaning and maintenance will be undertaken in an appropriately controlled area to reduce the potential for contaminated materials to migrate offsite.	Remediation Contractor	During remediation
SW15	As soon as practicable following completion of remediation and validation activities, the surface will be stabilised (application topsoil and grass) to reduce the potential for erosion and sediment loss.	Remediation Contractor	Post remediation
SW16	One round of surface water monitoring will occur after greater than 10 mm of rainfall in a 24 hour period post remediation.	Remediation Contractor	Post remediation

6.5 Historic heritage

The historic heritage desktop assessment included a review of the following:

- Goulburn Mulwaree Shire LEP local heritage items mapping
- State Heritage Register
- National Heritage List
- Commonwealth Heritage List
- ARTC Section 170 Heritage and Conservation Register (ARTC, 2019)
- TAHE Section 170 Register (TAHE, 2023)
- UGL Regional Linx Section 170 Register (UGL Regional Linx, 2023).

The Tarago Railway Precinct is listed (SHI # 4806298) within the TAHE Section 170 Register (TAHE, 2023). The Register noted that the Tarago Railway Precinct has a Conservation Management Plan (TAHE, 2023). The Tarago Railway Precinct is listed under the UGL Regional Linx Section 170 Register (SHI#3150047/ 5012238/ 2934067) (UGL Regional Linx, 2023).

A SoHI (OzArk, 2024) was completed for the remediation works proposed to be undertaken within the Rail Corridor Site. A copy of the SoHI has been provided in **Appendix 5** with a summary of the report provided in this Section.

6.5.1 Existing environment

The works would take place within the identified heritage curtilage of the Tarago Railway Station group that is listed on the State Heritage Register (#01262) and the *Goulburn Mulwaree Local Environmental Plan 2009* (I591). The heritage curtilage of both listings includes the Tarago Railway Station, Signal Box and Goods Shed. While the heritage curtilage of the LEP listing encompasses all three buildings, the Goods Shed is not individually noted within the LEP listing. A site inspection was completed on 24 November 2022 by OzArk.

The Tarago Railway Station, refer **Plate 3**, is identical to that of Bungendore and several other towns which consist of a main building flanked by two smaller buildings at either end. The Tarago Railway Station brick platform dates from 1884 with the asphalt surface being a modern addition. The Signal Box, refer **Plate 4**, built in 1938, is a simple square structure with a hipped corrugated iron roof and timber framed fibro walls. The internal fixtures of the Signal Box remain intact. The Goods Shed, refer **Plate 5**, built in 1884, is a large rectangular structure clad in corrugated iron with a gabled corrugated iron roof extending to form awnings on either side of the building. The Goods Shed includes a small weatherboard clad office wing. Images of the buildings are provided within the SoHI provided in **Appendix 5**.

No heritage items listed under the National Heritage List or Commonwealth Heritage List were identified within proximity to the Railway Corridor Site.

Plate 3: Tarago Railway Station from the southeast

Source: SoHI (OzArk, 2024)

Plate 4: Signal Box from the southwest

Source: SoHI (OzArk, 2024)

Plate 5: Goods Shed from the northeast

Source: SoHI (OzArk, 2024)

6.5.2 Potential impacts

The heritage listings are located on the eastern side of the rail corridor. The rail formation forms a physical barrier between the heritage listings and the remediation activities, refer **Figure 3-2**. The remediation activities are predominantly proposed to occur on the western side of the rail tracks, within the Woodlawn rail siding, with one portion at the northern most point of the remediation area occurring on the eastern side of the rail tracks. The area on the eastern side of the rail tracks to be remediated is located approximately 320 metres north of the heritage listed items. The site inspection confirmed that the built elements of the heritage items, being the Tarago Railway Station and platform, Signal Box, and Goods Shed, were separated from the remediation area by at least two sets of railway lines.

As previously discussed, the remediation area is considerably disturbed from the construction and maintenance of the Goulburn-Bombala rail line and the former load-out complex. The areas being remediated generally consist of landforms that are either an earthen bund in a highly modified area or simple slopes that the existing rail line has been cut into.

The works will also not alter the visual amenity of the area and will not obstruct views to the heritage items. The works, being the removal of contaminated soils and its replacement with non-contaminated soil, will not dominate the items, and when the works are complete, will not alter the aesthetic appeal of the items being exemplars of small, rural railway buildings.

Therefore, the proposed activities and works will not change the existing fabric of any existing building or associated platforms and has a very low likelihood of harming significant unknown heritage items or archaeological deposits. The built elements of the heritage listed items are at least two sets of railway lines from the remediation area, and thus significant fabric of the heritage items will not be harmed as a result of the Proposal. As shown in **Figure 3-2**, the listed heritage items would not be directly impacted by the excavation works required to remediate the Rail Corridor Site.

6.5.2.1 State heritage listing

As the Proposal is unlikely to harm heritage items and is for the purpose of removing contaminated soils, Standard Exemption 8 (Excavation) under the Heritage Act is applicable and therefore the Proposal does not require approval under subsection 57(1) of the Heritage Act. If substantial intact archaeological relics of state or local significance or any Aboriginal objects are discovered during excavation, all activities/works must stop, and Heritage NSW is to be notified. The following conditions apply to all standard exemptions that the Proposal must comply with:

a) activities/works must not disturb or remove any relics
b) excavation must not compromise the structural integrity of any heritage structure or significant landscape elements
c) activities/works must not affect archaeological evidence, for example the archaeology of foundation trench deposits from the time of original construction
d) if an environmental assessment is required in relation to (b) of the specified activities/works, the assessment must be undertaken prior to Part 5 of the EP&A Act commencing any work to remove the contaminated soil.

To record and evaluate the application of a Standard Exemption to an item of state heritage significance, the Heritage Council recommends that the person undertaking the works document the results of the works in the form presented in appendix 1 of the SoHI, provided in **Appendix 5**. The s57(2) Exemption under the *Heritage Act 1977* was endorsed by TfNSW Heritage on 16 October 2024. A copy of the endorsement has been provided in **Appendix 2**.

6.5.2.2 Local heritage listing

No further consultation is required with Council prior to the works proceeding. As there are no places to harm or modify the existing significant fabric of the Tarago Railway Station and Signal Box, or the associated platform, the works would have an inconsequential impact on the local heritage values of the station building. As per Section 5.10 of the Goulburn Mulwaree LEP, TfNSW must notify Council of the proposed developed, and Council advise TfNSW in writing before any work is carried out that it is satisfied that the proposed development will not adversely affect the heritage significance of the heritage item. However, under Section 2.11 of the Transport and Infrastructure SEPP, consultation with Council is not required to carry out works that will have a minor or inconsequential impact to the heritage values of a locally listed item. Therefore, provided that significant fabric associated with the Tarago Railway Station and Signal Box is not harmed, the works may proceed without further consultation with Council.

As per the SoHI, provided in **Appendix 5**, mitigation measures will be implemented as part of the Proposal and are provided in **Table 6-16.**

6.5.3 Management measures

Management measure to be implemented to reduce potential historic heritage impacts identified, are provided in **Table 6-16.**

Table 6-16: Management measures - historic heritage

ID	Management measure	Responsibility	Timing
HH1	Inductions for work crews will include a cultural heritage awareness procedure so that the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.	Remediation Contractor	Prior to and during remediation
HH2	If items are encountered during the works that are thought to have significant heritage value the TfNSW Unexpected heritage items procedure (Transport for NSW, 2024b) must be followed.	Remediation Contractor	During remediation
HH3	The significant fabric of the Tarago Railway Station, the Signal Box, the associated platform, and the Goods Shed will not be harmed.	Remediation Contractor	During remediation
HH4	The Proposal works within the state heritage curtilage for Tarago Railway Station group (SHR item 01262) may proceed under Standard Exemption 8 as it relates to contaminated soils. The SoHI, provided in **Appendix 5**, will be retained as a record of this determination and the documentation provided in Appendix 1 of the SoHI will be completed.	Remediation Contractor	Post remediation
HH5	Additional heritage assessment will be undertaken if the scope of works is greater than that shown in **Figure 3-2a-e.**	Remediation contractor	During remediation

6.6 Aboriginal cultural heritage

A desktop assessment was undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water, 2010) and included a review of the following:

- AHIMS search of Lot 22 DP1202608 including a 50 metre and 200 metre buffer
- State Heritage Inventory mapping (NSW Government, n.d. c)
- National Native Title Tribunal Spatial Data (National Native Title Tribunal, n.d.)
- Indigenous land and sea management projects (National Indigenous Australians Agency, n.d.).

The TfNSW Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI) letter is provided in **Appendix 6**.

6.6.1 Existing environment

The Traditional Custodians of the region are the Ngunnawal peoples who have a continued cultural, spiritual and historical connection to the Canberra region. The Ngunnawal country generally covers "the area from Yass to Boorowa, toward Coolac, the highlands west of the Shoalhaven and back to Goulburn" (Ngunnawal, n.d.). The Proposal is located within the area managed by the Pejar Local Aboriginal Land Council.

A basic AHIMS search was conducted of Lot 22 DP1202608 with a 50 metres and a 200 metres buffer (refer **Appendix 7**). Two Aboriginal sites were identified within the 200 metres buffer from Lot 22 DP1202608, while no sites were identified within 50 metres of the Lot.

6.6.2 Potential impacts

While the Proposal is located within a landscape likely to indicate the presence of Aboriginal objects, being within 200 metres of a watercourse, as the area has historically been disturbed, the Proposal is unlikely to harm any Aboriginal objects. The Due Diligence assessment conducted has been provided in **Table 6-17**. However, to reduce the potential that any Aboriginal objects are harmed, an unexpected finds protocol will be implemented as part of the Proposal.

Table 6-17: Due Diligence process

Due Diligence Process Step	Response
1. Will the activity disturb the ground surface?	Yes, the Proposal includes the potential excavation of the identified remediation area. The depth and area of soil excavation would be guided by in field sampling but is not anticipated to be greater than 0.5 mbgl.
2a. Search the AHIMS	A basic AHIMS search was completed on 16 July 2024. No known Aboriginal heritage items were located within the remediation area.
2b. Activities in area where landscape features indicate the presence of Aboriginal Objects	One second order and one fourth order Strahler Stream pass through the remediation area. Areas within 200 metres of a watercourse are likely to indicate the presence of Aboriginal objects. The remediation area has historically been disturbed and therefore Aboriginal objects are unlikely to be present.
If as a result of completing steps 2a and 2b it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the	There are no know items of Aboriginal significance within 50 metres of the Rail Corridor Site and the remediation area has previously been disturbed. The Proposal can

Due Diligence Process Step	Response
proposed activity you can proceed with caution without applying for an AHIP.	therefore proceed with caution and an AHIP is not required.

6.6.3 Management measures

Management measure to be implemented to reduce the likelihood of potential Aboriginal cultural heritage impacts are provided in **Table 6-18.**

Table 6-18: Management measures - Aboriginal cultural heritage

ID	Management measure	Responsibility	Timing
AH1	All remediation workers will be appropriately informed during the site induction on how to identify potential Aboriginal objects or items.	Remediation contractor	Prior to remediation
AH2	Inductions for work crews will include a cultural heritage awareness procedure so that the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.	Remediation contractor	Prior to and during remediation
AH3	If items are encountered during the works that are thought to have significant heritage value the TfNSW Unexpected heritage items procedure (Transport for NSW, 2024b) must be followed.	Remediation contractor	During remediation
AH4	Any confirmed Aboriginal heritage items would be registered on the AHIMS database.	Remediation contractor	During remediation

6.7 Biodiversity

A desktop assessment was conducted which included a review of the following databases and mapping:

- Biodiversity Values Map and Threshold Tool (Department of Climate Change, Energy, the Environment, and Water, n.d. a)
- High Environmental Values of the South East Tablelands Planning Region 2022 – detailed mapping (NSW Department of Climate Change, Energy, the Environment and Water, 2016)
- Protected Matters Search Tool (Department of Climate Change, Energy, the Environment and Water, n.d. b)
- NSW Department of Planning BioNet Atlas species sighting search (NSW Government, n.d. a)
- Native vegetation regulatory map (Department of Climate Change, Energy, the Environment, and Water, 2024)
- State Vegetation Type Mapping (NSW Department of Climate Change, Energy, the Environment and Water, 2023)
- Fisheries NSW Spatial Portal (Department of Primary Industries, n.d.).

6.7.1 Existing environment

6.7.1.1 Vegetation communities

The Rail Corridor Site and Lot 1 DP 595856 are largely disturbed with some remnant trees, predominantly in the southern portion of the Rail Corridor Site, with some clusters of trees located

immediately south of the Tarago Station Platform on either side of the rail track. A Protected Matters Search (Department of Climate Change, Energy, the Environment and Water, n.d. b) was conducted on 16 July 2024 including the Rail Corridor Site and a one kilometre buffer area. The search results have been provided in **Appendix 1.**

The search identified that the Rail Corridor Site is likely to contain Natural Temperate Grassland of the South Eastern Highlands and may contain the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, which are both critically endangered threatened ecological communities under the EPBC Act.

Plant community types mapped within the Rail Corridor Site consist of (NSW Department of Climate Change, Energy, the Environment and Water, 2023), refer **Figure 6-3**:

- PCT 3338 Goulburn Tableland Forest Hollow Grassy Woodland
- PCT 3347 Southern Tableland Creekflat Ribbon Gum Forest
- PCT 3373 Goulburn Tableland Box-Gum Grassy Forest.

Previous site inspection of the Rail Corridor Site undertaken by NGH in 2015 noted that there is no naturally-occurring vegetation communities at the site and it was "*predominantly a mixture of native grass and exotic weed species with regrowth native trees and shrubs growing on the cutting to the northern extent of works*" (p. 27) with no endangered ecological communities identified (NGH environmental, 2015).

Historic aerial imagery between 1975 and 2005 was reviewed as part of the assessment. The historic aerial image from 5 January 1997, refer **Figure 6-4**, shows the disturbance which occurred in the central portion of the Rail Corridor Site and Lot 1 DP595856 from its associated use with the load out facility. The Rail Corridor Site and Lot 1 DP595856 have been largely disturbed since prior to 1975. This aligns with the results of the geological test pits indicating the presence of fill material around the former load out facility. This area has also been impacted recently (2022) by works within the Rail Corridor Site for the loop extension. Therefore, the central portion of Lot 1 DP 595856 and the Rail Corridor Site are unlikely to contain the threatened ecological communities and species identified within the protected matters search. Additionally, no threatened species listed within the protected matters search tool have been recorded within or adjacent to the Rail Corridor Site as per the BioNet Atlas search conducted.

As shown in **Figure 6-3**, there is potential impact to PCT 3347 at the southern culvert due to the remediation works extent including the existing vegetated area.

Photographs of the Rail Corridor Site, taken in 2019, have been provided in **Plate 1**, **Plate 2**, and **Plate 6** to **Plate 13**.

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Figure 6-3: Plant Community Types within Lot DP595856 and the Rail Corridor Site

Figure 6-4: Tarago January 1997

Source: Department of Customer Service (Department of Customer Service, 1997)

Plate 6: Remnant vegetation predominantly within the Rail Corridor Site, facing south west

Source: Ramboll EMP site visit 18 October 2024

Plate 7: Partial view of Rail Corridor Site toward Lot 1 DP595856 of the former load-out complex facing north

Source: Ramboll EMP site visit 18 October 2024

Plate 8: View of Rail Corridor Site from north of the middle rail culverts facing south west

Source: Ramboll EMP site visit 18 October 2024

Plate 9: View of the eastern exit of the northern rail culvert facing east

Source: Ramboll EMP site visit 18 October 2024

Plate 10: View of the western entry to the northern rail culvert facing north-east

Source: Ramboll EMP site visit 18 October 2024

Plate 11: View of the eastern exit of the middle rail culvert south west toward the former SMC

Source: Ramboll EMP site visit 18 October 2024

Plate 12: View of western entrance of the southern rail culvert over fourth order Strahler stream facing north

Source: Ramboll EMP site visit 18 October 2024

Plate 13: View of eastern exist of southern rail culvert over fourth order Strahler stream facing south towards Goods Shed

Source: Ramboll EMP site visit 18 October 2024

6.7.1.2 Threatened species

The Protected Matters Search (refer **Appendix 1**) identified 50 threatened flora and fauna species that may or are likely to occur within the Rail Corridor Site or its one kilometre buffer. However, as discussed in **Section 6.7.1.1**, the Rail Corridor Site and adjacent Lot 1 DP 595856 are highly disturbed and maintained due to requirements of rail operations. Therefore, due to historic and current disturbance, the remediation area is unlikely to contain identified threatened species or associated habitat.

6.7.1.3 Weeds

Weeds have been previously recorded within the Rail Corridor Site (NGH environmental, 2015) and are shown as currently present in photographs of the site (refer **Plate 1**, **Plate 2,** and **Plate 6** to **Plate 12**).

6.7.1.4 Key fish habitat

The fourth order stream which crosses the southern portion of the Rail Corridor Site, facilitated by the southern rail culvert, and the Mulwaree River, located approximately 400 metres east of the Rail Corridor Site are mapped as Key Fish Habitat (Department of Primary Industries, n.d.).

6.7.2 Potential impacts

Ground disturbance activities associated within the Proposal would be limited to previously disturbed areas and would likely be focused on the remediation area identified in **Figure 3-2a-e**. The existing access track through Lot 1 DP595856 and Lot 22 DP1202608 would be the predominant area utilised to access the Rail Corridor Site and remediation area. Therefore, it is unlikely that the Proposal would significantly impact on threatened species or endangered ecological communities, if remaining within the already highly disturbed areas.

As shown within **Plate 8,** the Rail Corridor Site is highly disturbed, with the remediation area generally comprising of maintained grassland areas. The high disturbance of the Rail Corridor Site includes the following contributions:

- load-out complex demolition
- distribution of approximately one metre of fill in areas
- maintenance as a rail corridor
- highly eroded in areas, refer **Plate 1** and **Plate 2**
- loop extension completed in 2022.

Tree removal may occur to facilitate the remediation activities. If tree removal is necessary, it would be limited to that required to facilitate the remediation and would be in accordance with the Tree and hollow replacement guideline (Transport for NSW, 2023b). Fauna surveys of trees required for removal would occur prior to tree removal, in accordance with the Biodiversity Management Guideline (Transport for NSW, 2024a) and Tree and hollow replacement guideline (Transport for NSW, 2023b), along with additional management measures provided in **Table 6-19** to limit the potential impacts of tree removal.

6.7.2.1 Ecological communities

Ground disturbance activities associated within the Proposal would be limited to the previously disturbed areas and focused within the Rail Corridor Site. Existing access tracks would be the predominant area utilised to access the remediation area and conduct the remediation works. Therefore, it is unlikely that the Proposal would significantly impact on threatened ecological communities, if remaining within the already highly disturbed areas. If remediation works are to

extend into the area of mapped PCT at the southern culvert, as shown on **Figure 6-3**, an ecological assessment would be required to determine the PCTs conformance with a threatened ecological community. Alternatively, disturbance to the PCT is to be avoided.

6.7.2.2 Threatened species

The Rail Corridor Site and Lot 1 DP595856 are predominantly cleared of vegetation and therefore provides minimal habitat potential for threatened flora and fauna. The Proposal would predominantly be restricted to the centre of the Rail Corridor Site that is already highly disturbed, and would predominantly utilise existing access tracks, where possible. Excavation would likely be limited to the identified remediation area shown in **Figure 3-2a-e**. Significant impacts to biodiversity are therefore considered to be unlikely due to the disturbed nature of the Rail Corridor Site and Lot 1 DP595856, as shown within **Plate 1, Plate 2,** and **Plate 6** to **Plate 13** and due to the limited area of excavation resulting from the remediation works.

Vegetation clearing within areas identified as PCT 3373 or PCT 3338 should be inspected by an ecologist and deemed as non-conforming to the White Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC and Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions – profile | NSW Environment, Energy and Science respectively prior to vegetation clearing occurring. Or alternatively, be avoided.

Management measures have been provided in **Table 6-19**, to reduce the potential impacts in the instance where fauna enter the site.

6.7.2.3 Key fish habitat

The Proposal may directly impact the western entrances of the southern rail culvert facilitating the fourth order stream, refer **Plate 12**, and the second order stream into the middle rail culvert, refer **Plate 1**.

Figure 3-2a-e identifies the area of contaminated material removal includes the areas surrounding the culvert aprons. The *Controlled activities – Guidelines for instream works on waterfront land* (Department of Planning and Environment, n.d.) would be considered for the design and construction of instream works.

The Proposal would not directly impact the Mulwaree River, with management and mitigation measures implemented to reduce the potential for indirect impacts. Sediment and erosion controls would be implemented as per the CEMP, refer **Table 6-15**, that would further reduce the potential for any indirect impacts to Mulwaree River.

6.7.2.4 Weeds

Weeds have the potential to spread as a result of the Proposal through the transportation of material and vehicles to and from the Rail Corridor Site. Management measures that would be implemented to reduce the likelihood of spreading contamination, refer **Table 6-3**, would also reduce the potential of weeds from being transferred from the Rail Corridor Site, additionally, weed specific measures have been provided in **Table 6-19** .

6.7.3 Management measures

Management measures to be implemented to reduce the likelihood of potential biodiversity impacts are provided in **Table 6-19.**

Table 6-19: Management measures - biodiversity

ID	Management measure	Responsibility	Timing
B1	Disturbance will be restricted to the minimum area required for the Proposal. Remediation zones will be clearly demarcated to show the limit of the proposed works and "no-go" zones will be established to avoid unnecessary disturbance of adjacent vegetation and waterways.	Remediation contractor	Prior to and during remediation
B2	Fencing will be installed around trees in the vicinity of the southern culvert to prevent machinery from accessing surrounding vegetation.	Remediation Contractor	Prior to remediation
B3	If tree removal is required, the trees to be removed will be clearly demarcated and a fauna survey to be conducted by a suitably trained and qualified ecologist prior to removal.	Remediation Contractor	Prior to remediation
B4	Where vegetation clearing within areas identified as PCT 3373 or PCT 3338 is required, the areas will be inspected by an ecologist to determine non-conformance to the White Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC and Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions, respectively prior to vegetation clearing occurring.	Remediation contractor	Prior to remediation
B5	Vehicles, machinery and construction material will not be placed within the drip zones of trees (minimum 5 metres from the base of the tree) to avoid disturbance of the root zones, if retention of tree is to occur.	Remediation contractor	During remediation
B6	If native fauna species are present within the Site, workers will avoid the species or wait until the species has relocated from the site.	Remediation contractor	During remediation
B7	If native fauna is injured or trapped onsite, the Remediation contractor would contact the local wildlife authority to arrange for collection/removal from the site.	Remediation contractor	During remediation
B8	Site personnel will take reasonable steps so that machinery is free of weed material before entering and exiting the site to avoid the introduction or spread of weeds.	Remediation contractor	During remediation
B9	Any instream works would be limited to the remediation activity as far as practicable.	Remediation contractor	During remediation
B10	An erosion and sediment control management plan will be developed specific to the in-stream works.	Remediation contractor	During remediation

ID	Management measure	Responsibility	Timing
B11	Recommendations obtained from the Department of Primary Industries and Regional Development are to be implemented.	Remediation contractor	During remediation

6.8 Waste

A desktop assessment was conducted to assess the potential impacts of waste generated by the Proposal. The following reports were reviewed as part of the assessment:

- *Rail Sleeper Waste Classification – Tarago Loop extension* (Ramboll, 2020a)
- the RAP (Ramboll, 2024b)
- *Remediation Options Assessment* (Ramboll, 2024c)

6.8.1 Existing environment

The estimated waste material expected to be generated by the Proposal are detailed in **Table 6-20.**

Table 6-20: Volume projections for the remediation materials

Location on Site	Area (m^2)	Depth (mbgl)	Volume (m^3)
Redundant Woodlawn siding proposed excavation	4,000	0.5	2,000
Lead impact area surrounding the siding	6,300	0.3	1,890
Railway sleepers – GSW[1]			100
Total	**11,300**		**4,240**

[1] GSW is General Solid Waste. Lead concentrations in rail sleepers do not consistently exceed site assessment criteria however offsite disposal was adopted during previous works and aesthetics may drive offsite disposal again.

6.8.1.1 Excavated material

The *Remediation Options Assessment* (Ramboll, 2024c), refer **Section 2.2**, conducted in consultation with TfNSW identified the preferred remediation option was offsite disposal of contaminated excavated material in the purpose built containment cell at the Lake George Mine located in Captains Flat. However, as the containment cell would not be constructed and able to receive the material at the time of the remediation works, the contaminated excavated material would be transported north to an appropriately licensed facility in western Sydney.

6.8.1.2 Railway sleepers

The *Rail Sleeper Waste Classification – Tarago Loop extension* (Ramboll, 2020a) concluded that the approximate 100 cubic metres of railway sleepers, is classified as GSW under the *Waste Classification Guidelines* (NSW EPA, 2014 ac).

6.8.2 Potential impacts

Waste generated as part of the Proposal would be managed in accordance with the EPA's *Waste Classification Guideline* (NSW EPA, 2014 ac) and include:

- approximately 3,890 cubic metres of excavated contaminated spoil, to be confirmed through onsite validation testing while undertaking the remediation
- approximately 100 cubic metres of railway sleepers
- general domestic waste generated by the remediation personal such as food scraps, plastic and paper containers
- sewage from remediation personal. Portable facilities, including amenities would be positioned within the Rail Corridor Site for the duration of the Proposal. .

In addition to that noted above, approximately 450 tonnes of excavated contaminated spoil from the SMC site would be temporarily stockpiled within the Rail Corridor Site and transported with the contaminated spoil excavated form the remediation area to an appropriately licensed facility.

All excavated material generated by the Proposal would be appropriately tracked as described in the RAP (Ramboll, 2024b), and discussed in **Section 6.1.2**. As discussed in **Section 3**, all excavated material from the Proposal and stockpiled from SMC with levels greater than HIL D criteria, would be transported to an appropriately licensed facility in western Sydney.

Through the appropriate implementation of management measures the Proposal is not expected to result in significant environmental or human health impacts from the management of waste. To reduce the likelihood of potential impacts management measures have been provided in **Table 6-21.**

6.8.3 Management measures

Management measures relating to waste management of hazardous materials has been provided in **Table 6-3** and have not been repeated in **Table 6-21.** Additional management measures to be implemented to reduce the likelihood of potential waste impacts are provided in **Table 6-21.**

Table 6-21: Management measures - waste

ID	Management measure	Responsibility	Timing
WM1	Designated waste storage and stockpile area(s) will be established within the Rail Corridor Site (Part Lot 22 DP1202608) and waste will be appropriately segregated and stored based on the waste stream, being demolition material, contaminated excavated material, or general solid waste.	Remediation contractor	During construction
WM2	All waste generated onsite will be appropriately transported off site and disposed of at approved and appropriately licensed waste management facility.	Remediation contractor	During construction
WM3	The site waste tracking system will be set up and remediation personnel trained in its implementation prior to works commencing. The waste material tracking will be undertaken in accordance with the RAP (Ramboll, 2024b) or as updated.	Remediation contractor	Prior to remediation
WM4	All remediation personnel will be informed during the site induction of the waste management hierarchy and the measures to be implemented	Remediation contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
WM5	The waste storage and stockpile area(s) will be maintained in an organised condition, with waste material to be transported to and stockpiled in the designated storage area protected by appropriate controls and containment measures	Remediation contractor	During remediation
WM6	The waste storage and stockpile area(s) will be clearly signed to ensure correct placement of material and prevent further contamination	Remediation contractor	During remediation
WM7	Any wastes will be classified and managed in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014 ac) and the RAP (Ramboll, 2024b)	Remediation contractor	During remediation
WM8	Where possible recyclable wastes generated by construction personnel (paper, cans and bottles) will be collected by a recycling contractor. Remaining wastes will be collected for disposal at a licensed waste management facility.	Remediation contractor	During remediation
WM9	The environmental controls and containment measures placed on waste stockpiles will be inspected and maintained as required on a weekly basis and after rain and strong wind events.	Remediation contractor	During remediation
WM10	If unexpected materials are discovered, the materials are to be segregated into a stockpile and possible disposal options investigated.	Remediation contractor	During remediation
WM11	No waste material will be left on site once the remediation works have been completed.	Remediation contractor	During remediation

6.9 Air quality

A desktop assessment was undertaken to assess potential air quality impacts resulting from the Proposal. The following was reviewed as part of the desktop assessment:

- *Tarago Air Quality Monitoring Report* (Ramboll, 2024e).

6.9.1 Existing environment

Meteorological conditions

The closest meteorological station managed by the Bureau of Meteorology (BOM) is located at Lake Bathurst (Somerton) approximately five kilometres to the north of the Rail Corridor Site. The BOM Automatic Weather Station (AWS) is station number 70036. This station's records include rainfall statistics. Based on historical data provided by the AWS station, the region is characterised by moderate rainfall, with a mean annual rainfall of approximately 675.8 millimetres. Rainfall is consistent year-round with the highest rain fall experienced in October, November and January and the lowest in April, May and July (Bureau of Meteorology, 2024b).

Climate information has been obtained from the BOM station at Goulburn Airport AWS, station number 70330, located approximately 30 kilometres north of the Proposal site. Monthly mean minimum temperatures range between 0.4°C to 12.9°C, with monthly mean maximum

temperatures ranging between 11.9°C to 28.0°C, based on the long-term average record between 1990 to 2024 (Bureau of Meteorology, 2024a).

Surrounding air shed

The air quality of the air shed surrounding Tarago is rural in nature influenced by the following air emissions sources from surrounding land uses:

- the Woodlawn Bioreactor located approximately seven kilometres to the west
- the Crisps Creek intermodal facility associated with the Woodlawn Bioreactor
- the rail transport network
- wind entrained dust from exposed areas due to rural practices or recreational activities.

Air quality monitoring

To inform air quality impacts resulting from retained lead-containing ore within the Goulburn-Bombala rail corridor, air quality monitoring has been undertaken in Tarago, NSW by Ramboll on behalf of TfNSW. The air quality monitoring program was commissioned on 18 October 2022 and consists of dust deposition monitoring at four locations and TSP and lead sampling by high-volume air sampler at one location (Ramboll, 2024e). The program focuses on lead in particulate form, both for ambient airborne fractions and deposited dust.

Wind direction and speed recorded at BOM's Goulburn Airport AWS as well as CSIRO's The Air Pollution Model (TAPM) which is centred around Tarago, show the predominant wind direction is from the west with a secondary easterly component (Ramboll, 2024e).

Offsite migration of the contaminant via airborne dust was identified in early investigations. Elevated concentrations of lead in rainwater tank sediment and internal dust were identified close to the Rail Corridor Site indicating limited offsite migration of contaminants in air borne dust has occurred (Ramboll, 2024b). As detailed within the RAP (Ramboll, 2024b), the *Tarago Lead Management Action Plan* was developed by Ramboll in 2020 to address associated exposure risks. This included removal of dust from affected houses and rainwater tanks, application of a polymer sealant to contamination areas within the Rail Corridor Site as an interim measure to limit potential contaminant migration offsite. The polymer has been inspected and reapplied to areas as required during investigation of remedial options. Surface water and air quality monitoring completed following this indicate risks of exposure to site contamination in the surrounding environment are low.

The air quality monitoring undertaken since October 2022 (Ramboll, 2024e) is monitoring that has been undertaken post-polymer sealant application. The monitoring consists of the following:

- deposited dust and lead measures continuously throughout each month
- total suspended particulates (TSP) including lead contained within the TSP measured for a 24-hour period completed every one day in six days.

As reported in *Air Quality Monitoring Report* (Ramboll, 2024e), lead has not been measured above the detection limit of 1 µg across the monitoring network at any point since the program commenced in 2022. All locations measured deposited dust (insoluble solids) below the annual average criteria of 4 g/m^2/month and the rolling annual average for each location remains under criteria, except for one instance in December/January 2024 where a result of 4.1 g/m^2/month was measured at the Mulwaree Street location (DDG4-B), refer **Table 6-22** and **Figure 6-5**. The reason for the high deposited dust is unknown, however, as the prevailing winds during monitoring were predominantly from the east, Rail Corridor Site may have contributed to the

higher measurement. Lead was detected in all 24-hour average TSP samples, but in all cases the concentrations were below the annual average criterion.

Table 6-22: Measured lead content in deposited dust and deposited dust at four properties around Tarago, NSW

Month	DDG1, Stewart St		DDG2, Station Masters Cottage		DDG3, Boyd St		DDG4-B, Mulwaree St	
	Lead (µg)	Insoluble solids (g/m² /month)	Lead (µg)	Insoluble solids (g/m² /month)	Lead (µg)	Insoluble solids (g/m² /month)	Lead (µg)	Insoluble solids (g/m² /month)
Oct/Nov 2022	<1	0.3	<1	0.5	<1	1.2	[a] N/A	
Nov/Dec 2022	<1	0.9	<1	1.3	<1	2.2	<1	2.2
Dec/Jan 2023	<1	<0.1	<1	0.3	<1	1.2	<1	4.7
Jan/Feb 2023	<1	0.4	<1	0.5	<1	0.7	<1	0.7
Feb/Mar 2023	<1	0.9	<1	1.5	<1	1.1	<1	0.7
Jun/Jul 2023	<1	0.1	<1	0.3	<1	0.1	<1	0.4
Jul/Aug 2023	<1	0.3	<1	0.9	<1	0.6	<1	0.9
Aug/Sep 2023	<1	0.2	<1	0.3	<1	0.2	<1	0.2
Sep/Oct 2023	<1	1	<1	0.9	<1	1.1	<1	0.2
Dec/Jan 2024	<1	0.1	<1	0.4	<1	1.9	<1	4.1
Jan/Feb 2024	<1	1	<1	0.8	<1	0.9	<1	1
Feb/Mar 2024	<1	0.9	<1	0.6	<1	0.4	<1	0.3
Rolling annual average	**<1**	**0.5**	**<1**	**0.7**	**<1**	**1.0**	**<1**	**1.4**

Limit of reporting = 1 µg for lead and 0.1 g/m²/month for insoluble solids
[a] Averaged in next report (short exposure period during November)

Source: Tarago Air Quality Monitoring Report (Ramboll, 2024e)

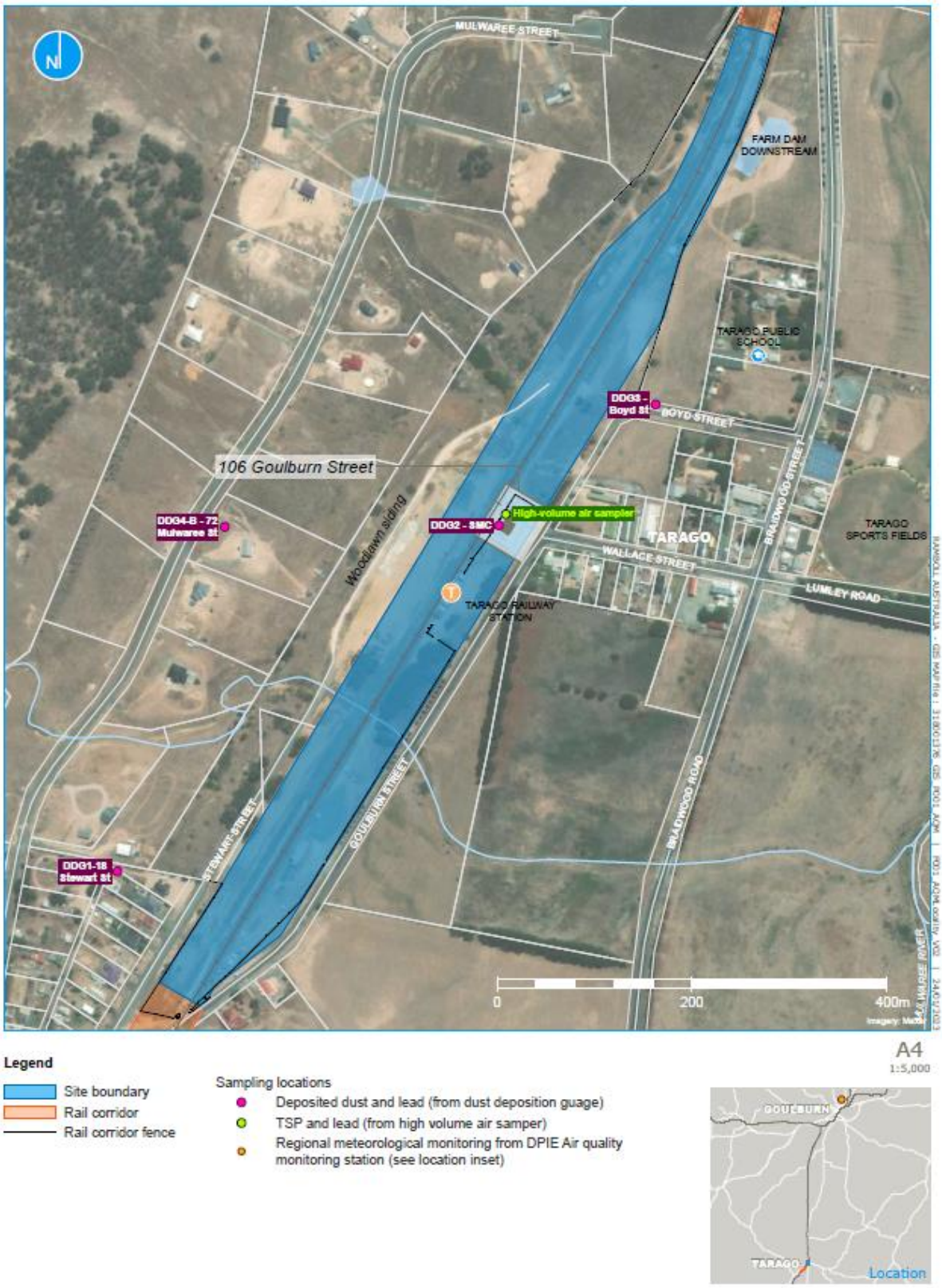

Figure 6-5: Map of air quality monitoring locations within Tarago

Source: *Tarago Air Quality Monitoring Report* (Ramboll, 2024e)

6.9.2 Potential impacts

The Proposal has the potential to impact air quality via the generation of dust and potentially cause offsite migration of particulate matter and contaminants if not appropriately managed. Dust generating activities that have the potential to cause airborne entrapment of pollutants include:

- excavation and earth moving
- bulk handling and transportation of materials, including loading and unloading of bulk materials, and wheel generated dust
- stockpiling material
- wind erosion of stockpiles and/or exposed areas.

Dust has the potential to impact the surrounding locality through suspension in the air, affecting visibility and cause health impacts. The lead-containing dust can settle on the ground and contaminate the soils, spreading the contamination to uncontaminated areas. Due to the history of lead contamination in the area, visible dust is also likely to result in psychological impacts to the local community. A dust management plan would be development for the Proposal to reduce the likelihood and potential impacts of dust generation.

The remediation works would be lead risk work as defined by SafeWork NSW. Notification to SafeWork NSW would be required and specific measures implemented to protect exposure levels of onsite workers. The main route of human exposure is via inhalation and ingestion of lead dust. Therefore, measures would be aimed at minimising dust generation and exposure at the site as per the Tarago Lead Management Action Plan (Ramboll, 2020b).

The primary pollutants generated by the Proposal are expected to be particulate matter, including TSP, particulate matter less than 10microns in aerodynamic diameter (PM_{10}), particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) and lead (µg).

The effectiveness of remediation at mitigating exposure risks associated with site contamination in the receiving environment would be assessed through air quality monitoring during and post remediation. Appropriate dust management controls would be implemented throughout the remediation works to limit the impacts to local air quality and any potential associated impacts. To monitor the dust generated from the Proposal, a dust management plan would be developed and would include a dust monitoring program to be conducted throughout the Proposal works. The monitoring would include real-time alerts to notify the Remediation Contractor of any exceedances. Details surrounding the requirements of the dust management plan have been detailed within **Table 6-23.**

6.9.3 Management measures

Management measure to be implemented to reduce the potential air quality impacts identified, and to be included within the CEMP, are provided in **Table 6-23.**

Table 6-23: Management measures - air quality

ID	Management measure	Responsibility	Timing
AQ1	A Dust Management Plan will be included within the CEMP and implemented prior to and during remediation activities, and will include all elements identified within the Remedial Action Plan (version 7 June 2024) and any updated revisions that may follow.	Remediation Contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
AQ2	Air quality monitoring will be undertaken in accordance with the Dust Management Plan	Remediation Contractor	Prior to and during remediation
AQ3	All workers will be briefed on the requirements under the Dust Management Plan and CEMP.	Remediation contractor	Prior to remediation
AQ5	In the event of a dust complaint, the following will be implemented • stop work • identify dust source and review control measures • assess requirements for additional monitoring or investigation of impact • review trigger alert system to determine if unacceptable impact measured at site boundary.	Remediation contractor	During remediation
AQ6	Workers outside the excavator shall be used minimally and on an as need basis. These workers shall remain outside a 20 metre exclusion zone from the excavator, ideally upwind. If there is a need to be closer to the excavator (i.e. within 20 metre exclusion zone) workers will wear a P2 mask and a Type 5 single use disposable Tyvek suit.	Remediation contractor	During remediation
AQ7	Works will cease immediately if it is apparent that dust generation could impact on nearby sensitive receptors, and suitable management measures would be applied. This may include the use of the water cart or an alternative dust suppressant, or waiting for more favourable weather conditions (i.e. less windy conditions).	Remediation contractor	During remediation
AQ8	Stockpiles will be covered when not required to be accessible for current remediation works.	Remediation contractor	During remediation
AQ9	All vehicles and trailers will be covered when transporting materials and waste off site.	Remediation contractor	During remediation
AQ10	All plant and machinery will have emission control devices complying with Australian design standards.	Remediation contractor	During remediation
AQ11	Excavation activities will be completed so that visible airborne dust is not generated.	Remediation contractor	During remediation
AQ12	A watercart will be kept on-site at all times.	Remediation contractor	During remediation
AQ13	A telemetry enabled air quality gauge and software alerting of trigger values will be installed at the Site to inform trigger levels for monitoring of air quality for the duration of the Proposal.	Remediation Contractor	Prior to and during remediation

ID	Management measure	Responsibility	Timing
AQ14	Air quality monitoring will occur for three months post remediation. Risks from site contamination in airborne dust within the surrounding environment will be considered acceptable when lead in samples from airborne and/or deposited dust collected are below validation criteria as per the Validation Plan within the RAP (Ramboll, 2024b)	Remediation contractor	Post remediation

6.10 Land use, property and visual amenity

6.10.1 Existing environment

6.10.1.1 Land use and property

The identified remediation area is located within the Rail Corridor Site, comprising Part Lot 22 DP1202608, and Part Lot 1 DP 595856. As detailed in **Table 3-1**, the Rail Corridor Site is zoned RU2 for rural use and is owned by the TAHE, while Lot 1 DP 595856 is zoned RU5 Village and is owned by Veolia. As per the RAP (Ramboll, 2024b), the surrounding environment of the Rail Corridor Site, identified through a review of satellite imagery and a site inspection, comprises the following:

- a residence with a former dam that received waters from the Rail Corridor Site (during surface water flow), located adjacent (east of) the northern end of site, this dam has now been filled in by the landholder (Ramboll, 2024b)
- Tarago Public School approximately 120 metres east of the northern end of the Rail Corridor Site
- residences approximately 70 metres west of the south end of Rail Corridor Site and east of Goulburn Street
- Tarago Recreation Area approximately 300 metres east of Rail Corridor Site.

The remediation area would primarily be accessed from Stewart Street via land privately owned by Veolia (Lot 1 DP 595856 and Lot 2 DP714595). Stewart Street is a public road for approximately 220 metres from the intersection with King Street before continuing north east on Lot 1 DP595856 and Lot 2 DP 714595, refer **Figure 1-1**. The existing access track that traverses Lot 1 DP595856 and Lot 2 DP714595 was historically utilised for the former load-out complex previously located within the Rail Corridor Site (Ramboll, 2024b). More recently, Lot 1 DP595856 was utilised to stockpile fouled ballast from loop extension works that occurred within the Goulburn-Bombala rail corridor (the Rail Corridor Site).

The eastern portion of the remediation area would be accessed from Goulburn Street via Boyd Street.

6.10.2 Potential impacts

6.10.2.1 Land use and property

The works associated with the Proposal would be predominantly contained within Part Lot 22 DP1202608, with a small area extending into Part Lot 1 DP595856 proposed for remediation, refer **Figure 3-2a-e**. TfNSW are currently exploring the option of an agreement with Veolia, for the remediation works of Lot 1 DP 595856, and the utilising of Lot 1 DP 595856 and Lot 2 DP714595 for access to the Rail Corridor Site, that would be required prior to commencement of the Proposal.

As detailed in **Section 6.2**, access to the Rail Corridor Site would be accessed via Stewart Street and Goulburn Street. Lot 2 DP714595, will only be used to access the rail corridor through the pre-existing access track for the transportation of equipment and materials.

6.10.2.2 Visual amenity

There would be some temporary minor visual impacts from the remediation works being undertaken. These impacts would be in the form of temporary construction and ancillary equipment required to facilitate the remediation and validation works.

6.10.3 Management measures

Management measure to be implemented to reduce the likelihood of potential land use, property and visual amenity impacts are provided in **Table 6-24.**

Table 6-24: Management measures - land use

ID	Management measure	Responsibility	Timing
LU1	Goulburn Mulwaree Council will be notified of the remediation works at least 30 days prior to commencement.	Remediation contractor	Prior to remediation
LU2	An agreement with Veolia will be arranged to facilitate use Lot 1 DP595856 and Lot 2 DP714595 for access to the Rail Corridor Site.	Remediation Contractor	Prior to and during remediation
LU3	The Site will be maintained in a tidy and organised manner.	Remediation Contractor	During remediation

6.11 Human health risks

6.11.1 Existing environment

The remediation area contains material contaminated with lead (Ramboll, 2024b). Lead exposure is known to have significant impacts to human health from short and long term exposure and can include damage to kidneys, nerves or brain, and even infertility (SafeWork NSW, n.d.). Females with reproductive capacity have been identified as the most sensitive receptor at work sites (Resource Regulator, Department of Regional NSW).

6.11.2 Potential impacts

There is a risk of human health impacts from the Proposal through the exposure to lead contaminated material. The main route of human exposure is via inhalation and ingestion of lead dust (Ramboll, 2020b). As children and pregnant women are particularly prone to lead related health effects, care should be taken to avoid the spread of lead dust and stop its spread to workers, homes and premises (Ramboll, 2020b). As per **Table 6-23**, a dust management plan will be prepared and implemented as part of the Proposal to reduce the risk of generating airborne dust that could impact the surrounding community and workers. Mitigating dust generation and exposure at the site level is the most appropriate form of protection for the community

As discussed in **Section 6.1** the remediation works would be lead risk work as defined by SafeWork NSW. Notification to SafeWork NSW would be required and specific measures implemented to protect exposure levels of onsite workers. To reduce the likelihood and severity of

impacts, a worker health and safety plan would be developed and implemented as part of the Proposal. Additionally, as per **Table 6-23**, a dust management plan would be prepared and implemented as part of the Proposal to reduce the risk of generating airborne dust that could impact the surrounding community and workers.

Human health impacts to the community would be mitigated through the implementation of air quality, water and soil safeguards included through **Section 6**. As noted in **Table 6-27**, the surrounding community will be notified prior to the proposal commencement with indicative timing of the remediation works.

6.11.3 Management measures

Management measure to be implemented to reduce the potential human-health impacts identified are provided in **Table 6-25**. Management measures relating to human-health impacts that have been previously identified, such as in **Table 6-23**, have not been repeated in **Table 6-25**.

Table 6-25: Management measures – human health

ID	Management measure	Responsibility	Timing
HUH1	A worker health and safety plan will be development and implemented as part of the Proposal in accordance with the following: • the *Tarago Lead Management Action Plan* (Ramboll, 2020b) (Ramboll Rev 7 27/10/2023) • SafeWork NSW *Lead Guidance* • SafeWork NSW 2022 *Code of Practice Managing risks of hazardous chemicals in the workplace* including the use of the hierarchy of control measures • *Managing individual exposure to lead in Australia – A guide to health practitioners* (Ramboll, 2024b) • NSWE EPA LeadSmart – *Work Smart: Tradespeople and Mining Industry Workers* (LeadSmart) • *Workplace Exposure Standards for Airborne Contaminants* (Safe Work Australia, 2024) • *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2017*.	Remediation Contractor	Prior to and during remediation
HUH2	The worker health and safety plan will address the exposure abatement and hazard elimination measures detailed in Table 7-1 of the Tarago Lead Management Action Plan (Ramboll, 2020b) (Ramboll Rev 7 27/10/2023).	Remediation Contractor	Prior to and during remediation
HUH3	Should any previously unidentified potentially hazardous material be identified during remediation, works will cease in the vicinity of the material and the potentially hazardous materials inspected by an experienced occupational hygienist.	Remediation contractor	During remediation

ID	Management measure	Responsibility	Timing
HUH4	Workers will remain in enclosed cabins of machinery at all times when conducting remediation works.	Remediation contractor	During remediation
HUH5	All vehicles and machinery will have windows closed at all time and an operating cabin air circulation system (air conditioning) equipped with high efficiency filter, and good seals to eliminate cabin dust intrusion.	Remediation contractor	During remediation
HUH7	During excavation of contaminated materials within 50 metres of Tarago Station no visible dust is to be generated and: • Access is to be prevented to the station platform until 10 minutes prior to arrival/departure of any passenger trains • Excavation works are to stop 10 minutes prior to arrival/departure of any passenger trains	Remediation contractor	Prior to and during remediation

6.12 Community socio-economic

6.12.1 Existing environment

Key social demographics for the Tarago township (SAL13773) are provided in **Table 6-26** (Australian Bureau of Statistics, 2021). The median age in Tarago is consistent with the NSW average (40 compared to 39). Tarago has a higher proportion of 'technicians and trade workers' occupations compared to the NSW average (15.9 percent compared to 11.9 percent).

Table 6-26 Key demographics for the Tarago locality

Attribute	Units	Tarago (SAL13733)	NSW
Population and people			
Population	No.	510	8,072,163
Median age	No.	40	39
People per household	No.	2.6	2.6
Indigenous status	%	2.0	3.4
Dwellings	No.	246	2,900,468
Labour and employment			
Unemployment rate	%	4.1	4.9
In the labour force	%	91.5	58.7
Income			
Median household weekly income	$	2,027	1,829

Attribute	Units	Tarago (SAL13733)	NSW
Median weekly rent	$	400	420
Average monthly household mortgage	$	19,93	2,167
Occupations (top)			
Technicians and trade workers	%	15.9	11.9
Machinery operators and drivers	%	6.6	6.0
Labourers	%	12.8	8.2
Clerical and administrative workers	%	14.7	13.0
Managers	%	21.7	14.6
Sales workers	%	6.2	8.0
Community and Personal Service Workers	%	9.3	10.6
Professionals	%	17.4	25.8

Source: (Australian Bureau of Statistics, 2021)

The town consists of following services and amenities:

- Tarago Bushfire Brigade
- Police Station
- Tarago Preschool
- Tarago Public School
- Town Hall
- multi-purpose courts
- recreation area
- playground
- rest stop and amenities.

Local businesses include the Loaded Dog Hotel, The Tarago Times, service station, community postal service and other services relating to food, agriculture, health and beauty and retail outlets.

The surrounding community is currently negatively impacted by the contamination and the potential impacts associated with its presence. Regular community updates have been issued via email and the project website. Community information sessions have been held since March 2020 to inform the community of the lead contamination and keep them informed of ongoing management and remediation plans (Transport for NSW, 2024).

6.12.2 Potential impacts

Some localised impacts would result from the Proposal and negatively impact the surrounding community. There would be some minor traffic impacts associated with the transportation of waste material from the Rail Corridor Site, as discussed in **Section 6.2.2**, the additional traffic generated by the Proposal is minor and unlikely to impact on the local community. Additionally, management measures, such as restricting the transport of materials from the Rail Corridor Site to occur outside of school bus pick up and drop off times would further reduce the impact on the community.

However, the remediation works would have a beneficial impact on the surrounding community through the removal of contaminated material and the implementation of long-term management measures for the contaminated material to remain in-situ.

As discussed in **Section 6.10,** the Proposal is anticipated to result in temporary visual impacts on the surrounding community.

The implementation of management measures detailed throughout this REF and summarised in **Table 7-1**, would reduce the potential for environmental, human health, and social impacts associated with the Proposal.

6.12.3 Management measures

Management measures to be implemented to reduce the likelihood of potential socio-economic impacts are provided in **Table 6-27.**

Table 6-27: Management measures - socio-economic

ID	Management measure	Responsibility	Timing
SE1	The community of Tarago will be notified 10 days prior to the remediation works being undertaken, including the anticipated commencement date and duration of remediation works.	TfNSW	Prior to remediation
SE2	The CEMP will detail the requirements for the complaint's mechanism for the Proposal. At a minimum the CEMP will detail: • the publicly available complaints phone number, which will be provided to residents at the time of works notification, and how it will be appropriately managed. • requirements for complaints recording and the resolution process.	Remediation contractor	Prior to remediation

6.13 Cumulative environmental effects

To assess the potential cumulative impacts of the Proposal with other developments occurring within its vicinity, the following were reviewed:

- Major Project website (NSW Government, n.d. b)
- Goulburn Mulwaree Council Operational Plan 2024-2025 (Gouldburn Mulwaree Council, 2024)
- *Acoustic Assessment – Tarago Stage 2 Remediation* (RAPT Consulting, 2024)
- *Tarago Rail Corridor Remediation – Stage 2 Traffic and Transport Impact Assessment* (SCT Consulting, 2024b).

6.13.1 Existing environment

The following major projects were identified in proximity to the Proposal, being:

- Woodlawn Advanced Energy Recover Centre
- Woodlawn Bioreactor expansion and modifications
- Woodlawn Mechanical Biological Treatment Facility
- Blind Creek Solar Farm
- Capital Wind Farm Stage 2.

The three Woodlawn projects are associated with the existing Veolia facility located approximately 8.5 kilometres west of the Proposal:

- the Woodlawn Advanced Energy Recover Centre is a State Significant Development is currently at the response to submissions phase (NSW Government, n.d. d) of the project, therefore, is unlikely to occur concurrently with the Proposal.
- the Woodlawn Bioreactor modifications are currently in the planning phase with the new leachate storage dam proposal currently under assessment.
- the Woodlawn Mechanical Biological Treatment Facility modification (Element Environmental, 2024) is currently under assessment. The proposed project does not indicate a timeframe for construction but notes a two month construction period. As the project is currently under assessment it is unlikely that the construction would occur concurrently to the Proposal.

Blind Creek Solar Farm (NGH, 2022) is located approximately 18 kilometres south west of the Proposal. The Solar Farm is expected to commence construction in December 2024 therefore is not likely to contribute to cumulative impacts (Infrastructure Partners Australia, n.d.)

Up to date information regarding the expected construction period of the Capital Wind Farm Stage 2 was unable to be found. Therefore, there is potential that the Capital Wind Farm Stage 2 construction may commence or occur at the same time as the Proposal.

As discussed in **Section 1.3**, the Proposal is part of larger remediation works. At the time of writing, the associated remediation works are expected to occur in a staged approach, with Stage 1 of the Proposal to occur concurrently with the remediation of the Stockpile located on Lot 1 DP595856, while Stage 2 of the proposal is to occur concurrently with the Rail Corridor remediation.

6.13.2 Potential impacts

As the Proposal is anticipated to take approximately 12 weeks to complete, the cumulative traffic and noise generated by the Proposal is not likely to significantly contribute to cumulative impacts when considered with other projects.

6.13.2.1 Traffic

While the construction of the Woodlawn Mechanical Biological Treatment Facility and Bioreactor leachate dam modifications, Woodlawn Advanced Energy Recovery Centre, and Blind reek Solar Farm are not anticipated to occur at the same time as the Proposal, a conservative approach has been taken assessing the worst-case scenario for the cumulative impact assessment (SCT Consulting, 2024a; SCT Consulting, 2024b).

The TTIA cumulative impact assessment scenario results show that the two intersections utilised for the Stage 2 works (inclusive of the Rail Corridor Site and SMC remediation) (Goulburn Street/King Street and Braidwood Road/Wallace Street) are forecast to still operate at a good level of service (LoS A) during both peak hours with marginal increases in the delays and degree

of saturation (DoS). Overall, the two intersections would have spare capacity to accommodate the cumulative traffic generated by all developments assessed in the modelling and would not be significantly impacted by the increased traffic volumes.

Braidwood Road, north of Wallace Street, is forecast to carry a maximum of about 1,240 vehicles per day accounting for Stage 2 works and 1,470 vehicles per day under the cumulative assessment with the major projects. This will still comply with Austroads 2016 *Guide to Road Design Part 3: Geometric Design* standards and therefore, no upgrades are indicated.

6.13.2.2 Noise

As the Woodlawn project are located over eight kilometres from the Proposal and therefore are unlikely to result in significant cumulative noise impacts with the Proposal.

The Stage 2 Acoustic Assessment (RAPT Consulting, 2024) included modelling of the SMC Stage 2 works and remediation works at different locations within the Rail Corridor Site. The cumulative impact of the SMC and the Rail Corridor Site being remediated concurrently was modelled from five locations within the Rail Corridor Site. The modelling indicated that there is potential for the NML's to be exceeded at all receptor locations. However, the highly affected noise level is expected to be complied with in all situations of the concurrent Rail Corridor Site and SMC remediation (RAPT Consulting, 2024). As discussed in **Section 6.3** a noise and vibration management plan will be implemented for the proposal to minimise the risk of adverse noise emanating upon the community.

6.13.3 Management measures

No additional management or mitigation measures have been proposed in addition to those identified in **Table 6-7** and **Table 6-13**.

7. Summary of environmental management measures

7.1 Environmental management measures

A summary of the management measures to be implemented as part of the Proposal has been provided in **Table 7-1**.

Table 7-1: Summary of management measures

ID	Management measure	Responsibility	Timing
Contamination			
C1	Remediation of the Site will occur in accordance with the Remedial Action Plan Tarago Rail Corridor (version 7 June 2024) and any updated revisions that may follow.	Remediation Contractor	Prior to and during remediation
C2	Transportation of the contaminated material, being Category 1 trackable waste, will be undertaken by a suitably qualified contractor that holds the relevant EPL.	Remediation Contractor	Prior to and during remediation
C3	The CEMP will include incident management and spill response procedures detailing procedures for responding to and manage chemical/fuel spills and should include: • Procedure for dealing with fire/ spills/ containment • Contact details of responsible Site personnel • Contact details for emergency services.	Remediation Contractor	Prior to and during remediation
C4	All site equipment will be appropriately cleaned to reduce the likelihood of spreading contamination	Remediation contractor	During remediation
Traffic and transport			
T1	The CEMP will include a traffic management plan developed in consultation with the Goulburn Mulwaree Council and reviewed and approval by the TfNSW before remediation commences.	Remediation Contractor	Prior to remediation
T2	The waste transporter will hold an EPL to transport category 1 trackable waste in accordance with the POEO Act.	Remediation Contractor	Prior to remediation
T3	An agreement with Veolia will be arranged to facilitate use Lot 1 DP595856 and Lot 2 DP714595 for access to the Rail Corridor Site.	Remediation Contractor	Prior to remediation
T4	The transportation of remediation materials will be managed to maximise vehicle loads to minimise vehicle movements, where practicable.	Remediation Contractor	Prior to and during remediation
T5	Adequate traffic control measures are to be implemented to ensure site safety and take into consideration the entry and egress of vehicles from the main site entrance or other approved access points.	Remediation Contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
T6	General signposting of the remediation vehicle routes with appropriate heavy vehicle and construction warning signs to be agreed between Goulburn Mulwaree Council and Transport for NSW.	Remediation Contractor	Prior to remediation
T7	All personnel required to drive on the site will be informed during the site induction of the access restrictions and transport routes within the site.	Remediation Contractor	Prior to remediation
T8	A speed limit of 20km/hr will be imposed on internal roads.	Remediation Contractor	Prior to and during remediation
T9	Warning signs will be installed along the local road network impacted by the Proposal to warn existing road users of entering and exiting Proposal traffic.	Remediation Contractor	Prior to remediation
T10	All personnel required to transport remediation materials on public roads will be informed during the site induction of the required transport routes.	Remediation Contractor	Prior to and during remediation
T11	Carpooling is to be promoted for workers, and other shared transport initiatives.	Remediation Contractor	Prior to and during remediation
T12	The internal access restrictions and transport routes will be altered as required to reflect the progression of the remediation works.	Remediation Contractor	During remediation
T13	All vehicles or trailers used to transport the excavated material will be covered before leaving the Rail Corridor Site.	Remediation Contractor	During remediation
T14	All vehicles will utilise the existing access tracks when accessing the site via Stewart Street.	Remediation Contractor	During remediation
T15	Heavy Vehicle Chain of Responsibility Plan is required to comply with TfNSW requirements. The Remediation Contractor must provide the Heavy Vehicle Chain of Responsibility Plan with the traffic management plan for Principal approval.	Remediation contractor	Prior to and during remediation
Noise and vibration			
NV1	The CEMP will include a noise and vibration management plan (NVMP) prepared prior to the commencement of works and implemented through all phases of the proposed construction works.	Remediation contractor	Prior to and during remediation
NV2	The TfNSW Construction Noise and Vibration Strategy (CNVS), DIN4150 and BS 7385 will be used when selecting plant and equipment.	Remediation contractor	Prior to and during remediation
NV3	A dilapidation assessment and report will be undertaken on all heritage listed buildings prior to the commencement of remediation activities.	Remediation contractor	Prior to remediation activities

ID	Management measure	Responsibility	Timing
	Recommendations of the assessment are to be implemented.		
NV4	Affected neighbours to the construction works will be advised in advance of the proposed construction period at least one week prior to the commencement of works. Consultation and communication between the site and neighbours to the site will assist in minimising uncertainty, misconceptions and adverse reactions to noise.	Remediation Contractor	Prior to and during remediation
NV5	All site workers (including subcontractors and temporary workforce) will be advised of the potential for noise impacts upon residents during the induction and encouraged to take all practical and reasonable measures to minimise noise during their activities.	Remediation Contractor	Prior to and during remediation
NV6	A community liaison phone number and permanent site contact will be established so that the noise related complaints, if any, can be received and addressed in a timely manner.	Remediation Contractor	Prior to and during remediation
NV7	The constructor (as appropriate) will establish contact with the residents and communicate, particularly when noisy activities are planned.	Remediation Contractor	Prior to and during remediation
NV8	Works will adopt Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) practices as addressed in the ICNG.	Remediation Contractor	Prior to and during remediation
NV9	Where possible, reversing beepers on mobile equipment will be replaced with low-pitch tonal beepers (quackers). Alternatives to reversing beepers include the use of spotters and designing the site to reduce the need for reversing may assist in minimising the use of reversing beepers.	Remediation Contractor	During remediation
NV10	Where practical, simultaneous operation of dominant noise generating plant will be managed to reduce noise impacts, such as operating at different times or increase the distance between plant and the nearest identified receptors.	Remediation Contractor	During remediation
NV11	High noise generating activities will only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block.	Remediation Contractor	During remediation
NV12	Equipment which is used intermittently will be shut down when not in use.	Remediation Contractor	During remediation
NV13	All engine covers will be kept close while equipment is operating.	Remediation Contractor	During remediation

ID	Management measure	Responsibility	Timing
NV14	The site will be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receptors wherever possible, including material stockpiling and loading and unloading areas.	Remediation Contractor	During remediation
NV15	Where possible, trucks associated with the work area will not be left standing with their engine operating in a street adjacent to a residential area.	Remediation Contractor	During remediation
NV16	Vibratory rollers used for the Proposal will not exceed 1 tonne in size and vibratory rollers will not be used within 11 metres of a heritage listed building.	Remediation Contractor	During remediation
NV17	The Remediation Contractor shall only undertake remediation works inside the hours of 7am – 6pm Monday to Friday and 8am – 1pm Saturday	Remediation contractor	During remediation
NV18	Noise and vibration monitoring will be undertaken, in accordance with the measures identified in the Acoustic Assessment Tarago Stage 2 Remediation (RAPT Consulting, 2024), upon receipt of a complaint to identify and quantify the issue and determine options to minimise impacts. If valid noise and/or vibration data for an activity is available for the complainant property, from works of a similar severity and location, it is not expected that monitoring will be repeated upon receipt of repeated complaints for these activities, except where vibration levels are believed to be potentially damaging to the building.	Remediation contractor	During remediation
Historic heritage			
HH1	Inductions for work crews will include a cultural heritage awareness procedure so that the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.	Remediation Contractor	Prior to and during remediation
HH2	If items are encountered during the works that are thought to have significant heritage value the TfNSW Unexpected heritage items procedure (Transport for NSW, 2024b) must be followed.	Remediation Contractor	During remediation
HH3	The significant fabric of the Tarago Railway Station, the Signal Box, the associated platform, and the Goods Shed will not be harmed.	Remediation Contractor	During remediation
HH4	The Proposal works within the state heritage curtilage for Tarago Railway Station group (SHR item 01262) may proceed under Standard Exemption 8 as it relates to contaminated soils. The	Remediation Contractor	Post remediation

ID	Management measure	Responsibility	Timing
	SoHI, provided in **Appendix 5**, will be retained as a record of this determination and the documentation provided in Appendix 1 of the SoHI will be completed.		
HH5	Additional heritage assessment will be undertaken if the scope of works is greater than that shown in **Figure 3-2a-e.**	Remediation contractor	During remediation
Aboriginal cultural heritage			
AH1	All remediation workers will be appropriately informed during the site induction on how to identify potential Aboriginal objects or items.	Remediation contractor	Prior to remediation
AH2	Inductions for work crews will include a cultural heritage awareness procedure so that the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.	Remediation contractor	Prior to and during remediation
AH3	If items are encountered during the works that are thought to have significant heritage value the TfNSW Unexpected heritage items procedure (Transport for NSW, 2024b) must be followed.	Remediation contractor	During remediation
AH4	Any confirmed Aboriginal heritage items would be registered on the AHIMS database.	Remediation contractor	During remediation
Biodiversity			
B1	Disturbance will be restricted to the minimum area required for the Proposal. Remediation zones will be clearly demarcated to show the limit of the proposed works and "no-go" zones will be established to avoid unnecessary disturbance of adjacent vegetation and waterways.	Remediation contractor	Prior to and during remediation
B2	Fencing will be installed around trees in the vicinity of the southern culvert to prevent machinery from accessing surrounding vegetation.	Remediation Contractor	Prior to remediation
B3	If tree removal is required, the trees to be removed will be clearly demarcated and a fauna survey to be conducted by a suitably trained and qualified ecologist prior to removal.	Remediation Contractor	Prior to remediation
B4	Where vegetation clearing within areas identified as PCT 3373 or PCT 3338 is required, the areas will be inspected by an ecologist to determine non-conforming to the White Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC and Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands	Remediation contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
	and South East Corner Bioregions, respectively prior to vegetation clearing occurring.		
B5	Vehicles, machinery and construction material will not be placed within the drip zones of trees (minimum 5 metres from the base of the tree) to avoid disturbance of the root zones, if retention of tree is to occur.	Remediation contractor	During remediation
B6	If native fauna species are present within the Site, workers will avoid the species or wait until the species has relocated from the site.	Remediation contractor	During remediation
B7	If native fauna is injured or trapped onsite, the Remediation contractor would contact the local wildlife authority to arrange for collection/removal from the site.	Remediation contractor	During remediation
B8	Site personnel will take reasonable steps so that machinery is free of weed material before entering and exiting the site to avoid the introduction or spread of weeds.	Remediation contractor	During remediation
B9	Any instream works would be limited to the remediation activity as far as practicable.	Remediation contractor	During remediation
B10	An erosion and sediment control management plan will be developed specific to the in-stream works.	Remediation contractor	During remediation
B11	Recommendations obtained from the Department of Primary Industries and Regional Development are to be implemented.	Remediation contractor	During remediation
Waste management			
WM1	Designated waste storage and stockpile area(s) will be established within the Rail Corridor Site (Part Lot 22 DP1202608) and waste will be appropriately segregated and stored based on the waste stream, being demolition material, contaminated excavated material, or general solid waste.	Remediation contractor	During construction
WM2	All waste generated onsite will be appropriately transported off site and disposed of at approved and appropriately licensed waste management facility.	Remediation contractor	During construction
WM3	The site waste tracking system will be set up and remediation personnel trained in its implementation prior to works commencing. The waste material tracking will be undertaken in accordance with the RAP (Ramboll, 2024b) or as updated.	Remediation contractor	Prior to remediation
WM4	All remediation personnel will be informed during the site induction of the waste management hierarchy and the measures to be implemented	Remediation contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
WM5	The waste storage and stockpile area(s) will be maintained in an organised condition, with waste material to be transported to and stockpiled in the designated storage area protected by appropriate controls and containment measures	Remediation contractor	During remediation
WM6	The waste storage and stockpile area(s) will be clearly signed to ensure correct placement of material and prevent further contamination	Remediation contractor	During remediation
WM7	Any wastes will be classified and managed in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014 ac) and the RAP (Ramboll, 2024b)	Remediation contractor	During remediation
WM8	Where possible recyclable wastes generated by construction personnel (paper, cans and bottles) will be collected by a recycling contractor. Remaining wastes will be collected for disposal at a licensed waste management facility.	Remediation contractor	During remediation
WM9	The environmental controls and containment measures placed on waste stockpiles will be inspected and maintained as required on a weekly basis and after rain and strong wind events.	Remediation contractor	During remediation
WM10	If unexpected materials are discovered, the materials are to be segregated into a stockpile and possible disposal options investigated.	Remediation contractor	During remediation
WM11	No waste material will be left on site once the remediation works have been completed.	Remediation contractor	During remediation
Air quality			
AQ1	A Dust Management Plan will be included within the CEMP and implemented prior to and during remediation activities, and will include all elements identified within the Remedial Action Plan (version 7 June 2024) and any updated revisions that may follow.	Remediation Contractor	Prior to remediation
AQ2	Air quality monitoring will be undertaken in accordance with the Dust Management Plan	Remediation Contractor	Prior to and during remediation
AQ3	All workers will be briefed on the requirements under the Dust Management Plan and CEMP.	Remediation contractor	Prior to remediation
AQ5	In the event of a dust complaint, the following will be implemented • stop work • identify dust source and review control measures • assess requirements for additional monitoring or investigation of impact	Remediation contractor	During remediation

ID	Management measure	Responsibility	Timing
	review trigger alert system to determine if unacceptable impact measured at site boundary.		
AQ6	Workers outside the excavator shall be used minimally and on an as need basis. These workers shall remain outside a 20 metre exclusion zone from the excavator, ideally upwind. If there is a need to be closer to the excavator (i.e. within 20 metre exclusion zone) workers will wear a P2 mask and a Type 5 single use disposable Tyvek suit.	Remediation contractor	During remediation
AQ7	Works will cease immediately if it is apparent that dust generation could impact on nearby sensitive receptors, and suitable management measures would be applied. This may include the use of the water cart or an alternative dust suppressant, or waiting for more favourable weather conditions (i.e. less windy conditions).	Remediation contractor	During remediation
AQ8	Stockpiles will be covered when not required to be accessible for current remediation works.	Remediation contractor	During remediation
AQ9	All vehicles and trailers will be covered when transporting materials and waste off site.	Remediation contractor	During remediation
AQ10	All plant and machinery will have emission control devices complying with Australian design standards.	Remediation contractor	During remediation
AQ11	Excavation activities will be completed so that visible airborne dust is not generated.	Remediation contractor	During remediation
AQ12	A watercart will be kept on-site at all times.	Remediation contractor	During remediation
AQ13	A telemetry enabled air quality gauge and software alerting of trigger values will be installed at the Site to inform trigger levels for monitoring of air quality for the duration of the Proposal.	Remediation Contractor	Prior to and during remediation
AQ14	Air quality monitoring will occur for three months post remediation. Risks from site contamination in airborne dust within the surrounding environment will be considered acceptable when lead in samples from airborne and/or deposited dust collected are below validation criteria as per the Validation Plan within the RAP (Ramboll, 2024b)	Remediation contractor	Post remediation
Land use, property and visual			
LU1	Goulburn Mulwaree Council will be notified of the remediation works at least 30 days prior to commencement.	Remediation contractor	Prior to remediation

ID	Management measure	Responsibility	Timing
LU2	An agreement with Veolia will be arranged to facilitate use Lot 1 DP595856 and Lot 2 DP714595 for access to the Rail Corridor Site.	Remediation Contractor	Prior to and during remediation
LU3	The Site will be maintained in a tidy and organised manner.	Remediation Contractor	During remediation
Human health risks			
HUH1	A worker health and safety plan will be development and implemented as part of the Proposal in accordance with the following: • the *Tarago Lead Management Action Plan* (Ramboll, 2020b) (Ramboll Rev 7 27/10/2023) • SafeWork NSW *Lead Guidance* • SafeWork NSW 2022 *Code of Practice Managing risks of hazardous chemicals in the workplace* including the use of the hierarchy of control measures • *Managing individual exposure to lead in Australia – A guide to health practitioners* (Ramboll, 2024b) • NSWE EPA LeadSmart – *Work Smart: Tradespeople and Mining Industry Workers* (LeadSmart) • *Workplace Exposure Standards for Airborne Contaminants* (Safe Work Australia, 2024) • *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2017*.	Remediation Contractor	Prior to and during remediation
HUH2	The worker health and safety plan will address the exposure abatement and hazard elimination measures detailed in Table 7-1 of the Tarago Lead Management Action Plan (Ramboll, 2020b) (Ramboll Rev 7 27/10/2023).	Remediation Contractor	Prior to and during remediation
HUH3	Should any previously unidentified potentially hazardous material be identified during remediation, works will cease in the vicinity of the material and the potentially hazardous materials inspected by an experienced occupational hygienist.	Remediation contractor	During remediation
HUH4	Workers will remain in enclosed cabins of machinery at all times when conducting remediation works.	Remediation contractor	During remediation
HUH5	All vehicles and machinery will have windows closed at all time and an operating cabin air circulation system (air conditioning) equipped with high efficiency filter, and good seals to eliminate cabin dust intrusion.	Remediation contractor	During remediation

ID	Management measure	Responsibility	Timing
HUH7	During excavation of contaminated materials within 50 metres of Tarago Station no visible dust is to be generated and: • Access is to be prevented to the station platform until 10 minutes prior to arrival/departure of any passenger trains • Excavation works are to stop 10 minutes prior to arrival/departure of any passenger trains	Remediation contractor	Prior to and during remediation
Community socio-economic			
SE1	The community of Tarago will be notified 10 days prior to the remediation works being undertaken, including the anticipated commencement date and duration of remediation works.	TfNSW	Prior to remediation
SE2	The CEMP will detail the requirements for the complaint's mechanism for the Proposal. At a minimum the CEMP will detail: • the publicly available complaints phone number, which will be provided to residents at the time of works notification, and how it will be appropriately managed. requirements for complaints recording and the resolution process.	Remediation contractor	Prior to remediation

7.2 Environmental management plans (or systems)

The following management plans would be developed by the Remediation Contractor and approved by the Site Auditor prior to commencing works at the Rail Corridor Site:

- remedial works plan
- worker health and safety plan
- Construction Environmental Management Plan (CEMP) including:
  - soil and water management plan
  - dust management plan
  - noise management plan
  - traffic management plan
- a contingency plan detailing an "unexpected finds protocol".

7.3 Licensing and approvals

No licenses or approvals are required.

The Proposal would require the following notifications:

- notify SafeWork NSW as required under the *Work Health and Safety Act 2011* for lead risk works
- notify the Minister as detailed under the FM Act to undertaken dredging within a watercourse and water land
- conduct notification requirements consistent with Section 4.13 to 6.16 of the Resilience and Hazards SEPP, including notifying Goulburn Mulwaree Council before commencement of remediation activities.

8. Environmental matters and checklists

8.1 Ecologically sustainable development

Consideration of the principles of ecological sustainable development (ESD) is required. ESD aims to ensure the needs of the current generations are met without compromising the needs of future generations. Decision making processes therefore require effective integration of economic, environmental, social and equity considerations. The principles of ESD are considered in **Table 8-1** in relation to the Proposal.

Table 8-1: Ecologically sustainable development considerations

Principle	Considerations for the Proposal
Precautionary principal	The Proposal would not pose serious or irreversible environmental damage. The impacts associated with the Proposal as considered in the REF will result in only minor, localised and temporary potential degradation of the quality of the environment with the implementation of the mitigation/management measures summarised in **Section 7**.
Intergenerational equity	The impacts associated with the Proposal are minor, localised and temporary in nature and would therefore not impact the health, diversity or productivity of the environment. Future generations utilising the Tarago area would benefit via the improved safety of the remediation area.
Conservation of biological diversity and ecological integrity	Conservation of biological diversity and ecological integrity has been considered within the REF. The Proposal works will remain within the Rail Corridor Site and Lot 1 DP595856 and only disturb the land necessary to facilitate the remediation works. Management and mitigation measures to conserve biological diversity and ecological integrity are summarised in the **Section 7**.
Improved valuation, pricing and incentive mechanisms	Environmental, social and residual impacts were considered within the planning and design of the Proposal. TfNSW's commitment to development planning, environmental assessments and implementation of management measures to avoid or minimise impacts wherever practicable reflects the value placed on environmental factors.

8.2 Section 171 Review of Environmental Factors

Table 8-2 provides consideration to the factors listed in Section 171(2) of the EP&A Regulation, assessing the potential impacts of the Proposal on the natural and built environment.

Table 8-2: Section 171(2) checklist

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact	Where addressed
(a) Any environmental impact on a community?	Yes	The Proposal would result in minor environmental impacts to the community during remediation activities such as, air quality, traffic, and visual impacts. The community may experience minor to high noise impacts during the main noise generating works for a period of approximately 12 weeks.	Minor/ moderate, temporary	**Section 6.2** (traffic and transport) **Section 6.3** (noise and vibration) **Section 6.9** (air quality) **Section 6.12** (community and socio-economic)
(b) Any transformation of a locality? (increased traffic, visitation)	Yes	The Proposal involves minor transformation of a locality during temporary remediation activities.	Minor, temporary	**Section 6.2** (traffic and access) **Section 6.10** (land use, property and visual)
(c) Any environmental impact on the ecosystems of the locality?	Yes	The Proposal would have minor short term impacts on the local ecosystem during remediation activities.	Minor, short term	**Section 6.7** (biodiversity)
(d) Any reduction in the aesthetic, recreational, scientific or other environmental quality or value of a locality?	No	The Proposal would not reduce the aesthetic, recreational, scientific, or other environmental quality of value of the locality. The Proposal would improve the environmental quality and value of the Rail Corridor Site and Lot 1	minor, long term (positive)	**Section 6.10** (land use, property and visual amenity) **Section 6.4** (soil and water)

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact	Where addressed
		DP595856 through the removal of contamination and remediation.		
(e) 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?	Yes	The remediation activities would occur in proximity to heritage listed building. The Proposal is unlikely to directly or indirectly impact on the heritage listed buildings with the appropriate mitigation measures implemented. The remediation area and Rail Corridor Site at large, has experienced a high level of disturbance over time and therefor ethe proposal is unlikely to unearth items of Aboriginal heritage.	Minor, long-term	**Section 6.6** (Aboriginal heritage) **Section 6.5** (historic heritage)
(f) Any impact on the habitat of protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)?	No	The Proposal is unlikely to impact on the habitat of protected animal due to the disturbed nature of the Site and the level of works to be undertaken.	No impact	**Section 6.7** (biodiversity)
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	No	The Proposal would not endanger any species. If fauna species are spotted on-site appropriate measures would be implemented to prevent harm to the species.	No impact	**Section 6.7** (biodiversity)
(h) Any long-term effects on the environment?	No	Potential impacts associated with remediation works would be minor and would be temporary in nature. The long-term outcomes would be positive as	Minor, long term (positive)	**Section 6.1** (contamination)

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact	Where addressed
		contamination is removed from the environment.		
(i) Any degradation of the quality of the environment?	Yes	The impacts associated with the Proposal as considered in the REF would generally result in only minor, localised and temporary degradation of the quality of the environment with the implementation of the mitigation and management measures described in the REF.	Minor, temporary	**Section 6.1** (contamination) **Section 6.2** (traffic and transport) **Section 6.3** (noise and vibration) **Section 6.4** (soil and water) **Section 6.9** (air quality) **Section 6.10** (land use, property and visual amenity)
(j) Any risk to the safety of the environment?	Yes	There is a risk that the Proposal could result in the spread of contamination and the contamination of soils and surface water from spills of chemicals, fuels, and oils. This risk is considered low with the implementation of the proposed management and mitigation measures described in the REF.	Minor, temporary	**Section 6.1** (contamination) **Section 6.7** (waste)
(k) Any reduction in the range of beneficial uses of the environment?	No	The Proposal involves removal of containing contaminated material and the remediation of that land in line with commercial/industrial use criteria (HIL D). Therefore, the Proposal results in a beneficial use of the environment.	Moderate, long term (positive)	N/A

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact	Where addressed
(l) Any pollution of the environment?	Yes	Pollution to the environment may arise from air and noise emissions from vehicles and machinery or dust from ground disturbance works and potential contamination of soils and surface/ground waters. The risk of pollution is considered low with the implementation of the mitigation and management measures described in the REF.	Minor, temporary	**Section 6.1** (contamination) **Section 6.3** (noise and vibration) **Section 6.4** (soil and water) **Section 6.9** (air quality)
(m) Any environmental problems associated with the disposal of waste?	No	The management of contaminated material and wastes is considered in **Section 6.1** and **Section 6.7** of the REF. No environmental problems would arise with the implementation of the mitigation and management measures described in the REF.	No impact	**Section 6.1** (contamination) **Section 6.7** (waste)
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	No	No resources likely to become in short supply are required for the Proposal.	No impact	N/A
(o) Any cumulative environmental effect with other existing or likely future activities?	No	No cumulative impacts have been identified that are not able to be adequately managed such as noise, air and traffic impacts (refer to discussion in **Section 6.13** of the REF).	No impact	N/A

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact	Where addressed
(p) Any impact on coastal processes and coastal hazards, including those under proposed climate change conditions?	No	The Proposal does not impact on any coastal management areas.	No impact	N/A
(q) Any impact on applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1.	No	No impacts on local strategic planning statements, regional strategic plans or district strategic plans are identified for the Proposal.	No impact	N/A
(r) Any impact on other relevant environmental factors?	No	No other environmental impacts are identified for the Proposal.	No impact	N/A

8.3 Matters of national environmental significance

Table 8-3 provides consideration to the Proposal and its potential impacts to MNES and Commonwealth land as required by the EPBC Act.

Table 8-3: Matters of National Environmental Significance (MNES)

Factor	Risk of impact? Yes/No	Comment	Degree and duration of impact
(a) Any impact on a World Heritage property?	No	The Proposal is not located near a World Heritage property.	N/A
(b) Any impact on a National Heritage place?	No	The Proposal is not located near a National Heritage place.	N/A
(c) Any impact on a wetland of international importance?	No	The Proposal is not located near a wetland of international importance.	N/A
(d) Any impact on a listed threatened species or communities?	No	No significant impact to threatened species or communities has been identified for the Proposal.	N/A
(e) Any impacts on listed migratory species?	No	No significant impact to threatened species or communities has been identified for the Proposal.	N/A
(f) Any impact on Commonwealth marine areas?	No	The Proposal is not located near a Commonwealth marine area.	N/A
(g) Any impact on the Great Barrier Reef Marine Park?	No	The Proposal is not located near the Great Barrier Reef Marine Park.	N/A
(h) Does the Proposal involve a nuclear action (including uranium mining)?	No	The Proposal does not involve a nuclear action.	N/A
(i) Additionally, any impact (direct or indirect) on a water resource, in relation to coal seam gas development and large coal mining development	No	No impact to a water resource has been identified for the Proposal.	N/A

9. Conclusion

9.1 Justification and conclusion

The Proposal is required to reduce the risk to human health and the environment currently posed by the Rail Corridor Site.

This REF has been prepared with reference to the *Guidelines for Division 5.1 assessments* (Department of Planning and Environment, 2022) and in accordance with Division 5.1 of Part 5 of the EP&A Act and Section 171 of the EP&A Regulation.

This REF has determined that:

- an environmental impact statement, species impact statement and/or biodiversity development assessment report is not required for the Proposal
- the Proposal is not likely to have a significant impact on the environment due to the limited scope of works and the expected level of remediation required
- the Proposal is unlikely to impact on a matter of national environmental significance and therefore a referral under the EPBC Act is not required.

10. References

ARTC. (2019, October 11). *Section 170 Heritage and Conservation Register.* Retrieved from ARTC: https://www.artc.com.au/uploads/S170-Register-Oct-2019.pdf

Australian Bureau of Statistics. (2021). *Tarago 2021 Census All persons QuickStats*. Retrieved from Census: https://www.abs.gov.au/census/find-census-data/quickstats/2021/SAL13773

Bureau of Meteorology. (2024a, July 25). *Climate statistics for Australian locations: Summary of statistics Goulburn AIrport AWS*. Retrieved from Bureau of Meteorology: http://www.bom.gov.au/climate/averages/tables/cw_070330.shtml

Bureau of Meteorology. (2024b, July 31). *Monthly rainfall: Lake Bathurst (Somerton)*. Retrieved Juy 31, 2024, from Bureau of Meteorology: http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=070036

Department of Climate Change, Energy, the Environment and Water. (n.d. b). *Protected Matters Search Tool*. Retrieved July 3, 2024, from Protected Matters Search Tool: https://pmst.awe.gov.au/#/map?lng=131.50634765625003&lat=-28.6905876542507&zoom=5&baseLayers=Imagery,ImageryLabels

Department of Climate Change, Energy, the Environment, and Water. (2024, June 17). *Draft native vegetation regulatory map*. Retrieved from https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=DraftNVRmap

Department of Climate Change, Energy, the Environment, and Water. (n.d. a). *Biodiversity Values Map and Threshold Tool*. Retrieved July 3, 2024, from https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap

Department of Customer Service. (1997, January 5). Ulladulla Block Run 8 NSW4337.

Department of Environment and Climate Change. (2009). *Interim Construtions Noise Guideline.*

Department of Environment and Conservation. (2006). *Assessing Vibration: A Technical Guideline.*

Department of Environment, Climate Change and Water. (2010). *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.* Sydney South: State of New South Wales and the Department of Environment, Climate Change and Water NSW.

Department of Environment, Climate Change and Water. (2011). *NSW Road Noise Policy.*

Department of Planning and Environment. (2022). *Guidelines for Division 5.1 assessments.* Retrieved from https://www.planning.nsw.gov.au/sites/default/files/2023-02/guidelines-for-division-51-assessments.pdf

Department of Planning and Environment. (n.d.). *Controlled activities - Guidelines for instream works on waterfront land.* Retrieved from https://water.nsw.gov.au/__data/assets/pdf_file/0005/386204/licensing_approvals_controlled_activities_instream_works.pdf

Department of Primary Industries. (n.d.). *Fisheries NSW Spatial Data Portal*. Retrieved July 3, 2024, from https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal

Element Environmental. (2024). *Woodlawn Mechanical Biological Treatment Facility Modification 4 - Modification Report.*

EPA. (2014). *Waste Classification Guideline.*

EPA. (2017). *Noise Policy for Industry.* Environment Protection Authority.

Goulburn Mulwaree Council. (2021). *Draft Tarago Village Strategy V.3.* Retrieved from https://www.goulburn.nsw.gov.au/files/sharedassets/public/strategic-planning/draft-tarago-village-strategy-v.3-public-exhibition-october-2021.pdf

Gouldburn Mulwaree Council. (2016). *Wollondilly and Mulwaree Rivers Flood Study.* Gouldburn Mulwaree Council.

Gouldburn Mulwaree Council. (2024). *Gouldburn Mulwaree Council Operation Plan 2024-2025.* Gouldburn Mulwaree Council. Retrieved from https://www.bing.com/ck/a?!&&p=4cf8d05503719f62JmltdHM9MTcyMTA4ODAwMCZpZ3VpZD0zYjUzY2Q3Yy03ZmY3LTY1YjYtMDk3ZS1kOWQwN2VjNTY0MGQmaW5zaWQ9NTIxOA&ptn=3&ver=2&hsh=3&fclid=3b53cd7c-7ff7-65b6-097e-d9d07ec5640d&psq=goulburn+mulwaree+council+major+project+septembe

Infrastructure Partners Australia. (n.d.). *Blind Creek Solar Farm*. Retrieved July 17, 2024, from Australia New Zealand Infrastructure Pipeline: https://infrastructurepipeline.org/project/blind-creek-solar-farm

LeadSmart. (n.d.). *Work smart: tradespeople and mining industry workers.* NSW Government. Retrieved from https://leadsmart.nsw.gov.au/tradespeople/%7C!%7CvcvUploadUrl%7C!%7C/2016/09/LeadSmart-Brochure-Working.pdf

National Environment Protection Council. (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure 1999, as amended 2013.*

National Heavy Vehicle Regulator. (2024). *National Network Map*. Retrieved from National Heavy Vehicle Regulator: https://maps.nhvr.gov.au/?networkLayerContext=NATIONAL_MAP&view=Recently+viewed+networks&exemptionSetId=-2&networkIds=%5B1514%5D

National Indigenous Australians Agency. (n.d.). *Indigenous land and sea management projects*. Retrieved July 3, 2024, from National Indigenous Australians Agency: https://www.niaa.gov.au/our-work/environment-and-land/indigenous-land-and-sea-management-projects

National Native Title Tribunal. (n.d.). *National Native Title Tribunal Spatial Data*. Retrieved July 3, 2024, from https://www.nntt.gov.au/assistance/Geospatial/Pages/Spatial-aata.aspx

NGH. (2022). *Environmental Impact Assessment Blind Creek Solar Farm.* Retrieved from https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-13166280%2120220530T042902.959%20GMT

NGH environmental. (2015). *Review of Environmental Factors Tarago Loop Extension.*

Ngunnawal. (n.d.). *The Ngunnawal*. Retrieved July 8, 2024, from https://www.ngunnawal.org/who-we-are

NSW Department of Climate Change, Energy, the Environment and Water. (2016, November 22). *High Environmental Values of the South East Tablelands Planning Region 2022 - detailed*. Retrieved July 17, 2024, from Datasets SEED: https://datasets.seed.nsw.gov.au/dataset/south-east-tablelands-high-environmental-value-hev-clone-6b33/metaexport/iso19115_html

NSW Department of Climate Change, Energy, the Environment and Water. (2023, November 30). *NSW State Vegetation Type Map*. Retrieved July 3, 2024, from SEED The Central Resource for Sharing and Enabling Data in NSW: https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map

NSW EPA. (2014 ac). *Waste Classification Guidelines, Part 1: Classifying Waste.* Sydney South: NSW Environment Protection AUthroity (EPA). Retrieved from https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wasteregulation/140796-classify-waste.pdf

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* Sydney South: NSW Environment Protection AUthroity (EPA). Retrieved from https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wasteregulation/140796-classify-waste.pdf

NSW Government. (n.d. a). *BioNet Species sighting search*. Retrieved from NSW: https://atlas.bionet.nsw.gov.au/UI_Modules/ATLAS_/AtlasSearch.aspx

NSW Government. (n.d. b). *Major Projects*. Retrieved July 17, 2024, from NSW Planning Portal: https://www.planningportal.nsw.gov.au/major-projects

NSW Government. (n.d. c). *State Heritage Inventory mapping*. Retrieved from https://www.hms.heritage.nsw.gov.au/App/Item/SearchHeritageItems?_ga=2.64229674.48536496.1659912770-277470070.1643675915

NSW Government. (n.d. d). *Woodlawn Advanced Energy Recovery Centre*. Retrieved July 17, 2024, from NSW Planning Portal: https://www.planningportal.nsw.gov.au/major-projects/projects/woodlawn-advanced-energy-recovery-centre

OzArk. (2024). *Statement of Heritage Impact: Tarago Woodlawn Siding Remediation.*

Ramboll. (2019). *Tarago Loop Extension Preliminary Human Health Risk Assessment.*

Ramboll. (2020a). *Rail Sleeper Waste Classification - Tarago Loop Extension.*

Ramboll. (2020b). *Tarago Lead Management Action Plan.* Rev 7 27/10/2023.

Ramboll. (2020c). *Tarago Rail Corridor and Tarago Area Detailed Site Investigation.*

Ramboll. (2020d). *Tarago Rail Corridor and Tarago Area Detailed Site Investigation Addendum.*

Ramboll. (2024a). *December 2023 Surface Water Monitoring Report Tarago, NSW.*

Ramboll. (2024b). *Remedial Action Plan Tarago Rail Corridor Rev 1.*

Ramboll. (2024b). *Remedial Action Plan Tarago Rail Corridor Rev 1.*

Ramboll. (2024c). *Remediation Options Assessment.*

Ramboll. (2024d). *Remedial Action Plan - Stockpile Associated with Tarago Rail Corridor, Tarago.*

Ramboll. (2024e). *Tarago Air Quality Monitoring Report.* Retrieved from https://www.transport.nsw.gov.au/system/files/media/documents/2024/tango-rail-air-quality-monitoring-report-april-2024.pdf

RAPT Consulting. (2024). *Acoustic Assessment - Tarago Stage 2 Remediation.*

Raymond, O., & Sexton, M. (n.d.). *Australian Geoscience Information Network*. Retrieved January 8, 2020, from Geoscience Australia: http://portal.geoscience.gov.au/

Resource Regulator, Department of Regional NSW. (n.d.). *Health control plan resources.* Retrieved July 18, 2024, from NSW Resource Regulator: https://www.resourcesregulator.nsw.gov.au/safety/health-and-safety-management/health-monitoring/health-control-plan-resources

Safe Work Australia. (2024, January 18). *Workplace exposure standards for airborne contaminants (2024).* Retrieved from Safe Work Australia: https://www.safeworkaustralia.gov.au/doc/workplace-exposure-standards-airborne-contaminants-2024

SafeWork NSW. (n.d.). *Lead work*. Retrieved from SafeWork NSW: https://www.safework.nsw.gov.au/hazards-a-z/hazardous-chemical/lead-work#:~:text=Exposure%20to%20lead%20can%20cause%20headaches%2C%20stomach%20pains,the%20kidneys%2C%20nerves%20or%20brain%2C%20and%20even%20infertility.

SCT Consulting. (2024a). *Tarago Rail Corrdior Remediation - Stage 1: Traffic and Transport Impact Assessment.*

SCT Consulting. (2024b). *Tarago Rail Corridor Remediaiton - Stage 2 Traffic and Transport Impact Assessment.*

Spatial Service (DCS). (2016, July 28). *NSW Hydrology*. Retrieved from SEED The Central Resource for SHaring and ENabling Environmental Data in NSW: https://datasets.seed.nsw.gov.au/dataset/nsw-hydrography

Spatial Service (DCS). (2022, May 7). *NSW Hydrology*. Retrieved from SEED The Central Resource for SHaring and ENabling Environmental Data in NSW: https://datasets.seed.nsw.gov.au/dataset/nsw-hydrography

TAHE. (2023). *Section 170 Heritage and Conservation Register.* Retrieved from https://www.transport.nsw.gov.au/system/files/media/documents/2023/TAHE%20S170%20Register.pdf

Transport for NSW. (2008). *Erosion and Sediment Management Procedure.*

Transport for NSW. (2019). *Construction Noise and Vibration Strategy.*

Transport for NSW. (2023a). *Transport Open Data Hub*.

Transport for NSW. (2023b). *Tree and hollow replacement guidelines.*

Transport for NSW. (2024, May 22). *Tarago rail yards lead contamination*. Retrieved from Transport for NSW: https://www.transport.nsw.gov.au/projects/current-projects/tarago-rail-yards-lead-contamination

Transport for NSW. (2024a). *Biodiversity Management Guideline.*

Transport for NSW. (2024b). *Unexpected heritage items procedure.*

UGL Regional Linx. (2023). *CRN Section 170 Register.* Retrieved from https://edge.sitecorecloud.io/cimicgroupl634d-cimicxmcloud-production-16eb/media/project/cimic/countryregionalnetwork/page-documents-and-assets/crn-reg-her-2035031653-6---crn-section-170-heritage-register_v20230808-(3).pdf

Water NSW. (n.d.). *Hawkesbury-Nepean*. Retrieved July 26, 2024, from Water: https://water.dpie.nsw.gov.au/about-us/learn-about-water/basins-and-catchments/catchments/hawkesbury-nepean#:~:text=Located%20on%20the%20NSW%20Central%20Coast%20in%20Greater,from%20Turimetta%20Headland%20to%20Barrenjoey%20near%20its%20mouth.

11. Limitations

Ramboll Australia Pty Ltd (Ramboll) prepared this report in accordance with the scope of work as outlined in our proposal to Transport for New South Wales (TfNSW) provided on 16 April 2024, an additional email received from Belinda Olteanu on 27/09/2024 and in accordance with our understanding and interpretation of current legislative and regulatory standards.

Site conditions may change over time. This report is based on conditions encountered at the site at the time of the report and Ramboll disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent Ramboll's professional judgment based on information made available during the course of this assignment and are true and correct to the best of Ramboll's knowledge as at the date of the assessment.

Ramboll did not independently verify all of the written or oral information provided to Ramboll during the course of this investigation. While Ramboll has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to Ramboll was itself complete and accurate.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

Appendix 1
PMST results

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 16-Jul-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	50
Listed Migratory Species:	18

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	29
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Pycnoptilus floccosus](#) Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In buffer area only
FISH			
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
[Litoria castanea](#) Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
INSECT			
[Keyacris scurra](#) Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat known to occur within area	In feature area
[Synemon plana](#) Golden Sun Moth [25234]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In buffer area only
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Calotis glandulosa			
Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area
Commersonia prostrata			
Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris aequalis			
Buttercup Doubletail [21588]	Endangered	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens			
Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus aggregata			
Black Gum [20890]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat likely to occur within area	In feature area
Pomaderris delicata [67208]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat may occur within area	In feature area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
[Charadrius bicinctus](#) Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Numenius minutus](#) Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area	In buffer area only
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
Southern RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Canberra ACT 2601 Australia
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Appendix 2

s57(2) Exemption endorsement from TfNSW Heritage

Exemption from Approval under s57(2) *Heritage Act 1977*

Mr Stephen Maxwell
Project Manager
Ramboll Australia Pty Ltd
SMAXWELL@ramboll.com

Re: Exemption from Approval or Notification under s57(2) of the NSW Heritage Act to undertake works to Tarago Railway Station Group, SHR #01262

16 October 2024

Dear Mr Maxwell,

The proposed works have been assessed, and an exemption under Section 57(2) of the *NSW Heritage Act 1977* has been granted.

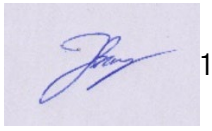
NSW State Heritage Register details	Tarago Railway Station Group (SHR 01262)
Documentation	The project information has been provided in the following documentation and reviewed in support of this exemption: • OzArk Environment & Heritage, September 2024, *Statement of Heritage Impact Tarago Woodlawn siding Invasive Works, Tarago NSW*, unpublished report prepared for Ramboll Australia Pty Ltd and Transport for NSW; and • Record of Use Form (updated 16/10/2024) • Email from Joanne Mcloughlin, entitled "RE: Tarago Woodlawn Siding - - Invasive Works and Remediation Woks - SOHI for review by 9 October 2024" dated 16 October 2024, which confirms the applicant for this exemption.
Scope of Works	It is understood that the proposal includes the following: • Limited test excavation within the SHR curtilage of the Tarago Railway Station Group focused on the rail corridor, and the smaller curtilage of the LEP listed Tarago Railway Station by Ramboll Australia Pty Ltd to inform a Remedial Action Plan for the Rail corridor. Works are not proposed to affect the buildings within the Tarago SHR listing (Tarago Railway Station, Signal Box and Goods Shed) • Remediation involving excavation of soil and its replacement in the rail corridor to a depth 0.5 metres below ground level in areas hatched red shown in Figures 1-3 and 1-4 in the Ozark SOHI (Sept 2024) and attached to this exemption. • Remediation involving excavation of soil and its replacement in the rail corridor to a depth of 0.3 metres below ground level in "Lead impacted areas" shown as yellow and red dotted areas in Figures 1-3 and 1-4 in the Ozark SOHI (Sept 2024) and attached to this exemption. These works will enable test excavation for contamination and removal of soil in select areas to support appropriate environmental management

	without impacting the significance of the Tarago Railway Station Group. The SOHI has assessed there is no likelihood of relics being present in these areas.
Assessment	The proposal is considered consistent with the activities described within the following Standard Exemptions (gazetted 17 June 2022): Standard Exemption 8 Excavation Specified activities/ works: a) Excavation or disturbance of land that is: i. for the purpose of exposing underground utility services infrastructure which occurs within an existing service trench, or ii. to carry out inspections or emergency maintenance or repair on underground utility services, or iii. to maintain, repair, or replace underground utility services to buildings, or iv. to maintain or repair the foundations of an existing building, or v. to expose survey marks, or vi. associated with feral animal/insect eradication. b) Removing contaminated soil. Relevant standards: c) Activities/ works must not disturb or remove any relics. d) Excavation must not compromise the structural integrity of any heritage structure or significant landscape elements. e) Activities/ works must not affect archaeological evidence, for example the archaeology of foundation trench deposits from the time of original construction. f) If an environmental assessment is required under Part 5 of the Environmental Planning and Assessment Act 1979 (NSW) in relation to " b) of the specified activities/works, the assessment must be undertaken prior to commencing any work to remove the contaminated soil. The proposal has been assessed by a Transport for NSW Heritage Specialist/ Snr Environment Officer (Heritage) and is considered to have no adverse impacts on the heritage significance of the place. Transport for NSW and its contractors are not required to obtain external heritage approval for the specified activity in this exemption from Heritage NSW (the office of the Heritage Council of New South Wales).

General conditions	Please note these works are exempt from approval based on the following general conditions. • To support avoidance of significant fabric, environmental protection measures should be put in place during the works to protect the Tarago Railway Station group buildings during work. • Due care must be taken in the vicinity of identified heritage structures and fabric. No construction materials are to be stockpiled or stored against heritage items or trees. • Any accidental damage caused to heritage items/fabric must be reported immediately through Sydney Trains SHEM and My Ngara HSE. Damage is to be made good in accordance with specialist heritage advice. • All areas impacted by the work must be cleaned and made good after completion of works. • Any proposed changes beyond the approved scope of works may require further assessment and approval. • On completion of work, photos of the works–both before and after, suitably captioned or identified–must be submitted to STheritage@transport.nsw.gov.au for updating the S170 Register.
Site Visit/Post Completion Inspection Required	No

Please do not hesitate to make contact if you have any questions.

Sincerely,



16/10/2024

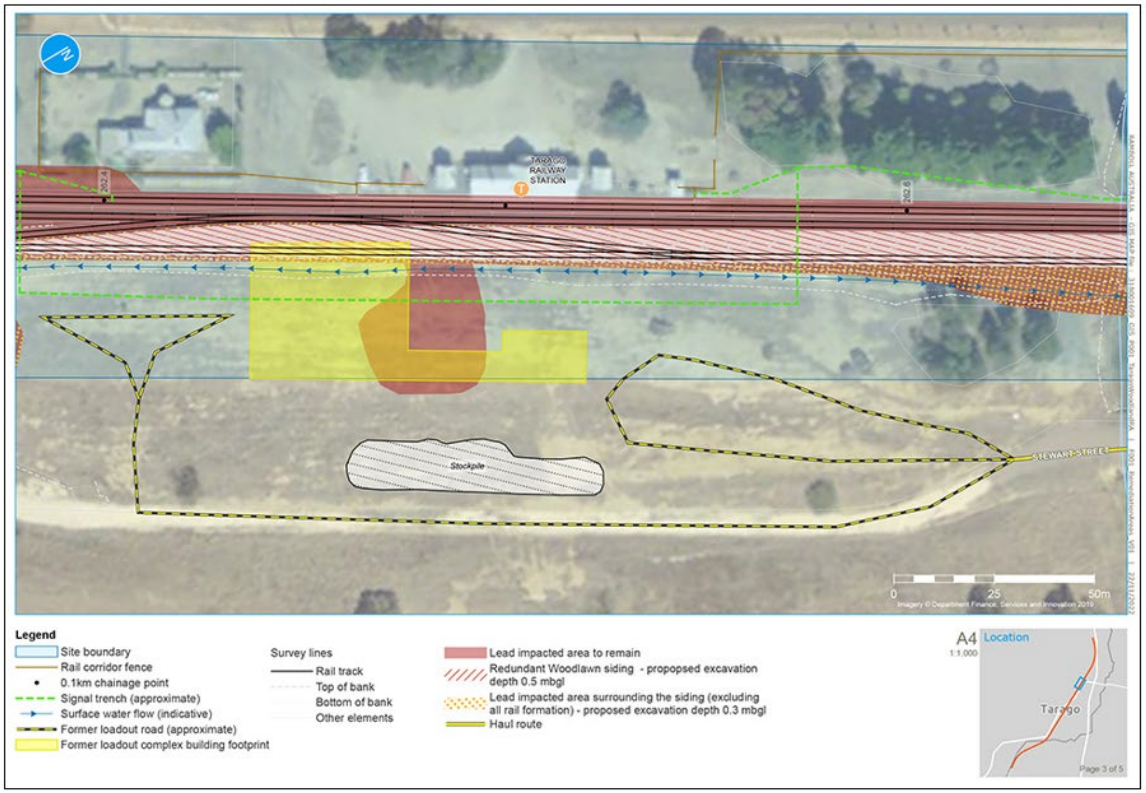
Felicity Barry (*She/Her*)
Snr Environment Officer, Heritage
Environment and Sustainability
Safety, Environment and Regulation
Transport for NSW

M 0422 996 645 **E** Felicity.Barry@transport.nsw.gov.au

Attachment 1. Map showing the proposed works at Tarago Station (Figure 1-3 from OzArk SOHI Sept 2024, p4)
Attachment 2. Map showing proposed works near the Goods Shed (Figure 1-4 from OzArk SOHI Sept 2024, p5)
Attachment 3: Record of Use form (updated 16/10/2024)

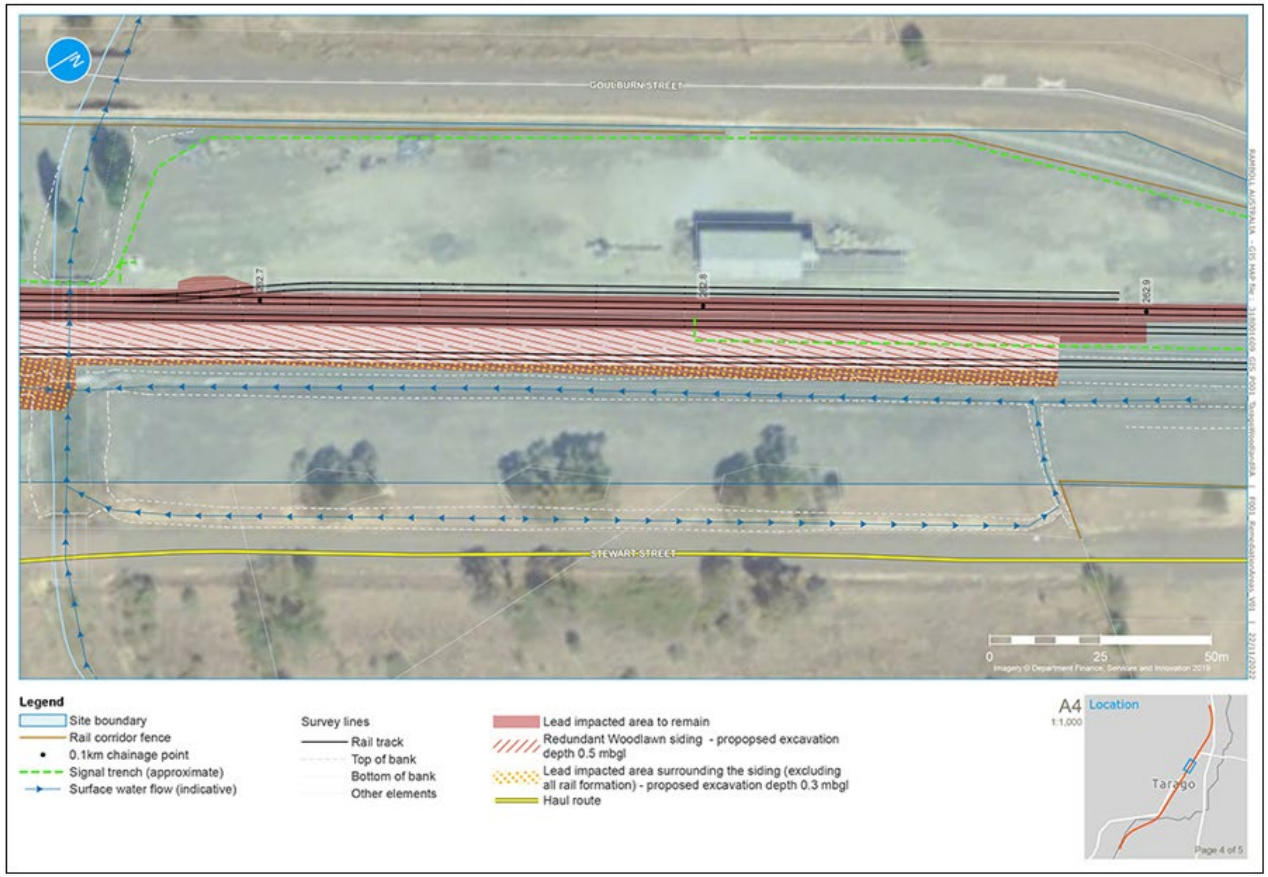
Attachment 1 Map showing the proposed works at Tarago Station (Figure 1-3 from OzArk SOHI Sept 2024, p4)

Figure 1-3: Proposed works near Tarago Railway Station.



Attachment 2. Map showing proposed works near the Goods Shed (Figure 1-4 from OzArk SOHI Sept 2024, p5

Figure 1-4: Proposed works near the Goods Shed.



Attachment 3 Record of use form (updated 16/10/2024)

APPENDIX 1: STANDARD EXEMPTION RECORD KEEPING FORM

Standard Exemption Record Keeping Form

This form is to assist owners and managers when recording the use of standard exemptions under section 57(2) of the *Heritage Act 1977*. Use the form each time a standard exemption is used. Retain copies of completed forms and all relevant information for your records and to demonstrate compliance with the general conditions of use for the standard exemptions.

Use of the standard exemptions is self-assessed. In completing this form you acknowledge that this record is not for assessment purposes and does not represent an endorsement of the Heritage Council for the work or use of exemptions. This form may be requested as part of an audit or compliance investigation. This information cannot be relied on as a defence to prosecution.

Affected heritage item

Name of State Heritage Register item/IHO item:	Tarago Railway Station group
Street address of heritage item:	Goulburn-Bombala railway TARAGO / NSW

Local government area: Goulburn Mulwaree Council

State Heritage Register/ interim heritage order reference number: 01262

Activity/works

Description of works:

Include at a minimum what the activity/work is, how it will be carried out, what parts of the item it affects, what materials will be used.

A Remedial Action Plan (RAP) for the rail corridor was developed in 2021 and the remediation of the site will be in accordance with the RAP. The invasive works are required to inform the methodology of the RAP.

The proposed activities and works will not change the existing fabric of any existing building or associated platforms etc.

- Limited test excavation within the SHR curtilage of the Tarago Railway Station Group focused on the rail corridor, and the smaller curtilage of the LEP listed Tarago Railway Station by Ramboll Australia Pty Ltd to inform a Remedial Action Plan for the Rail corridor. Works are not

proposed·to·affect·the·buildings·within·the·Tarago·SHR·listing·(Tarago·Railway·Station,·Signal·Box·and·Goods·Shed)¶ • → Remediation·involving·excavation·of·soil·and·its·replacement·in·the·rail·corridor·to·a·depth·0.5·metres·below·ground·level·in·areas·hatched·red·shown·in·Figures·1-3·and·1-4·in·the·Ozark·SOHI·(Sept·2024)·and·attached·to·this·exemption.·¶ • → Remediation·involving·excavation·of·soil·its·replacement·in·the·rail·corridor·to·a·depth·of·0.3·metres·below·ground·level·in·"Lead·impacted·areas"·shown·as·yellow·and·red·dotted·area·in·Figures·1-3·and·1-4·in·the·Ozark·SOHI·(Sept·2024).¤

¶

Standard·Exemption:·8:·Excavation·¶

Statement·of·Significance·Referred·to:·State·Heritage·Register¶

If·not·the·State·Heritage·Register,·record·the·document·title,·author·and·date:·¶

Document·Title¤	Author¤	Date¤
¤	¤	¤

↵

Was·professional·advice·required·to·use·the·Standard·Exemption?·Yes:·☒·No:·☐¶

Was·professional·advice·sought·to·use·the·Standard·Exemption·(even·if·it·was·not·required·by·the·relevant·standards)?·Yes:·☒·No:·☐¶

If·yes·to·either·of·the·above·questions·on·professional·advice,·complete·the·table·below·(add·additional·rows·if·required):¶

Name·of·company/·person·who·advised¤	Date·of·advice¤	Title·of·any·document·containing·the·advice¤
Ben·CHURCHER,·OzArk¤	September·2024¤	Statement·of·Heritage·Impact.·Tarago·Woodlawn·Siding·Invasive·Works.·2024¤

¶

Cost·of·works:¤	$¤	Start·date:¤	Click·or·tap·to·enter·a·date.¤	Completion·date:¤	Click·or·tap·to·enter·a·date.¤

↵

Were·any·inspections·undertaken?·Yes:·☒·No:·☐¶

If·yes,·complete·below·(add·additional·rows·if·required):¶

Date·of·inspection¤	Who·inspected·(name·and·organisation)¤	Purpose·of·inspection¤	Inspection·findings¤	¤
24/11/2022¤	Ben·Churcher,·OzArk¤	Heritage·assessment¤	Works·will·not·harm·significant·fabric¤	¤

¶

Challenges·encountered·and/or·change·of·plans¶

Describe·here·the·challenge·or·change·and·how·you·managed·it.·Remember:·any·change·of·plans·that·would·not·comply·with·the·Standard·Exemption·require·approval·under·the·*Heritage·Act·1977*·before·activity/works·can·be·undertaken.¶

n/a¤	¤

Heritage·impact¶

Summarise·how·the·activity/·work·will·change·the·heritage·item.·What·elements·of·the·item·will·be·affected?·Are·those·elements·significant·or·non-significant?·How·will·those·elements·change?·Is·the·change·permanent·or·temporary·and·will·the·change·be·reversible?··Does·the·change·to·those·elements·affect·their·significance·and/or·the·item's·overall·significance?·Remember:·there·must·be·no·impact·to·the·item's·overall·significance·to·work·under·a·Standard·Exemption.·¶

It·is·not·anticipated·that·the·works·will·negatively·impact·the·station·or·its·supporting·structures·as·the·work·includes·contamination·testing·and·removal·of·specific·areas·with·contaminated·soil·within·the·permanent·way·in·the·SHR·curtilage·set·out·in·Figures·1-3·and·1-1·of·the·Oz·Ark·SOHI·(sept·2024).·¶
The·buildings·will·not·be·affected·by·the·proposed·decontamination·testing·and·program.·¶

Heritage·controls¶

What·measures·were·put·in·place·to·minimise·or·avoid·impact·from·the·activity/·work·to·significant·elements,·fabric,·values·and·the·item's·overall·heritage·significance?¶

To·protect·the·Tarago·Railway·station·buildings·during·the·work,·the·project·will·include·a·site·induction.·Environmental·protection·measures·are·also·recommended·during·the·program·to·protect·the·Tarago·Railway·Station·group·buildings·during·work.¶

Page Break ¶

proposed to affect the buildings within the Tarago SHR listing (Tarago Railway Station, Signal Box and Goods Shed)

- Remediation involving excavation of soil and its replacement in the rail corridor to a depth 0.5 metres below ground level in areas hatched red shown in Figures 1-3 and 1-4 in the Ozark SOHI (Sept 2024) and attached to this exemption.
- Remediation involving excavation of soil its replacement in the rail corridor to a depth of 0.3 metres below ground level in "Lead impacted areas" shown as yellow and red dotted area in Figures 1-3 and 1-4 in the Ozark SOHI (Sept 2024).

Standard Exemption: 8: Excavation

Statement of Significance Referred to: State Heritage Register

If not the State Heritage Register, record the document title, author and date:

Document Title	Author	Date

Was professional advice required to use the Standard Exemption? Yes: ☒ No: ☐

Was professional advice sought to use the Standard Exemption (even if it was not required by the relevant standards)? Yes: ☒ No: ☐

If yes to either of the above questions on professional advice, complete the table below (add additional rows if required):

Name of company/ person who advised	Date of advice	Title of any document containing the advice
Ben CHURCHER, OzArk	September 2024	Statement of Heritage Impact. Tarago Woodlawn Siding Invasive Works. 2024

Cost of works:	$	Start date:	Click or tap to enter a date.	Completion date:	Click or tap to enter a date.

Were any inspections undertaken? Yes: ☒ No: ☐

If yes, complete below (add additional rows if required):

Date of inspection	Who inspected (name and organisation)	Purpose of inspection	Inspection findings
24/11/2022	Ben Churcher, OzArk	Heritage assessment	Works will not harm significant fabric

Challenges encountered and/or change of plans

Describe here the challenge or change and how you managed it. Remember: any change of plans that would not comply with the Standard Exemption require approval under the *Heritage Act 1977* before activity/works can be undertaken.

n/a

Heritage impact

Summarise how the activity/ work will change the heritage item. What elements of the item will be affected? Are those elements significant or non-significant? How will those elements change? Is the change permanent or temporary and will the change be reversible? Does the change to those elements affect their significance and/or the item's overall significance? Remember: there must be no impact to the item's overall significance to work under a Standard Exemption.

It is not anticipated that the works will negatively impact the station or its supporting structures as the work includes contamination testing and removal of specific areas with contaminated soil within the permanent way in the SHR curtilage set out in Figures 1-3 and 1-1 of the Oz Ark SOHI (sept 2024).
The buildings will not be affected by the proposed decontamination testing and program.
The assessment has concluded relics are not likely to be present or disturbed by the works.

Heritage controls

What measures were put in place to minimise or avoid impact from the activity/ work to significant elements, fabric, values and the item's overall heritage significance?

To protect the Tarago Railway station buildings during the work, the project will include a site induction. Environmental protection measures are also recommended during the program to protect the Tarago Railway Station group buildings during work.

Contact details (person completing this form)

Name	Ben Churcher updated by Felicity Barry
Organisation/role	OzArk Environment & Heritage contracted by Ramboll Australia. Snr Environment Officer, Heritage (TfNSW)
Postal address	PO Box 2069 Dubbo, NSW, 2830 Level 4, 7 Harvest St, Macquarie Park, NSW 2113
Email	enquiry@ozarkehm.com.au Felicity.barry@transport.nsw.gov.au
Phone number	(02) 6882 0118 0422 996 645 (Felicity)

Name of heritage item owner (if not the contact who completed this form)	Transport Asset Holding Entity (TAHE) owns the Tarago Railway Station Group.

Attachments

List the names of any other documents or files that form part of the exemption record in addition to this form.

- OzArk Environment & Heritage, Statement of Heritage Impact. Tarago Woodlawn Siding Invasive Works., September 2024

- Email from Joanne Mcloughlin, entitled "RE: Tarago Woodlawn Siding - - Invasive Works and Remediation Woks - SOHI for review by 9 October 2024" dated 16 October 2024, which confirms the applicant for this exemption.

- Exemption endorsement letter dated 16/10/2024 issued by TfNSW Heritage team

Appendix 3

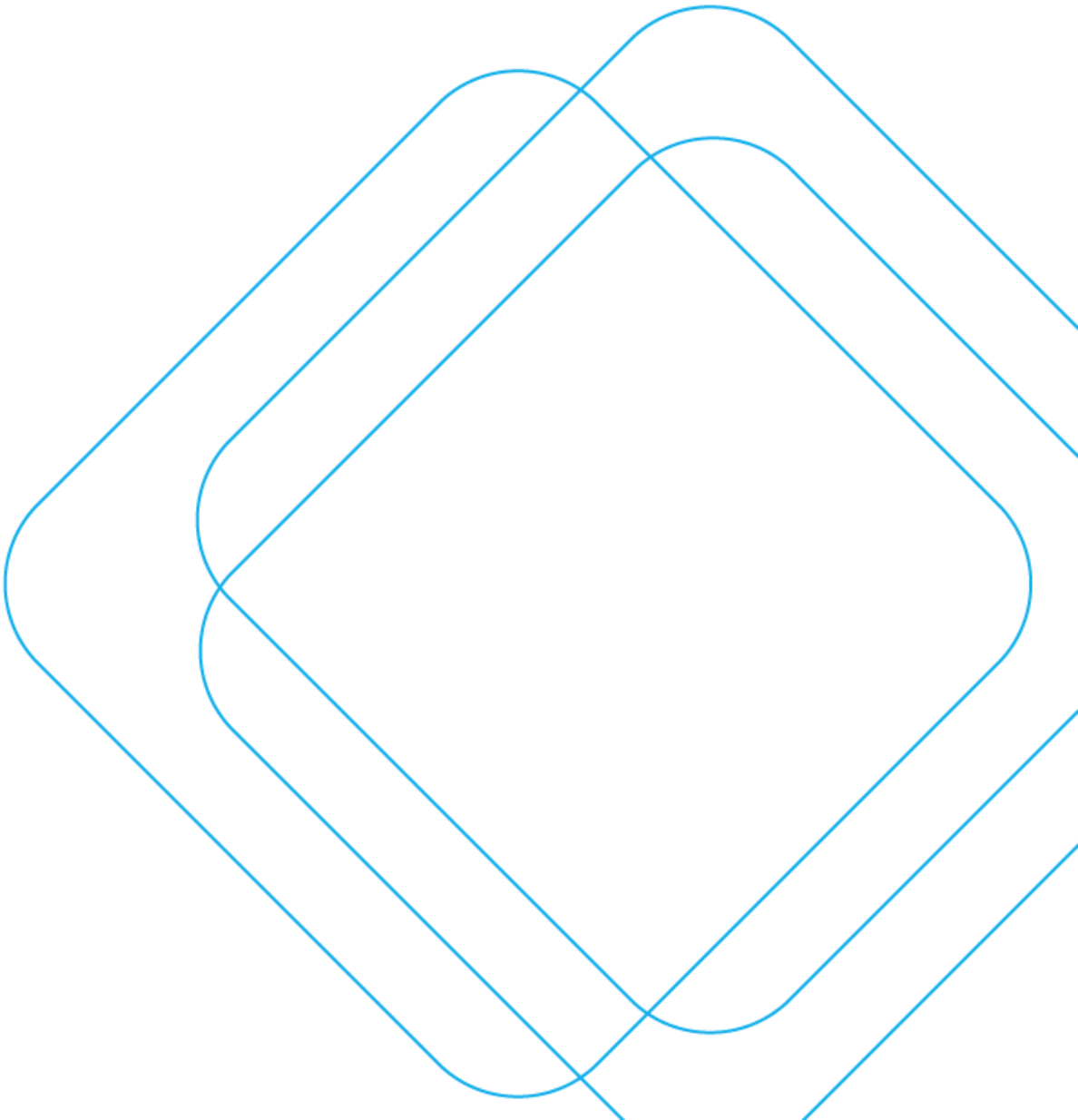
Traffic and Transport Impact Assessment prepared by SCT (SCT Consulting, 2024b)

TARAGO RAIL CORRIDOR REMEDIATION – STAGE 2

Traffic and Transport Impact Assessment

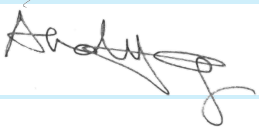
24 JANUARY 2025

SCT Consulting acknowledges the traditional owners of the lands on which we work.
We pay our respects to Elders past, present and emerging.



Quality Assurance

Project:	Tarago Rail Corridor Remediation – Stage 2		
Project Number:	SCT_00601		
Client:	Ramboll Australia	**ABN:**	49 095 437 442
Prepared by:	SCT Consulting PTY. LTD. (SCT Consulting)	**ABN:**	53 612 624 058

Information	Name	Position	Signature
Author:	Sorathun Maitrawatthana	Consultant	
Reviewer:	Nick Bernard	Associate Director	
Authoriser:	Andy Yung	Director	

Version	Date	Details
1.0	15 August 2024	Draft report
2.0	25 October 2024	Updated draft report
3.0	24 January 2025	Final report

Contents

Executive Summary

Introduction

SCT Consulting has been engaged by Ramboll Australia on behalf of Transport for New South Wales (TfNSW) to prepare a traffic and transport impact assessment (TTIA) to support the Review of Environmental Factors (REF) to facilitate Stage 2 of the proposed remedial and demolition works (the works) around Tarago Railway Station in Tarago, New South Wales, along the Goulburn – Bombala rail corridor.

Project overview

The works concern the remediation of lead contamination identified within 1 km along the rail corridor around the station and include three sites:

– **Site 1:** Stockpile Remediation

– **Site 2:** Station Masters Cottage Remediation

– **Site 3:** Rail Corridor Remediation.

The works are to be carried out over two stages:

– **Stage 1** includes the removal of fouled ballast from Site 1 and the demolition of the former Station Masters Cottage and associated above-ground structures on Site 2.

– **Stage 2** involves excavating and relocating soils from Site 2 and remediation works at Site 3.

This TTIA report is prepared to support Stage 2 of the proposed works. The potential traffic and transport impacts of the Stage 1 works will be assessed in a separate report.

Existing traffic and transport conditions

Two key intersections close to the sites that will accommodate the traffic generated by the works were identified as the Goulburn Street / King Street intersection and the Braidwood Road / Wallace Street intersection. The peak hours of the two intersections were found to be 7am – 8am and 4pm – 5pm.

The existing intersection performance was assessed with the modelling results indicating both intersections are currently operating at a good level of service during both AM and PM peak hours. The intersections are operating with average delays between 6 – 11 seconds, at level of service (LoS A), and a degree of saturation (DoS) of less than 0.20.

Daily mid-block traffic volumes on Braidwood Road north of the intersection with Wallace Street indicate that the road carries an average of about 1,210 two-way vehicles per day on weekdays. Braidwood Road currently has a sealed width of about 10 metres, which complies with the Austroads (2016) *Guide to Road Design Part 3: Geometric Design* (AGRD Part 3) standards based on the daily traffic volume.

Over the five-year period (2018-2022), the area recorded a total of 11 road crashes. Five crashes occurred mid-block on Braidwood Road and two crashes at its intersection with Wallace Street. The mid-block crashes involved vehicles driving off the carriageway into an object and one head-on collision. Both crashes at the intersection were a result of cross-traffic movements.

Public transport services in the area include the NSW TrainLink train services and local school buses. Tarago Station is a stop along the Southern NSW rail route between Sydney and Canberra. While there are no regular bus services, school buses operate between the area and several destinations, with five school buses operating between 7am – 9am and between 3pm – 5pm. The nearest school bus stops from the sites are on King Street and Braidwood Road.

There is a railway level crossing on Goulburn Street, north of its intersection with King Street. The crossing is controlled by active protection using flashing lights and boom gates.

Active transport infrastructure is limited, given the rural nature of the area. There are footpaths along the northwestern side of Goulburn Street, the northern side of Wallace Street, and on both sides of Braidwood Road for about 200 metres to Tarago Public School and Tarago Community Playground.

Traffic generation and distribution

Working hours for the Stage 2 works are planned to be between 7am – 6pm on weekdays and 8am – 1pm on Saturdays. To reduce the impact of the works, the removal of material by truck will only take place between 9am – 3pm to avoid coinciding with school traffic and school bus operations.

Stage 2 of the works is anticipated to employ ten workers across the two sites. All workers are presumed to travel to and from the sites by private car (light vehicle), arrive at the sites before 7am, and depart after 6pm. Hence, Stage 2 is anticipated to not generate any light vehicle traffic during the AM and PM peak hours.

The three phases of work at Site 3 will take place sequentially, while the removal of contaminated material from Site 2 and Site 3 is planned to occur concurrently.

For the purpose of this assessment, the traffic generated during the contaminated material removal phase is considered a worst-case scenario during Stage 2 and was assessed for its impacts on the surrounding roads.

The Stage 2 works are expected to generate a maximum of 16 truck movements per day. While no truck movements are expected to occur during the surrounding intersection peak hours, to assess a worst-case traffic impact scenario, the following peak-hour movements were assumed to occur:

– **AM peak hour:** 1 incoming truck to Site 2 and 5 outgoing trucks from Site 3.

– **PM peak hour:** 1 outgoing truck from Site 2 and 5 incoming trucks to Site 3.

During the Stage 2 works, the disposal locations of material have been identified to be facilities in Western Sydney or Goulburn, both to the north of the sites. The fill material for Site 3 will be imported from Western Sydney or Goulburn to the north. Braidwood Road will provide a connection between the sites and the wider road network to the north. Stage 2 will generate only material transport traffic but no light vehicle traffic during the peak hours.

Traffic and transport impact assessment

As the Stage 2 works are anticipated to commence as soon as possible and occur over 12 weeks, the existing traffic conditions and intersection performances were deemed sufficient to provide a base case for the purpose of comparison. The TTIA has also assessed the potential cumulative impacts incurred by the Stage 2 works and nearby major developments, which include the construction works of the Woodlawn Mechanical Biological Treatment Facility and Bioreactor leachate dams, the Woodlawn Advanced Energy Recovery Centre, and the Blind Creek Solar Farm.

The intersection modelling indicated that the traffic generated by the Stage 2 works will have minimal impact on the operation of the intersections with all performance metrics at the Goulburn Street / King Street intersection remaining unchanged and a negligible increase in the average delay at the Braidwood Road / Wallace Street intersection. In the cumulative scenario, the results show that the two intersections are forecast to still operate at a good level of service (LoS A) during both peak hours with marginal increases in the delays and DoS.

Braidwood Road north of Wallace Street is forecast to carry a maximum of about 1,240 vehicles per day during the Stage 2 works and 1,470 vehicles per day under the cumulative scenario. This is still within the same volume category in AGRD Part 3 and no upgrades are indicated.

The works are expected to take about 12 weeks. The short-term increase in traffic volumes is not expected to have a substantial effect on the safety of the road network around the sites. Both workers' commute traffic and material transport traffic are planned to be outside of school start and end times. The impacts on road safety for all users during the works will be further mitigated through a traffic management plan developed in consultation with the Goulburn Mulwaree Council. The plan will include strategies to minimise conflicts between different road users with clear advance identifiers of work activities and vehicles, especially around the site access points.

All workers are expected to commute by private cars and, hence, no impacts on the public transport and active transport networks are expected from the increased travel demand generated by the Stage 2 works.

Given the low volumes of generated traffic and the existing train services, no impacts associated with the proposed works are expected on and from the level crossing.

Conclusion

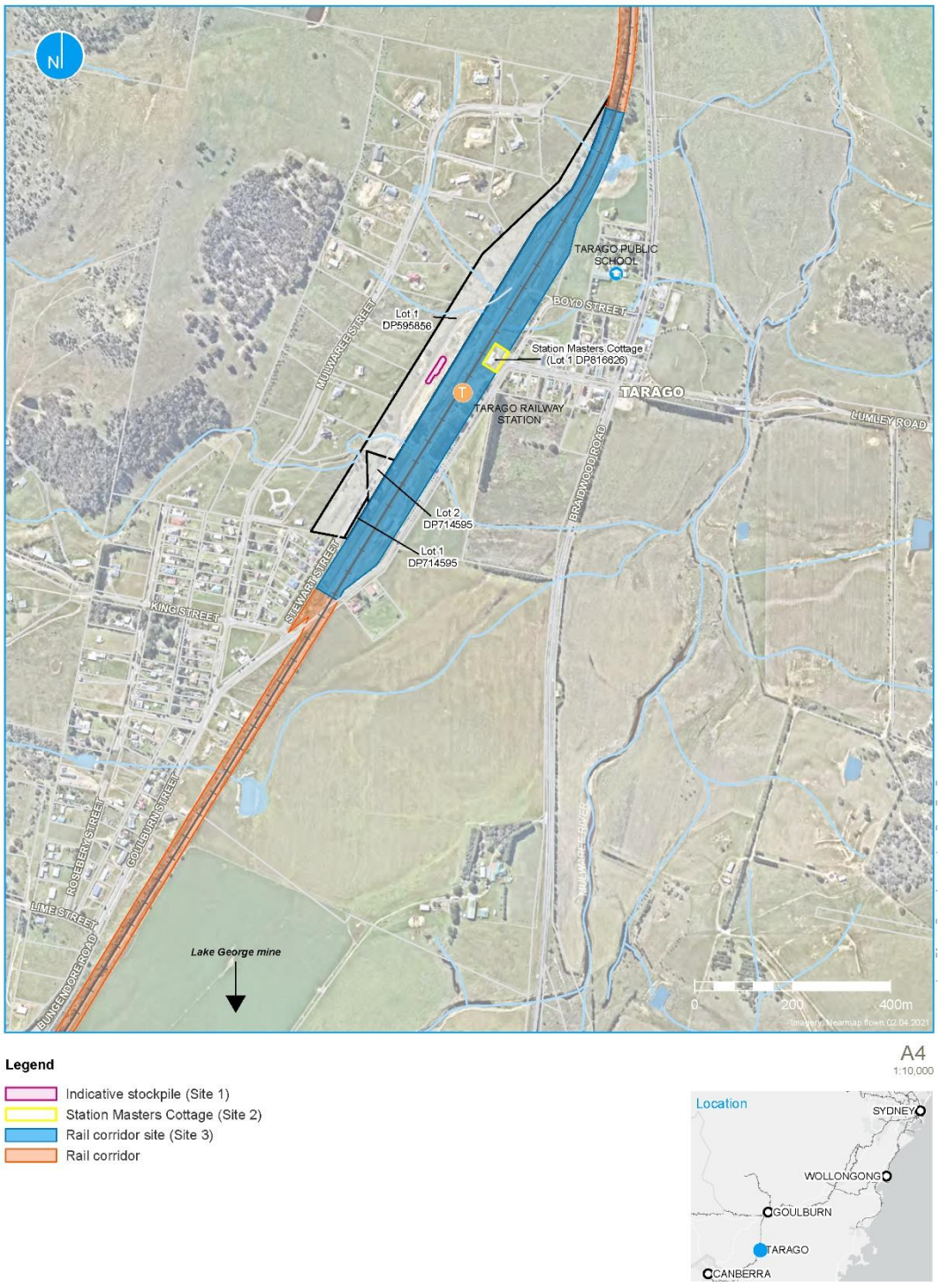
Overall, the TTIA assessment concludes that Stage 2 of the proposed works will not have significant impacts on the operation of the road network, road safety, and public transport and active transport networks adjacent to the sites.

1.0 Introduction

1.1 Background

SCT Consulting has been engaged by Ramboll Australia (Ramboll) on behalf of Transport for New South Wales (TfNSW) to prepare a traffic and transport impact assessment (TTIA) to support the Review of Environmental Factors (REF) to facilitate remedial and demolition works (the works) around Tarago Railway Station in Tarago, New South Wales (NSW), along the Goulburn – Bombala rail corridor, as shown in **Figure 1-1**.

Figure 1-1 Locality of the working site



Source: Ramboll Australia (2024)

Tarago is a township within the Goulburn Mulwaree Local Government Area (LGA) located about 70km northeast of Canberra and 37km south of Goulburn. Tarago Station is located on Goulburn Street in Tarago adjacent to the intersection with Wallace Street. The station is part of the Goulburn – Bombala rail corridor and a stop on the Southern NSW regional train network for NSW TrainLink services between Sydney and Canberra.

The works concern the remediation of the following three sites, described further in **Section 2.0**:

– **Site 1:** Stockpile Remediation

– **Site 2:** Station Masters Cottage Remediation

– **Site 3:** Rail Corridor Remediation.

The works are to be carried out over two stages:

– **Stage 1** includes the removal of a contaminated stockpile from Site 1 and the demolition of the former Station Masters Cottage and associated above-ground structures on Site 2.

– **Stage 2** involves excavating and relocating soils from Site 2, and remediation works at Site 3.

1.2 Purpose of report

This TTIA report is prepared to support **Stage 2** of the proposed remedial and demolition works along the Goulburn – Bombala rail corridor in Tarago, NSW. The report aims to identify and assess potential traffic and transport impacts associated with the Stage 2 works and nearby developments and addresses the following:

– Review of the site context and existing traffic and transport conditions, including road, public transport, and active transport networks.

– Analysis of the generation and distribution of traffic demands generated by the works and nearby developments.

– Assessment of potential traffic and transport impacts on the operation of road network, road safety, and public transport and active transport networks.

The potential traffic and transport impacts of the Stage 1 works have been assessed in a separate report.

1.3 Report structure

The report is structured into the following sections:

– **Section 2.0** outlines an overview of the works.

– **Section 3.0** describes the existing conditions of the road, public transport, and active transport networks.

– **Section 4.0** provides analyses of the likely traffic generation and distribution associated with the works.

– **Section 5.0** assesses potential traffic and transport impacts on the road network operation, road safety, and public transport and active transport networks due to the proposed works and cumulative impacts of nearby developments.

– **Section 6.0** summarises the study findings and presents conclusions.

2.0 Project overview

The works are the remediation and demolition around Tarago Station along the Goulburn – Bombala rail corridor. The works are to be carried out across three sites:

– **Site 1 (Lot 1 DP 595856): Stockpile Remediation**

  Extension of a loop line within the Rail Corridor Site (Site 3) generated a stockpile of about 750m^3 lead-contaminated fouled ballast (the Stockpile), which was placed on Lot 1 DP 595856, privately owned land adjacent to the Rail Corridor Site (Site 3). Site 1 is owned by Veolia.

  TfNSW's preferred remedial strategy is offsite disposal at an appropriately licensed waste facility. The Stockpile will be loaded directly onto trucks and transported offsite. The remediation is expected to take about 3 weeks.

– **Site 2 (Lot 1 DP 816626): Station Masters Cottage Remediation**

  During investigations into the lead contamination of the Rail Corridor Site (Site 3), it was identified that lead contamination had impacted Site 2, with soil found to contain lead at concentrations exceeding national guideline values for the protection of human health and the environment.

  Site 2 therefore requires remediation and has been included within the Remedial Action Plan, Tarago Rail Corridor (Ramboll, June 2024). The Site will be remediated in two stages:

  - Stage 1 including the demolition of the former Station Masters Cottage and associated above ground structures
  - Stage 2 including the excavation of Site 2 to a depth of approximately 0.25 metres below ground level (mbgl).

  Stage 1 will include demolition and removal of about 50m^3 of building waste to be transported to an appropriately licensed facility. The demolition is expected to take about 2 weeks with removal of the demolished material to occur on one day.

  Stage 2 will be undertaken in accordance with the Remedial Action Plan (Ramboll, June 2024) and include excavation of approximately 250m^3 of contaminated soils. Soils that are validated to be less than the Health Investigation Level for commercial or industrial land use (HIL D) criteria but greater than the Health Investigation Level for residential land use (HIL A) will be relocated to the Rail Corridor Site (Site 3) for reuse. Soils validated to be greater than the HIL D will be transported to an appropriately licensed facility in Western Sydney. The transport of material off Site 2 is expected to take about 2 weeks, which would be incorporated into the Site 3 program.

– **Site 3 (part Lot 22 DP 1202608): Rail Corridor Remediation**

  The Goulburn – Bombala rail corridor was historically used to transport lead, copper, and zinc ore concentrates from the Woodlawn Mine to smelters in Newcastle and Port Kembla and a concentrate berth in Port Kembla. A rail corridor loadout complex, located about 20 metres north of Tarago Station, was utilised as part of the ore distribution. In 2020, the area was declared to be significantly contaminated by the NSW Environment Protection Authority.

  Lead contaminated excavated spoil will be transported by truck to an appropriately licensed facility in Western Sydney. The remediation of Site 3 is expected to take about 12 weeks.

The three sites are shown in **Figure 1-1**.

The works are to be carried out over two stages as described in **Table 2-1**. This TTIA report is prepared to support **Stage 2** of the proposed works. The potential traffic and transport impacts of the Stage 1 works have been assessed in a separate report.

Table 2-1 Stages of the works

Site	Stage 1	Stage 2
Site 1	– Removal of about 750m^3 of fouled ballast – Validation sampling of residual soils beneath the stockpile – Excavation if contamination is present within residual soils, this would be an additional volume	
Site 2	– Demolition and removal of above-ground structures generating about 50m^3 of building waste	– Excavation of approximately 250m^3 of contaminated material – Relocate soils below HIL D for reuse within the rail corridor – Transportation of soils greater than HIL D to Western Sydney – Validation sampling of excavated area – Reinstate the site with imported materials appropriate for the intended use
Site 3		– Site establishment – Pre-excavation survey – Excavation and disposal of approximately 100m^3 of railway sleepers to appropriately licensed facility – Excavation of approximately 3,890m^3 contaminated soils and transport to Western Sydney – Validation of excavated areas – Reinstate the site with imported materials appropriate for the intended use – Post-excavation survey and remediation – Demobilisation
Total volume of materials to be transported	**Removal: ~800m^3**	**Removal: ~4,200 m^3** **Importation: ~1,900 m^3**

3.0 Existing conditions

3.1 Road network

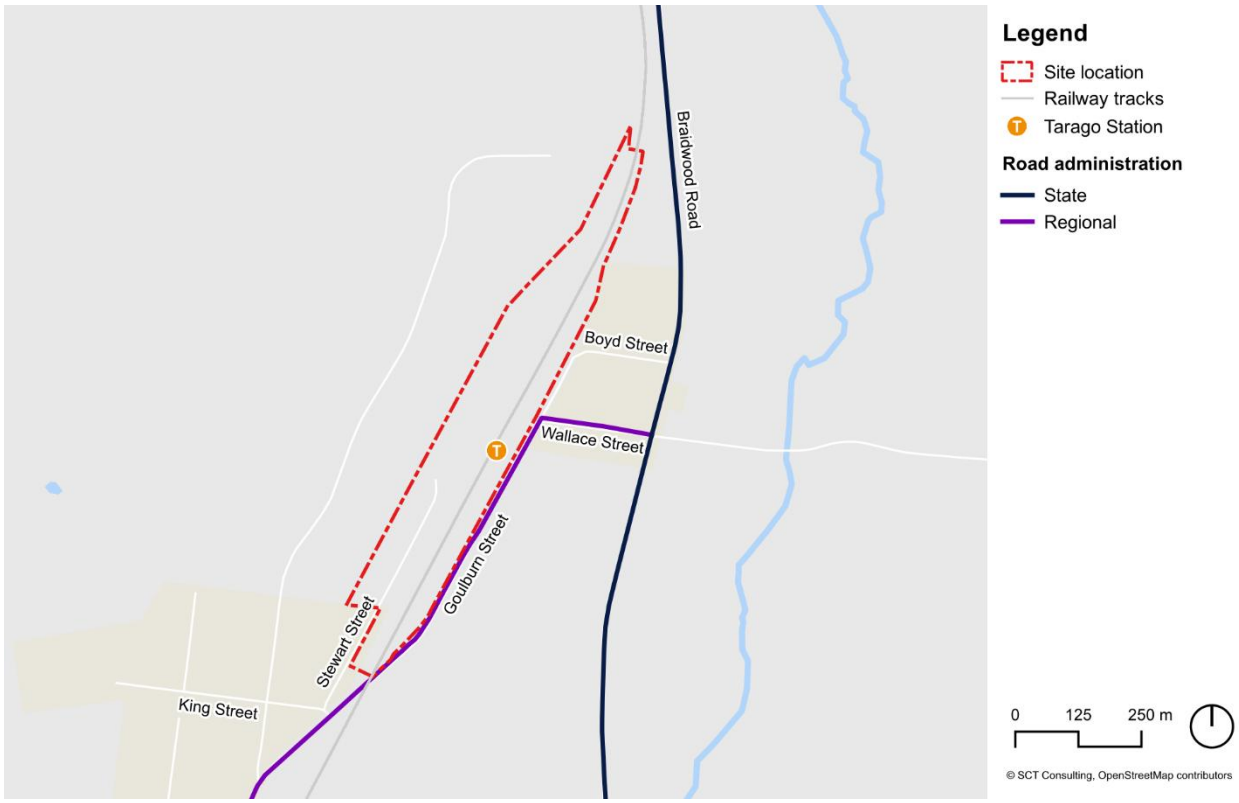
The sites are along the Goulburn – Bombala rail corridor around Tarago Station. Key roads in proximity to the sites are shown in **Figure 3-1** and described below:

– **Braidwood Road** is a State Road that extends to Goulburn in the north and the Kings Highway in the south. Braidwood Road is a two-way road with one lane in each direction. Within Tarago, the posted speed limit is 60km/h, with a 40km/h school zone enforced north of Boyd Street. The road is an approved 25/26m B-double route.

– **Goulburn Street** is a regional arterial road that runs through Tarago. It extends from Wallace Street adjacent to Tarago Station to Lime Street, beyond which it continues south as Bungendore Road. To the north, it continues as Wallace Street. The road is a two-way road with one lane in each direction and a posted speed limit of 50km/h between Wallace Street and King Street and 60km/h south of King Street. The road is an approved 25/26m B-double route.

– **Stewart Street** is a local street that runs from the intersection of Goulburn Street / King Street south of Tarago Station on the west side of the rail corridor. It is a two-way road with no lane markings and a carriageway width of between 8 – 10 metres for the sealed section of the road that runs from the intersection with King Street to just south of the station. North of the station, the road continues as unsealed, forming the proposed access road for the west side of the rail corridor. Stewart Street has a speed limit of 50km/h.

Figure 3-1 Key roads in proximity to the sites



Source: TfNSW (2021)

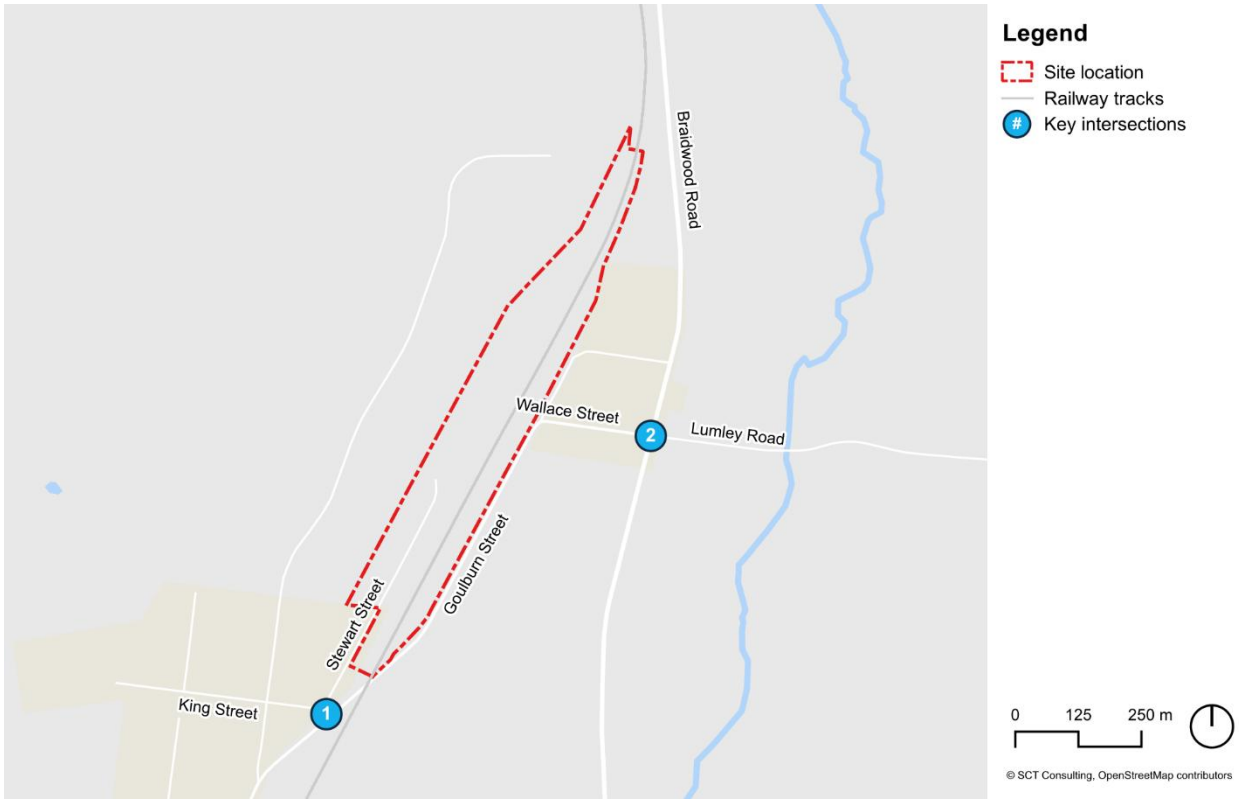
3.2 Intersection layout and geometry

Two key intersections around the sites that will accommodate the traffic generated by the works have been identified. They include:

1. Goulburn Street / King Street intersection
2. Braidwood Road / Wallace Street intersection

The key intersections were assessed for the traffic and transport impacts incurred by the works, which is discussed in **Section 5.1** of the report. The locations of the key intersections are illustrated in **Figure 3-2**.

Figure 3-2 Key intersections around the sites



The **Goulburn Street / King Street intersection** is located south of the sites and will accommodate the traffic coming in and out of Site 1. The intersection's characteristics are described in **Table 3-1** with a satellite image of the intersection shown in **Figure 3-3**.

Table 3-1 Goulburn Street / King Street intersection

Aspect	Description
Intersection control	Give-way priority control
Goulburn Street (northeast approach)	One lane entry and one lane exit
Goulburn Street (southwest approach)	One lane entry and one lane exit
King Street (west approach)	One lane entry and one lane exit with a short median and no line markings
Active transport amenities	A footpath on the northwestern side of the northeast approach; no pedestrian crossings provided
Heavy vehicle routes	Approved 25/26m B-double route along the northeast and southwest approaches

Figure 3-3 Satellite imagery of the Goulburn Street / King Street intersection

Source: Nearmap (2021) / Annotated by SCT Consulting

The **Braidwood Road / Wallace Street intersection** is located east of the sites. It provides a connection between the sites and the wider road network and will accommodate most of the traffic generated during Stage 2 of the works. The intersection's characteristics are described in **Table 3-2** and a satellite image of the intersection is shown in **Figure 3-4**.

Table 3-2 Braidwood Road / Wallace Street intersection

Aspect	Description
Intersection control	Stop-sign priority control
Braidwood Road (north approach)	One lane entry and one lane exit
Braidwood Road (south approach)	One lane entry and one lane exit
Lumley Road (east approach)	One lane entry and one lane exit with no line markings
Wallace Street (west approach)	One lane entry and one lane exit
Active transport amenities	Footpaths along both sides of the north approach and the northern side of the west approach; no pedestrian crossings provided
Heavy vehicle routes	Approved 25/26m B-double routes along the north, south, and west approaches.

Figure 3-4 Satellite imagery of the Braidwood Road / Wallace Street intersection

Source: Nearmap (2021) / Annotated by SCT Consulting

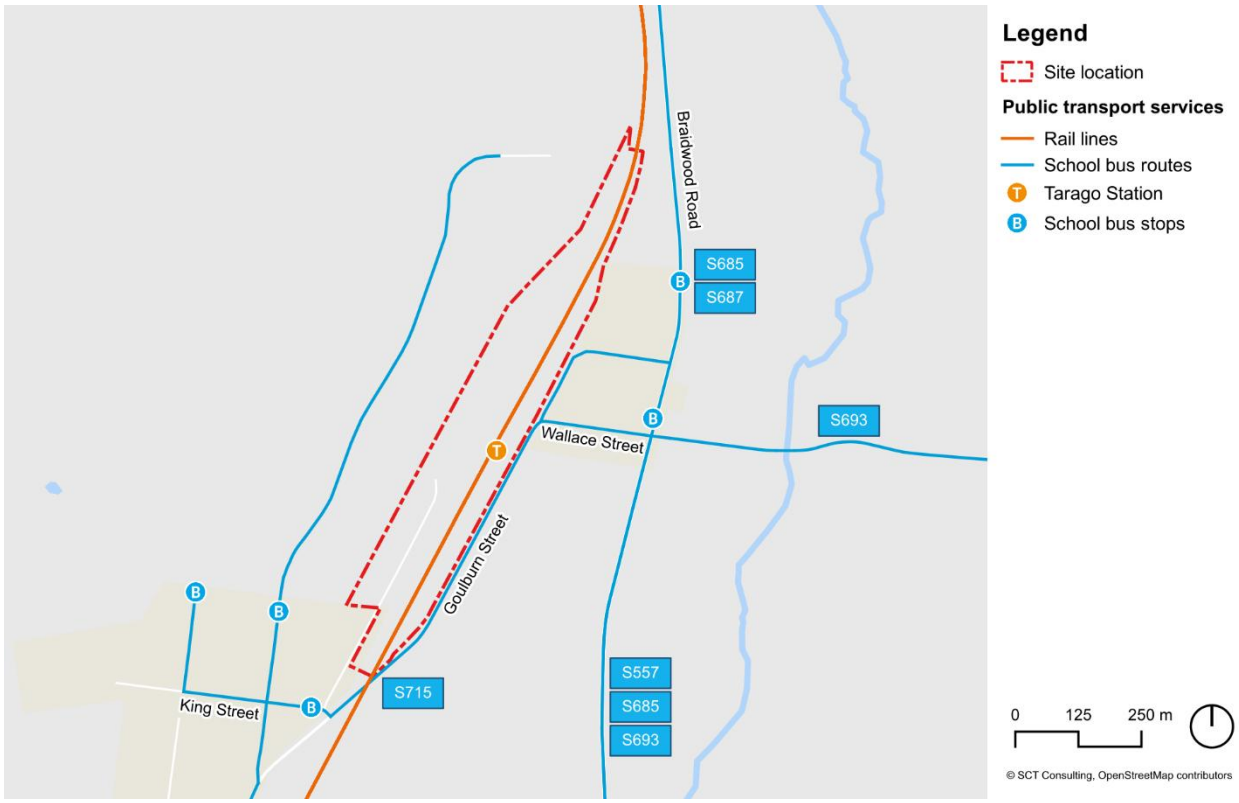
3.3 Public transport

Public transport services in the area include the regional train services and local school buses, as shown in **Figure 3-5**.

Tarago Station is a stop along the regional train services between Sydney and Canberra operated by NSW TrainLink. Three trains depart in each direction every day throughout the week.

While there are no regular bus services, school buses operate between the area and several destinations, namely Goulburn, Braidwood, Lower Boro, and Taylors Creek Road. Five school buses operate in the area between 7am – 9am and five buses between 3pm – 5pm. The nearest school bus stops from the sites are located on King Street at Goulburn Street and on Braidwood Road north of Wallace Street.

Figure 3-5 Public transport services around the sites



Source: TfNSW (2024)

3.4 Active transport

Active transport infrastructure in the vicinity of the sites is considered limited, given the rural nature of the area. Notably, there is a footpath along the northwestern side of Goulburn Street that stretches from King Street in the south to Wallace Street in the north. The footpath then extends along the northern side of Wallace Street. On Braidwood Road, footpaths are provided on both sides of the road north from the intersection with Wallace Street for about 200 metres to Tarago Public School and Tarago Community Playground.

Street views along Goulburn Street and Braidwood Road are shown in **Figure 3-6** and **Figure 3-7** respectively.

Figure 3-6 Street view on Goulburn Street looking north from King Street

Source: Google Street View (2022)

Figure 3-7 Street view on Braidwood Road looking north from Wallace Street

Source: Google Street View (2022)

3.5 Railway level crossings

There is a railway level crossing on Goulburn Street, north of its intersection with King Street. The crossing is controlled by active protection using flashing lights and boom gates. A street view of the crossing is depicted in **Figure 3-8**.

Figure 3-8 Street view of railway level crossing on Goulburn Street looking south

Source: Google Street View (2022)

3.6 Crash statistics

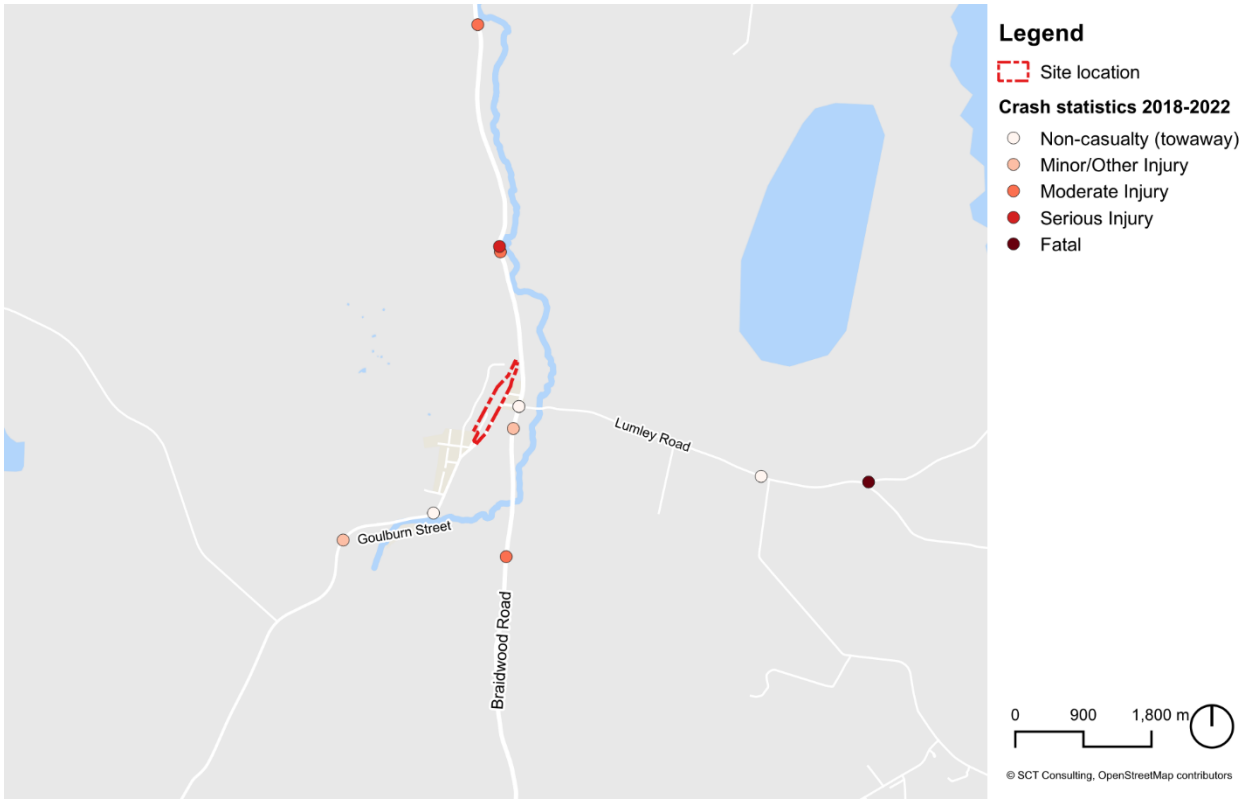
Crash statistics between 2018 and 2022 were obtained from the Transport Open Data Hub (TfNSW, 2023) to develop an understanding of road crashes that occurred within 5 km of the sites. The locations of the crashes recorded in the five-year period are shown in **Figure 3-9**.

Over the five years, the area recorded a total of 11 road crashes. These included six non-casualty and minor injury crashes, three moderate injury crashes, one serious injury crash, and one crash that resulted in a fatality.

Five crashes occurred mid-block on Braidwood Road and two crashes at its intersection with Wallace Street. Goulburn Street and Lumley Road each recorded two crashes, including the fatal crash at the Lumley Road / Cullulla Road intersection.

The crashes on Braidwood Road were classified as three non-casualty and minor injuries, three moderate injuries, and one serious injury. The serious injury crash involved a B-double vehicle driving off the carriageway into an object. Other mid-block crashes involved three occurrences where vehicles drove off the carriageway into an object or a parked vehicle and one head-on collision. Both crashes at the intersection were a result of cross-traffic movements.

Figure 3-9 Road crashes within 5 km of the sites



Source: TfNSW (2023)

3.7 Existing traffic conditions

3.7.1 Intersection analysis

Intersection traffic volumes

Existing traffic volumes at the two key intersections were collected via on-site traffic surveys conducted in 2021 and 2024.

The survey at the Goulburn Street / King Street intersection was carried out on Thursday 13 June 2024, while the Braidwood Road / Wallace Street intersection survey was undertaken on Thursday 12 August 2021. The volumes at the Braidwood Road / Wallace Street intersection have been adjusted with correction factors to account for the reduced traffic recorded during a COVID-19 lockdown period.[1]

Since the adjusted volumes at the Braidwood Road / Wallace Street intersection represented the traffic conditions in 2022, a traffic growth rate was applied to estimate the intersection volumes in 2024. The growth rate was adopted from the average annual population growth rate of 2.3 per cent per annum recorded in the Rural South region of the Goulburn Mulwaree LGA between the 2016 Census and the 2021 Census.[2]

The peak hours of the two intersections were found to be:

– AM peak hour: 7am – 8am.

– PM peak hour: 4pm – 5pm.

The existing 2024 traffic volumes at the two intersections during the AM and PM peak hours are illustrated in **Figure 3-10** and **Figure 3-11** respectively.

[1] EMM (2022) Woodlawn Advanced Energy Recovery Centre – Traffic Impact Assessment
[2] .id (2024) Population and dwellings | Goulburn Mulwaree | Community profile

Figure 3-10 Existing traffic volumes during the AM peak hour (2024)

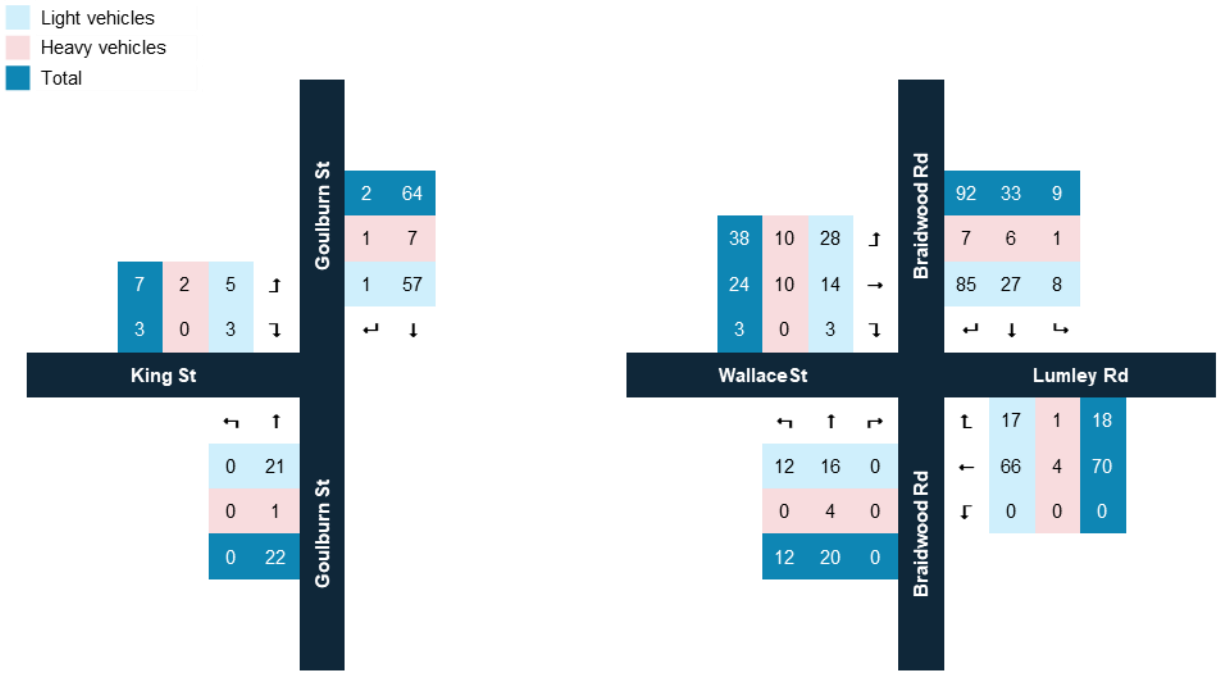
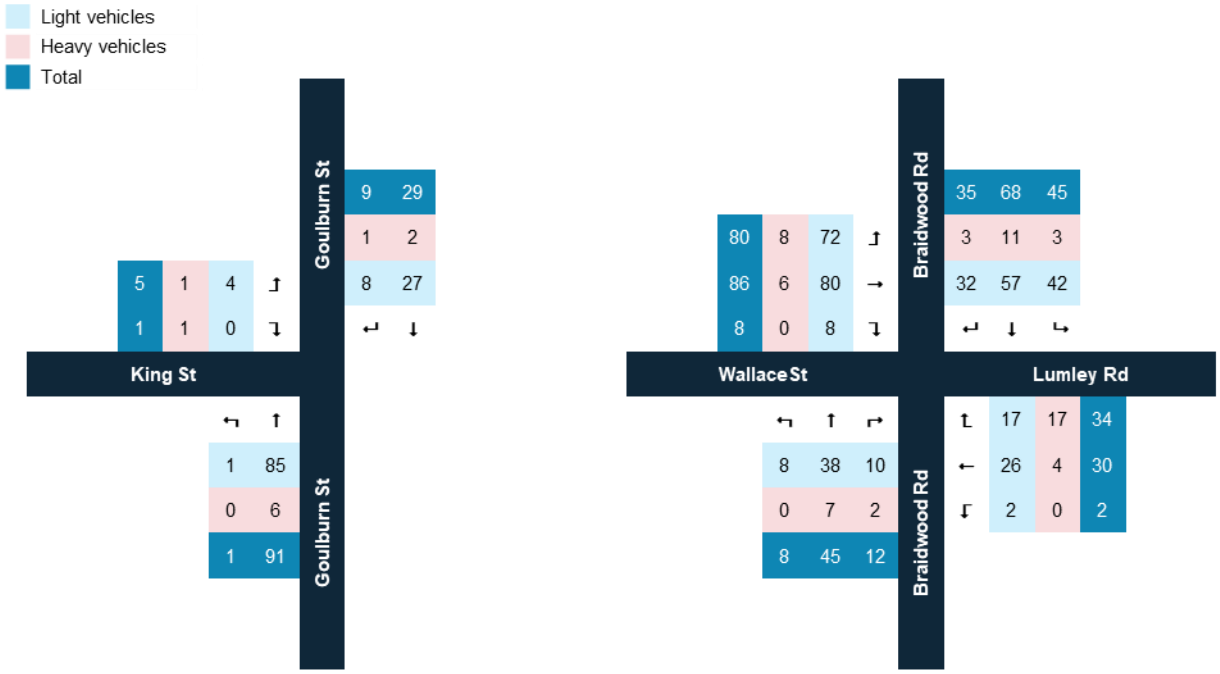


Figure 3-11 Existing traffic volumes during the PM peak hour (2024)



Intersection performance metrics

Intersection performance is assessed through intersection modelling for the intersection Level of Service (LoS), which is a measure of the level of congestion at an intersection based on the average delay per vehicle experienced at the intersection. **Table 3-3** provides a summary of the LoS performance bands as defined by the Road and Maritime Services (2013) *Traffic Modelling Guidelines*.

Table 3-3 Level of Service categories

Level of Service	Average delay per vehicle (seconds)	Performance explanation
A	Less than 14.5	Good operation
B	14.5 to 28.4	Good with acceptable delays and spare capacity
C	28.5 to 42.4	Satisfactory
D	42.5 to 56.4	Operating near capacity
E	56.5 to 70.4	At capacity, at signals incidents will cause excessive delays. Roundabouts require other control method.
F	70.5 or greater	At capacity, at signals incidents will cause excessive delays. Roundabouts require other control method.

Source: Road and Maritime Services (2013) *Traffic Modelling Guidelines*

In addition, the Degree of Saturation (DoS) is included to complement the LoS. It is a measure of traffic volume per capacity for the worst turning movement at an intersection. A DoS approaching 1.00 implies that the turning movement is operating at close to its capacity and an alternative intersection control should be considered.

The performance metrics were analysed via SIDRA Intersection 9.1, the most recent version of the software at the time of writing. The program is a typical tool utilised for analyses of this scale.

Existing intersection performance

The existing intersection performance is shown in **Table 3-4**. With the rural nature of the area, the modelling results indicate that both intersections are currently operating at a good level of service during both AM and PM peak hours. The intersections are operating with average delays between 6 – 11 seconds, at LoS A, and with a DoS of less than 0.20. Detailed SIDRA results are provided in **Appendix A**.

Table 3-4 Existing intersection performance

Intersection	AM peak hour			PM peak hour		
	Delay (sec)	LoS	DoS	Delay (sec)	LoS	DoS
Goulburn Street / King Street	6.5	A	0.04	6.6	A	0.05
Braidwood Road / Wallace Street	9.6	A	0.08	11.1	A	0.14

Notes: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections.

3.7.2 Roadway analysis

Mid-block traffic volumes

Daily mid-block traffic volumes on Braidwood Road north of the intersection with Wallace Street were collected via a tube traffic count survey conducted for 14 days in August 2021 (EMM, 2022). The road segment was chosen for the mid-block analysis as most of the generated traffic from Stage 2 of the works is expected to travel to and from the north via Braidwood Road.

Similar to the intersection traffic volumes, a traffic growth rate of 2.3 per cent was applied to estimate the mid-block volumes in 2024. The estimation found that Braidwood Road carries an average of about 1,210 vehicles per day on weekdays, comprising about 630 northbound vehicles towards Goulburn and 580 southbound vehicles towards Braidwood.

Roadway design standards

The Austroads (2016) *Guide to Road Design Part 3: Geometric Design* (AGRD Part 3) specifies road width design standards for single-carriageway rural roads based on daily traffic volumes. The guideline was consulted to assess the compliance of Braidwood Road with the design standards. **Table 3-5** summarises the design standards as presented in the AGRD Part 3.

Table 3-5 Daily traffic volumes and design standards under the AGRD Part 3

Daily traffic volume (veh/day)	Design standards
1 – 150	8.7m wide total carriageway (if unsealed); or minimum 3.7m wide seal
150 – 500	Minimum 7.2m wide seal
500 – 1,000	Minimum 7.2m – 8m wide seal
1,000 – 3,000	Minimum 9m wide seal
> 3,000	Minimum 10m wide seal

Source: Guide to Road Design Part 3: Geometric Design, Austroads, 2016

Based on the daily traffic volume of 1,210 vehicles per day, Braidwood Road falls under the 1,000 – 3,000 vehicles volume category, which recommends the carriageway to have a minimum sealed width of 9 metres. The road currently has a sealed width of approximately 10 metres, including a 1.5-metre shoulder on the western side and a 0.7 metre shoulder on the eastern side, and complies with the AGRD Part 3 standards.

4.0 Traffic generation and distribution

4.1 Traffic generation

Working hours for the Stage 2 works are planned to be between 7am – 6pm on weekdays and 8am – 1pm on Saturdays. To reduce the impact of the works, the removal of material by truck will only take place between 9am – 3pm to avoid coinciding with school traffic and school bus operations.

Vehicles and plants expected to access the two sites during Stage 2 are:

– Light vehicles transporting workers

– Truck-trailer combinations to remove material

– A 30-tonne excavator

– A water cart.

Site 3 would also require a dozer and a roller, which, together with the 30-tonne excavator, would arrive on-site at the start of the works program and leave at the end. At each site, a water cart would likely arrive and leave once a day.

4.1.1 Workers

Each site is expected to employ five workers per day, totalling ten workers for the Stage 2 works, assuming the works at both sites occur simultaneously. All workers are presumed to travel to and from the sites by private car (light vehicle), arrive at the sites before 7am, and depart after 6pm. While there may be some light vehicle movements to a site office or between sites, the Stage 2 works are not anticipated to generate any light vehicle traffic during the AM and PM peak hours.

4.1.2 Material transport

Stage 2 works are expected to remove 250m^3 of contaminated material from Site 2 and 3,890m^3 of contaminated soils from Site 3, totalling 4,140m^3 of contaminated material. In addition, 100m^3 of railway sleepers will be excavated and removed from Site 3. At Site 3, around 1,890m^3 of fill material will be imported to reinstate the site for the intended use.

The three phases of work at Site 3 will take place sequentially, while the removal of contaminated material from Site 2 and Site 3 is planned to occur concurrently.

The materials are estimated to weigh 1.8 tonnes per m^3 and a truck-trailer vehicle can carry a maximum of 42 tonnes per truck. Due to site constraints, Site 2 can generate a maximum of six truck movements per day, while Site 3 can accommodate up to 10 movements per day. A breakdown of truck movements generated during Stage 2 is presented in **Table 4-1**.

Table 4-1 Truck movements generated during Stage 2

Site	Total volume of materials to be transported (m^3)	Total trucks required (vehicles)	Number of truck movements	
			Per day	Peak hour
Site 2				
Contaminated material removal	250	11	6	1
Stage 2 Total	**250**	**11**	**6**	**1**
Site 3				
Railway sleeper removal	100	5	10	5
Contaminated material removal	3,890	167	10	5
Fill material importation	1,890	81	10	5
Stage 3 Total	**5,880**	**253**	**10**	**5**
Grand Total	**6,130**	**264**	**16**	**6**

For the purpose of this assessment, the traffic generated during the contaminated material removal phase, which would take the longest time, is considered a worst-case scenario and was assessed for its impacts on the surrounding roads.

The following assumptions were made regarding truck movements for the assessment:

– At Site 2, no truck will be parked at the site overnight. Instead, empty trucks will arrive at the site in the morning after 9am and leave for their disposal location before 3pm.

– At Site 3, five trucks will remain on-site overnight. The trucks will be loaded in the morning and depart for their disposal location after 9am. Empty trucks will return to the site before 3pm to prepare for loading and transportation the next morning.

While no truck movements are expected to occur during the surrounding intersection peak hours, to assess a worst-case traffic impact scenario, the following peak-hour truck movements were assumed to occur:

– **AM peak hour:** 1 incoming truck to Site 2 and 5 outgoing trucks from Site 3.

– **PM peak hour:** 1 outgoing truck from Site 2 and 5 incoming trucks to Site 3.

4.2 Traffic routes and distribution

4.2.1 Workers' access routes

Of the ten workers employed for the Stage 2 works, based on the size and location of population centres around the area, eight workers are presumed to be sourced from Goulburn to the north of the sites and two workers from Bungendore to the south and split equally between Site 2 and Site 3.

Workers from Goulburn are anticipated to travel to and from the site via Braidwood Road, while Bungendore workers will travel via Bungendore Road.

However, as no light vehicle traffic is expected to be generated during the peak hours, workers' commuting traffic was not included in the intersection modelling for the potential traffic and transport impacts of the works. The low traffic volumes would have minimal impact on the traffic conditions outside of the peak hours.

4.2.2 Material transport routes

During the Stage 2 works, the disposal locations of material have been identified to be facilities in Western Sydney or Goulburn, both to the north of the sites. The fill material for Site 3 will be imported also from Western Sydney or Goulburn. Braidwood Road will provide a connection between the sites and the wider road network and destinations to the north. The material transport routes are provided in **Table 4-2**.

Table 4-2 Material transport routes

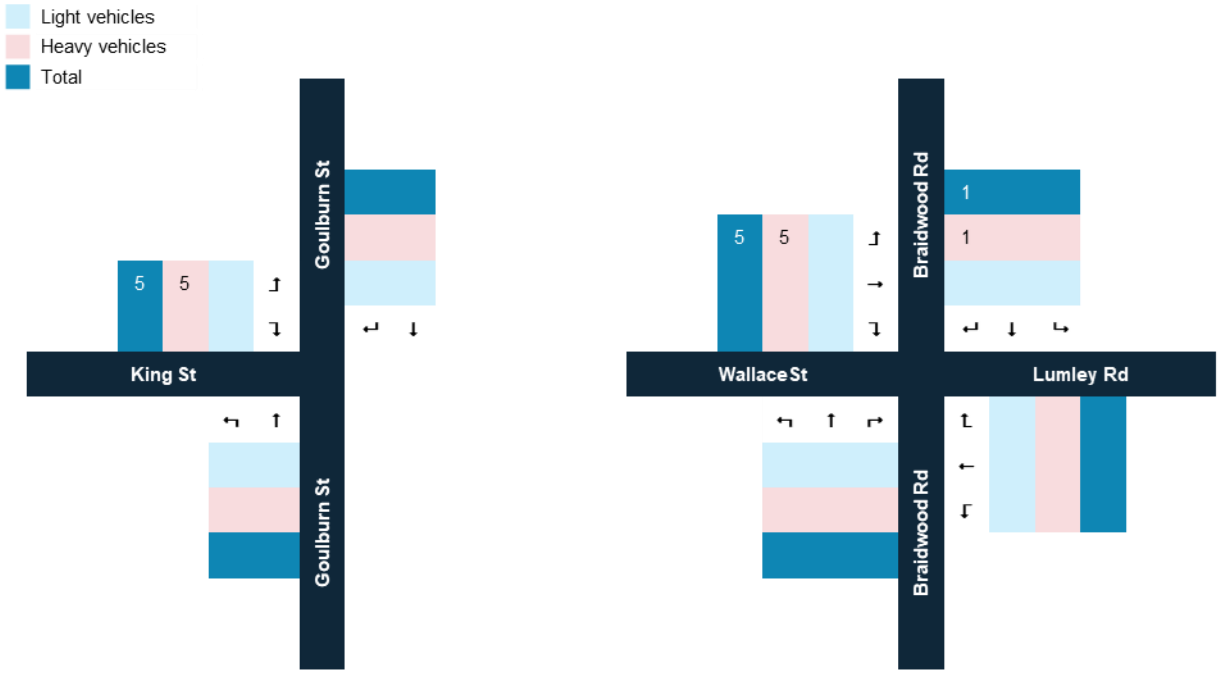
Materials	Disposal location	Route	Total trucks required (vehicles)
Site 2			
Contaminated material	Western Sydney	Goulburn St → Wallace St → Braidwood Rd (North)	11
Site 3			
Railway sleepers	Western Sydney or Goulburn	Stewart St → King St → Goulburn St → Wallace St → Braidwood Rd (North)	5
Contaminated soils	Western Sydney	Stewart St → King St → Goulburn St → Wallace St → Braidwood Rd (North)	167
Fill material	Western Sydney or Goulburn	Braidwood Rd (North) → Wallace St → Goulburn St → King St → Stewart St	81

It is noted that all roads used for the transport routes except for Stewart and King Streets are approved 25/26m B-double roads under the National Heavy Vehicle Regulator.[3]

4.2.3 Traffic distribution

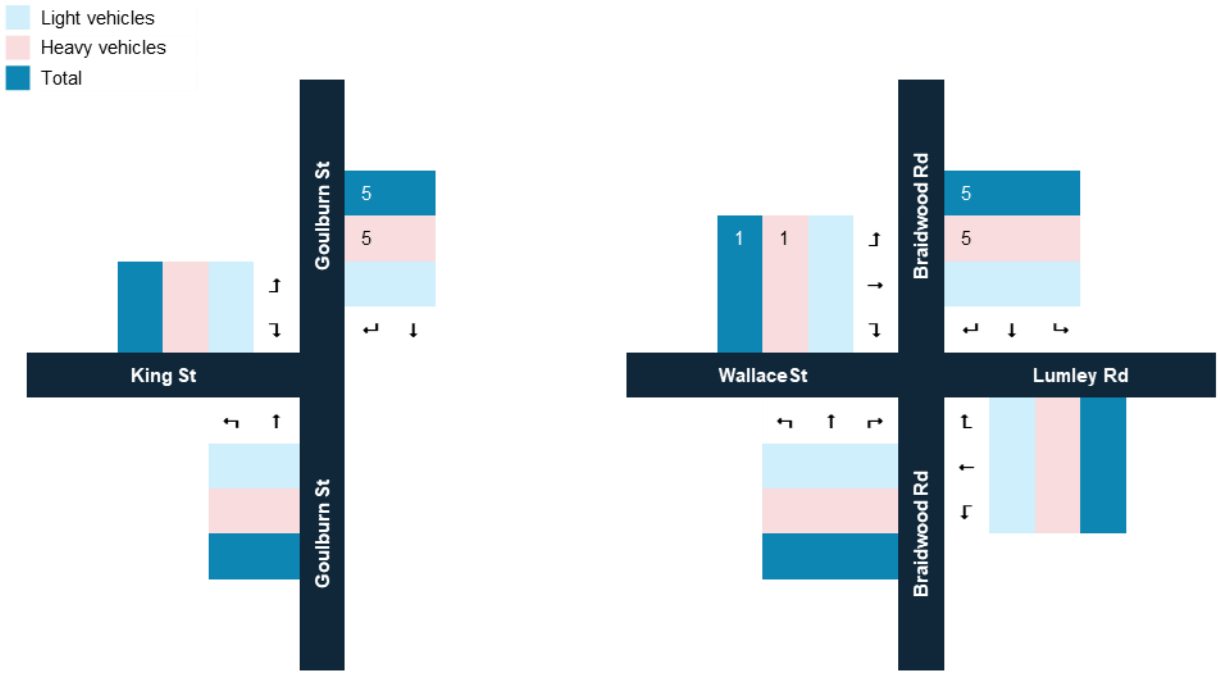
The traffic generated during the contaminated material removal phase was assessed. During both peak hours, there would be no car traffic and only truck traffic between the sites and either Goulburn or Western Sydney. The distribution of the traffic generated by the works during the AM and PM peak hours is illustrated in **Figure 4-1** and **Figure 4-2** respectively.

Figure 4-1 Stage 2 traffic distribution during the AM peak hour



[3] National Heavy Vehicle Regulator (2024) National Network Map

Figure 4-2 Stage 2 traffic distribution during the PM peak hour



5.0 Traffic and transport impact assessment

5.1 Road network operation

5.1.1 Intersection performance – Stage 2 works

The impacts of the proposed Stage 2 works on the key intersections' performance were assessed through intersection modelling. Stage 2 is anticipated to commence as soon as possible and occur over 12 weeks. Hence, the existing 2024 traffic conditions and intersection performances in **Section 3.7** were deemed sufficient to provide a base case for the purpose of comparison and no future base case is necessary.

The modelling results of the intersection performance during Stage 2 are shown in **Table 5-1** with the differences from the results of the existing conditions indicated in brackets.

Table 5-1 Intersection performance during Stage 2 works

Intersection	AM peak hour			PM peak hour		
	Delay (sec)	LoS	DoS	Delay (sec)	LoS	DoS
Goulburn Street / King Street	6.5 (-)	A (A)	0.04 (-)	6.6 (-)	A (A)	0.05 (-)
Braidwood Road / Wallace Street	9.6 (-)	A (A)	0.08 (-)	11.2 (+0.1)	A (A)	0.14 (-)

Notes: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections.
The differences from the existing conditions results are indicated in brackets.

The results indicate that the traffic generated by the Stage 2 works will have minimal impact on the operation of the two key intersections during both peak hours. All performance metrics at the Goulburn Street / King Street intersection remain unchanged, though there will be a negligible increase in the average delay at the Braidwood Road / Wallace Street intersection during the PM peak hour. Detailed SIDRA results are provided in **Appendix A**.

5.1.2 Intersection performance – Cumulative scenario

The TTIA has also assessed the potential cumulative impacts incurred by the Stage 2 works with nearby major developments. A review of publicly available documents identifies the construction works of the following nearby developments that have been included in the cumulative traffic impact assessment:

– Woodlawn Mechanical Biological Treatment Facility (MBTF) and Bioreactor (WBR) leachate dams[4]

– Woodlawn Advanced Energy Recovery Centre (AERC)[5]

– Blind Creek Solar Farm[6].

While the construction and development timelines of these other developments are unknown, it was assumed that all construction might be occurring at the same time as the proposed Stage 2 works, as a worst-case scenario. Based on the publicly available documentation, the three developments are anticipated to generate 49 light vehicle and 63 heavy vehicle trips passing through both Goulburn Street / King Street and Braidwood Road / Wallace Street intersections during the AM and PM peak hours.

The modelling results of the cumulative scenario are provided in **Table 5-2** with the differences from the existing conditions results indicated in brackets. The modelling results show that the two intersections are forecast to still operate at a good level of service (LoS A) during both peak hours. At the Goulburn Street / King Street intersection, the delay will increase by 0.6 seconds during the PM peak hour while the DoS will slightly increase during both peak hours. At the Braidwood Road / Wallace Street intersection, the average delays will increase by 0.5 and 1.4 seconds during the AM and PM peak hours, respectively. The DoS will also increase marginally during both peak hours. Detailed SIDRA results are included in **Appendix A**.

[4] SCT Consulting (2022) Woodlawn Bioreactor – Modification 6 – Traffic and Transport Impact Assessment
[5] EMM (2022) Traffic Impact Assessment – Woodlawn Advanced Energy Recovery Centre
[6] Amber (2022) Blind Creek Solar Farm – Traffic Impact Assessment

Table 5-2 Intersection performance – Cumulative scenario with Stage 2 and nearby developments

Intersection	AM peak hour			PM peak hour		
	Delay (sec)	LoS	DoS	Delay (sec)	LoS	DoS
Goulburn Street / King Street	6.5 (-)	A (A)	0.09 (+0.05)	7.2 (+0.6)	A (A)	0.11 (+0.06)
Braidwood Road / Wallace Street	10.1 (+0.5)	A (A)	0.12 (+0.04)	12.5 (+1.4)	A (A)	0.20 (+0.06)

Notes: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections.
The differences from the existing conditions results are indicated in brackets.

Overall, the two intersections will have spare capacity to accommodate the cumulative traffic generated by all developments assessed in the modelling and will not be significantly impacted by the increased traffic volumes.

5.1.3 Roadway design standard

The traffic generation and distribution described in **Section 4.0** indicate that the works are estimated to generate a maximum of 16 light vehicle trips and 16 truck trips per day travelling between the sites and the wider road network to the north via Braidwood Road. Braidwood Road is also forecast to accommodate an additional 224 vehicles per day travelling between the nearby major developments and their origins and destinations in the north.

Braidwood Road, north of Wallace Street, is therefore forecast to carry a maximum of about 1,240 vehicles per day during the Stage 2 works and 1,470 vehicles per day under the cumulative assessment with other major projects. The road will remain in the same volume category under the AGRD Part 3 and no upgrades are indicated.

5.2 Road safety

The traffic generated by the works is low compared to the existing traffic volumes within the road network close to the sites. The works are expected to take about 12 weeks, hence, the short-term increase in traffic volumes is not expected to have a substantial effect on the safety of the road network around the sites.

Consideration has been given to avoid the generated truck traffic operating at the same time as the nearby school traffic and school bus operations. It is planned that the removal of materials by truck will only take place between 9am – 3pm. Workers' commute traffic and material transport traffic would be outside of school start and end times.

It is acknowledged that there are still risks associated with the movements of truck-trailer combinations and other heavy-duty vehicles. The impacts on road safety for all users during the works will be further mitigated through the provision of a traffic management plan, which will be developed in consultation with the Goulburn Mulwaree Council. The plan will also include strategies to minimise conflicts between generated traffic and existing road users with clear advance identifiers of work activities and vehicles, especially around the site access points.

5.3 Public and active transport

As discussed, all workers are expected to commute by private cars and, hence, no impacts on the public transport and active transport networks are expected from the increased travel demand generated by the Stage 2 works.

The removal of materials will only take place between 9am – 3pm to avoid coinciding with the school hours and school bus operations. The material transport traffic is hence not expected to create any significant impacts on the operation of the public transport and active transport networks.

The railway level crossing on Goulburn Street is controlled by active protection using flashing lights and boom gates. Given the low volumes of generated traffic and the existing train services, no impacts associated with the proposed works are expected on and from the level crossing.

6.0 Conclusion

The works proposed by TfNSW are the remediation and demolition around Tarago Railway Station in Tarago, NSW, along the Goulburn – Bombala rail corridor.

The works are to be carried out across three sites and over two stages. This TTIA report supports the REF for the works in Stage 2, which include the removal of contaminated material from Sites 2 and 3 and the importation of fill material at Site 3.

Intersection modelling was carried out to assess the impacts of the proposed Stage 2 works and the cumulative impacts of nearby major developments on the two key intersections close to the sites: Goulburn Street / King Street intersection and Braidwood Road / Wallace Street intersection.

While the Stage 2 works are not planned to generate traffic during the traffic and school peak periods, a worst-case scenario was tested with six truck-trailer movements operating in each peak hour during the contaminated material removal phase. In this worst-case traffic scenario, all truck traffic is expected to travel to and from the north along Braidwood Road to an appropriate licensed facility in Western Sydney.

The results indicate that the intersections are currently operating at an LoS A and the proposed Stage 2 works are not anticipated to cause any significant impacts on the operation of the two key intersections, either when assessed individually or cumulatively. The level of service will remain at LoS A across all modelling scenarios with marginal increases in the delays and DoS. This is as expected as low traffic volumes will be generated by the proposed Stage 2 works and the current traffic volumes on the road network are relatively low.

With up to 1,470 vehicles per day forecast to travel along Braidwood Road north of Wallace Street, when considering the Stage 2 works and the nearby major developments, no roadway upgrades to the road segment are required as the road remains within the same volume category in AGRD Part 3.

The works are expected to take about 12 weeks. The short-term increase in traffic volumes is not expected to have a substantial effect on the safety of the road network around the sites. Consideration has been given to avoid the generated truck traffic operating concurrently with the nearby school traffic and school bus operations. It is planned that workers' commuting will be before the schools' start time and after the schools' finish time, while the removal of materials by truck will only take place between 9am – 3pm. The impacts on road safety will be further mitigated through the provision of a traffic management plan developed in consultation with the Goulburn Mulwaree Council.

No impacts on public transport and active transport networks are expected from the increased travel demand and material transport traffic. The removal of materials will only take place between 9am – 3pm to avoid coinciding with the operation of school buses. Given the low volumes of site-generated traffic and existing train services, no impacts associated with the proposed works are expected on and from the level crossing.

Overall, the TTIA assessment concludes that Stage 2 of the proposed works will not have significant impacts on the operation of the road network, road safety, and public transport and active transport networks adjacent to the sites.

APPENDIX A

SIDRA RESULTS

MOVEMENT SUMMARY

Site: 1AMX [1.GOU_KIN_24_AM_X (Site Folder: 2024 base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 base year
AM (7.15AM-8.15AM)
Site Category: Base Year
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	67	10.9	67	10.9	0.038	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	56.1
4	R1	All MCs	2	50.0	2	50.0	0.038	3.7	LOS A	0.0	0.1	0.01	0.01	0.01	37.1
Approach			69	12.1	69	12.1	0.038	0.1	NA	0.0	0.1	0.01	0.01	0.01	55.6
West: King Street (W)															
5	L1	All MCs	7	28.6	7	28.6	0.006	4.8	LOS A	0.0	0.2	0.08	0.54	0.08	32.9
6	R3	All MCs	3	0.0	3	0.0	0.006	5.3	LOS A	0.0	0.2	0.08	0.54	0.08	41.8
Approach			11	20.0	11	20.0	0.006	4.9	LOS A	0.0	0.2	0.08	0.54	0.08	36.3
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.013	6.5	LOS A	0.0	0.0	0.00	0.22	0.00	51.0
2	T1	All MCs	23	4.5	23	4.5	0.013	1.1	LOS A	0.0	0.0	0.00	0.22	0.00	55.3
Approach			24	4.3	24	4.3	0.013	1.3	NA	0.0	0.0	0.00	0.22	0.00	55.1
All Vehicles			104	11.1	104	11.1	0.038	0.9	NA	0.0	0.2	0.01	0.12	0.01	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMX [2.BRA_WAL_24_AM_X (Site Folder: 2024 base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 base year
AM (7.15AM-8.15AM)
Site Category: Base Year
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	13	0.0	13	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.8
2	T1	All MCs	21	20.0	21	20.0	0.019	0.0	LOS A	0.0	0.1	0.01	0.23	0.01	57.6
3	R2	All MCs	1	0.0	1	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.0
Approach			35	12.1	35	12.1	0.019	2.2	NA	0.0	0.1	0.01	0.23	0.01	55.6
East: Lumley Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.080	7.5	LOS A	0.2	1.7	0.22	0.96	0.22	47.5
5	T1	All MCs	74	5.7	74	5.7	0.080	7.8	LOS A	0.2	1.7	0.22	0.96	0.22	42.4
6	R2	All MCs	19	5.6	19	5.6	0.080	8.0	LOS A	0.2	1.7	0.22	0.96	0.22	47.1
Approach			94	5.6	94	5.6	0.080	7.9	LOS A	0.2	1.7	0.22	0.96	0.22	43.6
North: Braidwood Road (N)															
7	L2	All MCs	9	11.1	9	11.1	0.068	5.8	LOS A	0.4	2.7	0.11	0.43	0.11	49.6
8	T1	All MCs	35	18.2	35	18.2	0.068	0.1	LOS A	0.4	2.7	0.11	0.43	0.11	55.7
9	R2	All MCs	97	7.6	97	7.6	0.068	5.6	LOS A	0.4	2.7	0.11	0.43	0.11	49.2
Approach			141	10.4	141	10.4	0.068	4.3	NA	0.4	2.7	0.11	0.43	0.11	51.1
West: Wallace Street (W)															
10	L2	All MCs	40	26.3	40	26.3	0.054	8.5	LOS A	0.2	1.8	0.11	1.01	0.11	45.2
11	T1	All MCs	25	41.7	25	41.7	0.054	9.6	LOS A	0.2	1.8	0.11	1.01	0.11	41.7
12	R2	All MCs	3	0.0	3	0.0	0.054	7.8	LOS A	0.2	1.8	0.11	1.01	0.11	46.1
Approach			68	30.8	68	30.8	0.054	8.9	LOS A	0.2	1.8	0.11	1.01	0.11	43.9
All Vehicles			338	13.4	338	13.4	0.080	6.0	NA	0.4	2.7	0.13	0.67	0.13	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMX [1.GOU_KIN_24_PM_X (Site Folder: 2024 base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 base year
PM (4.00PM-5.00PM)
Site Category: Base Year
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	31	6.9	31	6.9	0.021	0.1	LOS A	0.1	0.4	0.10	0.13	0.10	53.3
4	R1	All MCs	9	11.1	9	11.1	0.021	3.9	LOS A	0.1	0.4	0.10	0.13	0.10	40.2
Approach			40	7.9	40	7.9	0.021	1.0	NA	0.1	0.4	0.10	0.13	0.10	50.5
West: King Street (W)															
5	L1	All MCs	5	20.0	5	20.0	0.004	4.9	LOS A	0.0	0.1	0.19	0.51	0.19	32.4
6	R3	All MCs	1	100.0	1	100.0	0.004	6.6	LOS A	0.0	0.1	0.19	0.51	0.19	34.4
Approach			6	33.3	6	33.3	0.004	5.2	LOS A	0.0	0.1	0.19	0.51	0.19	32.9
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.052	6.5	LOS A	0.0	0.0	0.00	0.21	0.00	51.4
2	T1	All MCs	96	6.6	96	6.6	0.052	1.1	LOS A	0.0	0.0	0.00	0.21	0.00	55.7
Approach			97	6.5	97	6.5	0.052	1.2	NA	0.0	0.0	0.00	0.21	0.00	55.6
All Vehicles			143	8.1	143	8.1	0.052	1.3	NA	0.1	0.4	0.04	0.20	0.04	53.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMX [2.BRA_WAL_24_PM_X (Site Folder: 2024 base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 base year
PM (4.00PM-5.00PM)
Site Category: Base Year
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	8	0.0	8	0.0	0.038	5.8	LOS A	0.1	0.7	0.11	0.20	0.11	52.1
2	T1	All MCs	47	15.6	47	15.6	0.038	0.1	LOS A	0.1	0.7	0.11	0.20	0.11	57.9
3	R2	All MCs	13	16.7	13	16.7	0.038	6.0	LOS A	0.1	0.7	0.11	0.20	0.11	50.9
Approach			68	13.8	68	13.8	0.038	1.9	NA	0.1	0.7	0.11	0.20	0.11	55.9
East: Lumley Road (E)															
4	L2	All MCs	2	0.0	2	0.0	0.084	7.7	LOS A	0.2	2.1	0.31	0.98	0.31	47.1
5	T1	All MCs	32	13.3	32	13.3	0.084	8.3	LOS A	0.2	2.1	0.31	0.98	0.31	41.8
6	R2	All MCs	36	50.0	36	50.0	0.084	11.1	LOS A	0.2	2.1	0.31	0.98	0.31	45.1
Approach			69	31.8	69	31.8	0.084	9.7	LOS A	0.2	2.1	0.31	0.98	0.31	43.9
North: Braidwood Road (N)															
7	L2	All MCs	47	6.7	47	6.7	0.083	5.7	LOS A	0.2	1.8	0.09	0.32	0.09	50.5
8	T1	All MCs	72	16.2	72	16.2	0.083	0.1	LOS A	0.2	1.8	0.09	0.32	0.09	56.8
9	R2	All MCs	37	8.6	37	8.6	0.083	5.7	LOS A	0.2	1.8	0.09	0.32	0.09	50.3
Approach			156	11.5	156	11.5	0.083	3.1	NA	0.2	1.8	0.09	0.32	0.09	53.4
West: Wallace Street (W)															
10	L2	All MCs	84	10.0	84	10.0	0.137	8.0	LOS A	0.5	3.9	0.18	0.94	0.18	46.0
11	T1	All MCs	91	7.0	91	7.0	0.137	8.1	LOS A	0.5	3.9	0.18	0.94	0.18	42.3
12	R2	All MCs	8	0.0	8	0.0	0.137	7.8	LOS A	0.5	3.9	0.18	0.94	0.18	46.2
Approach			183	8.0	183	8.0	0.137	8.0	LOS A	0.5	3.9	0.18	0.94	0.18	44.1
All Vehicles			477	13.5	477	13.5	0.137	5.8	NA	0.5	3.9	0.16	0.64	0.16	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMDev [1.GOU_KIN_24_AM_Dev (Site Folder: 2024 with Stage 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 with Stage 1 works
AM (7.15AM-8.15AM)
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	67	10.9	67	10.9	0.038	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	56.1
4	R1	All MCs	2	50.0	2	50.0	0.038	3.7	LOS A	0.0	0.1	0.01	0.01	0.01	37.1
Approach			69	12.1	69	12.1	0.038	0.1	NA	0.0	0.1	0.01	0.01	0.01	55.6
West: King Street (W)															
5	L1	All MCs	13	58.3	13	58.3	0.010	5.1	LOS A	0.0	0.4	0.09	0.53	0.09	32.0
6	R3	All MCs	3	0.0	3	0.0	0.010	5.3	LOS A	0.0	0.4	0.09	0.53	0.09	41.8
Approach			16	46.7	16	46.7	0.010	5.1	LOS A	0.0	0.4	0.09	0.53	0.09	34.5
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.013	6.5	LOS A	0.0	0.0	0.00	0.22	0.00	51.0
2	T1	All MCs	23	4.5	23	4.5	0.013	1.1	LOS A	0.0	0.0	0.00	0.22	0.00	55.3
Approach			24	4.3	24	4.3	0.013	1.3	NA	0.0	0.0	0.00	0.22	0.00	55.1
All Vehicles			109	15.4	109	15.4	0.038	1.1	NA	0.0	0.4	0.02	0.14	0.02	51.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMDev [2.BRA_WAL_24_AM_Dev (Site Folder: 2024 with Stage 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 with Stage 1 works
AM (7.15AM-8.15AM)
Site Category: Future Conditions 1
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	13	0.0	13	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.8
2	T1	All MCs	21	20.0	21	20.0	0.019	0.0	LOS A	0.0	0.1	0.01	0.23	0.01	57.6
3	R2	All MCs	1	0.0	1	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.0
Approach			35	12.1	35	12.1	0.019	2.2	NA	0.0	0.1	0.01	0.23	0.01	55.6
East: Lumley Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.080	7.5	LOS A	0.2	1.7	0.22	0.96	0.22	47.5
5	T1	All MCs	74	5.7	74	5.7	0.080	7.8	LOS A	0.2	1.7	0.22	0.96	0.22	42.4
6	R2	All MCs	19	5.6	19	5.6	0.080	8.0	LOS A	0.2	1.7	0.22	0.96	0.22	47.1
Approach			94	5.6	94	5.6	0.080	7.9	LOS A	0.2	1.7	0.22	0.96	0.22	43.6
North: Braidwood Road (N)															
7	L2	All MCs	9	11.1	9	11.1	0.069	5.8	LOS A	0.4	2.7	0.11	0.43	0.11	49.5
8	T1	All MCs	35	18.2	35	18.2	0.069	0.1	LOS A	0.4	2.7	0.11	0.43	0.11	55.7
9	R2	All MCs	98	8.6	98	8.6	0.069	5.7	LOS A	0.4	2.7	0.11	0.43	0.11	49.2
Approach			142	11.1	142	11.1	0.069	4.3	NA	0.4	2.7	0.11	0.43	0.11	51.0
West: Wallace Street (W)															
10	L2	All MCs	45	34.9	45	34.9	0.058	8.9	LOS A	0.2	2.0	0.11	1.01	0.11	44.8
11	T1	All MCs	25	41.7	25	41.7	0.058	9.6	LOS A	0.2	2.0	0.11	1.01	0.11	41.7
12	R2	All MCs	3	0.0	3	0.0	0.058	7.8	LOS A	0.2	2.0	0.11	1.01	0.11	46.1
Approach			74	35.7	74	35.7	0.058	9.1	LOS A	0.2	2.0	0.11	1.01	0.11	43.7
All Vehicles			344	15.0	344	15.0	0.080	6.1	NA	0.4	2.7	0.13	0.68	0.13	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMDev [1.GOU_KIN_24_PM_Dev (Site Folder: 2024 with Stage 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 with Stage 1 works
PM (4.00PM-5.00PM)
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	31	6.9	31	6.9	0.026	0.2	LOS A	0.1	0.7	0.15	0.19	0.15	52.8
4	R1	All MCs	15	42.9	15	42.9	0.026	4.0	LOS A	0.1	0.7	0.15	0.19	0.15	35.6
Approach			45	18.6	45	18.6	0.026	1.4	NA	0.1	0.7	0.15	0.19	0.15	47.4
West: King Street (W)															
5	L1	All MCs	5	20.0	5	20.0	0.004	4.9	LOS A	0.0	0.1	0.19	0.51	0.19	32.4
6	R3	All MCs	1	100.0	1	100.0	0.004	6.6	LOS A	0.0	0.1	0.19	0.51	0.19	34.4
Approach			6	33.3	6	33.3	0.004	5.2	LOS A	0.0	0.1	0.19	0.51	0.19	32.9
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.052	6.5	LOS A	0.0	0.0	0.00	0.21	0.00	51.4
2	T1	All MCs	96	6.6	96	6.6	0.052	1.1	LOS A	0.0	0.0	0.00	0.21	0.00	55.7
Approach			97	6.5	97	6.5	0.052	1.2	NA	0.0	0.0	0.00	0.21	0.00	55.6
All Vehicles			148	11.3	148	11.3	0.052	1.4	NA	0.1	0.7	0.05	0.21	0.05	51.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMDev [2.BRA_WAL_24_PM_Dev (Site Folder: 2024 with Stage 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 with Stage 1 works
PM (4.00PM-5.00PM)
Site Category: Future Conditions 1
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	8	0.0	8	0.0	0.038	5.8	LOS A	0.1	0.7	0.11	0.20	0.11	52.1
2	T1	All MCs	47	15.6	47	15.6	0.038	0.1	LOS A	0.1	0.7	0.11	0.20	0.11	57.9
3	R2	All MCs	13	16.7	13	16.7	0.038	6.0	LOS A	0.1	0.7	0.11	0.20	0.11	50.9
Approach			68	13.8	68	13.8	0.038	1.9	NA	0.1	0.7	0.11	0.20	0.11	55.9
East: Lumley Road (E)															
4	L2	All MCs	2	0.0	2	0.0	0.085	7.7	LOS A	0.2	2.1	0.31	0.98	0.31	47.0
5	T1	All MCs	32	13.3	32	13.3	0.085	8.3	LOS A	0.2	2.1	0.31	0.98	0.31	41.7
6	R2	All MCs	36	50.0	36	50.0	0.085	11.2	LOS A	0.2	2.1	0.31	0.98	0.31	45.1
Approach			69	31.8	69	31.8	0.085	9.8	LOS A	0.2	2.1	0.31	0.98	0.31	43.9
North: Braidwood Road (N)															
7	L2	All MCs	47	6.7	47	6.7	0.088	5.7	LOS A	0.3	2.3	0.10	0.33	0.10	50.4
8	T1	All MCs	72	16.2	72	16.2	0.088	0.1	LOS A	0.3	2.3	0.10	0.33	0.10	56.7
9	R2	All MCs	42	20.0	42	20.0	0.088	5.9	LOS A	0.3	2.3	0.10	0.33	0.10	50.0
Approach			161	14.4	161	14.4	0.088	3.3	NA	0.3	2.3	0.10	0.33	0.10	53.2
West: Wallace Street (W)															
10	L2	All MCs	85	11.1	85	11.1	0.138	8.0	LOS A	0.5	3.9	0.18	0.94	0.18	45.9
11	T1	All MCs	91	7.0	91	7.0	0.138	8.1	LOS A	0.5	3.9	0.18	0.94	0.18	42.3
12	R2	All MCs	8	0.0	8	0.0	0.138	7.8	LOS A	0.5	3.9	0.18	0.94	0.18	46.2
Approach			184	8.6	184	8.6	0.138	8.1	LOS A	0.5	3.9	0.18	0.94	0.18	44.1
All Vehicles			483	14.6	483	14.6	0.138	5.8	NA	0.5	3.9	0.16	0.64	0.16	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1AMC [1.GOU_KIN_24_AM_Cu (Site Folder: 2024 cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 with Stage 1 works and nearby developments
AM (7.15AM-8.15AM)
Site Category: Future Conditions 2
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	153	26.9	153	26.9	0.093	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	56.0
4	R1	All MCs	2	50.0	2	50.0	0.093	3.7	LOS A	0.0	0.1	0.01	0.01	0.01	37.1
Approach			155	27.2	155	27.2	0.093	0.1	NA	0.0	0.1	0.01	0.01	0.01	55.7
West: King Street (W)															
5	L1	All MCs	13	58.3	13	58.3	0.011	5.2	LOS A	0.0	0.4	0.18	0.52	0.18	31.6
6	R3	All MCs	3	0.0	3	0.0	0.011	5.5	LOS A	0.0	0.4	0.18	0.52	0.18	41.4
Approach			16	46.7	16	46.7	0.011	5.3	LOS A	0.0	0.4	0.18	0.52	0.18	34.1
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.040	6.5	LOS A	0.0	0.0	0.00	0.20	0.00	51.0
2	T1	All MCs	56	60.4	56	60.4	0.040	1.2	LOS A	0.0	0.0	0.00	0.20	0.00	52.1
Approach			57	59.3	57	59.3	0.040	1.3	NA	0.0	0.0	0.00	0.20	0.00	52.1
All Vehicles			227	36.6	227	36.6	0.093	0.7	NA	0.0	0.4	0.02	0.09	0.02	53.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2AMC [2.BRA_WAL_24_AM_Cu (Site Folder: 2024 cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 with Stage 1 works and nearby developments
AM (7.15AM-8.15AM)
Site Category: Future Conditions 2
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	13	0.0	13	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.8
2	T1	All MCs	21	20.0	21	20.0	0.019	0.0	LOS A	0.0	0.1	0.01	0.23	0.01	57.6
3	R2	All MCs	1	0.0	1	0.0	0.019	5.5	LOS A	0.0	0.1	0.01	0.23	0.01	51.0
Approach			35	12.1	35	12.1	0.019	2.2	NA	0.0	0.1	0.01	0.23	0.01	55.6
East: Lumley Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.088	7.5	LOS A	0.3	1.9	0.29	0.96	0.29	47.4
5	T1	All MCs	74	5.7	74	5.7	0.088	8.1	LOS A	0.3	1.9	0.29	0.96	0.29	42.2
6	R2	All MCs	19	5.6	19	5.6	0.088	8.7	LOS A	0.3	1.9	0.29	0.96	0.29	47.0
Approach			94	5.6	94	5.6	0.088	8.2	LOS A	0.3	1.9	0.29	0.96	0.29	43.5
North: Braidwood Road (N)															
7	L2	All MCs	9	11.1	9	11.1	0.115	5.8	LOS A	0.6	5.4	0.13	0.48	0.13	49.3
8	T1	All MCs	35	18.2	35	18.2	0.115	0.1	LOS A	0.6	5.4	0.13	0.48	0.13	55.4
9	R2	All MCs	183	23.0	183	23.0	0.115	5.9	LOS A	0.6	5.4	0.13	0.48	0.13	48.4
Approach			227	21.8	227	21.8	0.115	5.0	NA	0.6	5.4	0.13	0.48	0.13	49.7
West: Wallace Street (W)															
10	L2	All MCs	78	62.2	78	62.2	0.089	9.9	LOS A	0.4	3.8	0.12	1.02	0.12	43.6
11	T1	All MCs	25	41.7	25	41.7	0.089	10.1	LOS A	0.4	3.8	0.12	1.02	0.12	41.6
12	R2	All MCs	3	0.0	3	0.0	0.089	8.3	LOS A	0.4	3.8	0.12	1.02	0.12	46.1
Approach			106	55.4	106	55.4	0.089	9.9	LOS A	0.4	3.8	0.12	1.02	0.12	43.2
All Vehicles			462	25.5	462	25.5	0.115	6.6	NA	0.6	5.4	0.15	0.68	0.15	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 1PMC [1.GOU_KIN_24_PM_Cu (Site Folder: 2024 cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1. Goulburn Street / King Street
2024 with Stage 1 works and nearby developments
PM (4.00PM-5.00PM)
Site Category: Future Conditions 2
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Goulburn Street (NE)															
3	T1	All MCs	63	55.0	63	55.0	0.053	0.2	LOS A	0.1	1.1	0.13	0.15	0.13	52.3
4	R1	All MCs	15	42.9	15	42.9	0.053	4.4	LOS A	0.1	1.1	0.13	0.15	0.13	35.7
Approach			78	52.7	78	52.7	0.053	1.0	NA	0.1	1.1	0.13	0.15	0.13	49.3
West: King Street (W)															
5	L1	All MCs	5	20.0	5	20.0	0.005	5.2	LOS A	0.0	0.2	0.29	0.52	0.29	31.9
6	R3	All MCs	1	100.0	1	100.0	0.005	7.2	LOS A	0.0	0.2	0.29	0.52	0.29	34.1
Approach			6	33.3	6	33.3	0.005	5.5	LOS A	0.0	0.2	0.29	0.52	0.29	32.4
SouthWest: Goulburn Street (SW)															
1	L3	All MCs	1	0.0	1	0.0	0.107	6.5	LOS A	0.0	0.0	0.00	0.20	0.00	51.4
2	T1	All MCs	181	22.1	181	22.1	0.107	1.1	LOS A	0.0	0.0	0.00	0.20	0.00	54.8
Approach			182	22.0	182	22.0	0.107	1.2	NA	0.0	0.0	0.00	0.20	0.00	54.7
All Vehicles			266	31.2	266	31.2	0.107	1.2	NA	0.1	1.1	0.04	0.19	0.04	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 2PMC [2.BRA_WAL_24_PM_Cu (Site Folder: 2024 cumulative)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2. Braidwood Road / Wallace Street / Lumley Road
2024 with Stage 1 works and nearby developments
PM (4.00PM-5.00PM)
Site Category: Future Conditions 2
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Braidwood Road (S)															
1	L2	All MCs	8	0.0	8	0.0	0.038	5.8	LOS A	0.1	0.7	0.11	0.20	0.11	52.1
2	T1	All MCs	47	15.6	47	15.6	0.038	0.1	LOS A	0.1	0.7	0.11	0.20	0.11	57.9
3	R2	All MCs	13	16.7	13	16.7	0.038	6.0	LOS A	0.1	0.7	0.11	0.20	0.11	50.9
Approach			68	13.8	68	13.8	0.038	1.9	NA	0.1	0.7	0.11	0.20	0.11	55.9
East: Lumley Road (E)															
4	L2	All MCs	2	0.0	2	0.0	0.097	7.7	LOS A	0.3	2.5	0.37	0.98	0.37	46.6
5	T1	All MCs	32	13.3	32	13.3	0.097	8.5	LOS A	0.3	2.5	0.37	0.98	0.37	41.3
6	R2	All MCs	36	50.0	36	50.0	0.097	12.5	LOS A	0.3	2.5	0.37	0.98	0.37	44.8
Approach			69	31.8	69	31.8	0.097	10.6	LOS A	0.3	2.5	0.37	0.98	0.37	43.5
North: Braidwood Road (N)															
7	L2	All MCs	47	6.7	47	6.7	0.116	5.8	LOS A	0.5	4.8	0.15	0.37	0.15	50.3
8	T1	All MCs	72	16.2	72	16.2	0.116	0.2	LOS A	0.5	4.8	0.15	0.37	0.15	56.5
9	R2	All MCs	75	54.9	75	54.9	0.116	6.4	LOS A	0.5	4.8	0.15	0.37	0.15	48.9
Approach			194	28.8	194	28.8	0.116	3.9	NA	0.5	4.8	0.15	0.37	0.15	52.2
West: Wallace Street (W)															
10	L2	All MCs	171	25.3	171	25.3	0.201	8.6	LOS A	0.9	7.2	0.19	0.93	0.19	45.2
11	T1	All MCs	91	7.0	91	7.0	0.201	8.4	LOS A	0.9	7.2	0.19	0.93	0.19	42.2
12	R2	All MCs	8	0.0	8	0.0	0.201	8.1	LOS A	0.9	7.2	0.19	0.93	0.19	46.1
Approach			269	18.4	269	18.4	0.201	8.5	LOS A	0.9	7.2	0.19	0.93	0.19	44.2
All Vehicles			601	22.8	601	22.8	0.201	6.5	NA	0.9	7.2	0.19	0.67	0.19	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Thoughtful Transport Solutions

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Appendix 4

Acoustic assessment prepared by RAPT Consulting (RAPT Consulting, 2024)

Acoustic Assessment – Tarago Stage 2 Remediation

Prepared for
Ramboll

January 2025

Relationships Attention Professional Trust

Document Details

Acoustic Assessment – Tarago Stage 2 Remediation

Prepared For:

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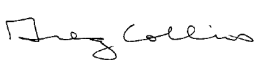
Document ID	Rev No.	Date	Author	
2224597_250124	0	24 January 2025	Gregory Collins - MAAS	

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1. Introduction

1.1 Background

RAPT Consulting has been engaged to undertake a Construction Noise and Vibration Impact Assessment (CNVIA) for Ramboll Australia Pty Ltd (Ramboll) to inform a Review of Environmental Factors (REF) to facilitate the remediation of contamination identified along an approximate one kilometre stretch of the Goulburn – Bombala rail corridor at Tarago, New South Wales (NSW) (the Rail Corridor Site). The Rail Corridor Site includes part Lot 22 DP1202608, and remediation of the former Station Masters Cottage and associated above ground structures located at Lot 1 DP 816626, 106 Goulburn Road, Tarago New South Wales (NSW).

This project is a component of the larger remediation works occurring within Tarago. The three sites identified within Figure 1-1 are:

- Site 1: Stockpile Remediation
- Site 2: Station Masters Cottage Remediation
- Site 3: Rail Corridor Remediation

The works are to be carried out over two stages:

- Stage 1 includes the removal of fouled ballast from Site 1 and the demolition of the former Station Masters Cottage and associated above-ground structures on Site 2.
- Stage 2 (this assessment) involves remediation of the land at Site 2 and remediation works at Site 3.

Rail Corridor Remediation

Based on information provided, it is understood the Goulburn – Bombala rail corridor was historically used to transport lead, copper and zinc ore concentrates from the Woodlawn Mine to smelters in Newcastle and Port Kembla and to a concentrate berth at Port Kembla. A rail corridor loadout complex, located approximately 20 metres north of the Tarago Station and west of the rail corridor, was utilised as part of the ore distribution (Ramboll, September 2023). Various infrastructure was included as part of the loadout complex and included a loop road for truck access from the south, a truck dumping station, a conveyor from the dumping station to a larger square building and an undercover rail loading point extending over part of the rail corridor (the former Woodlawn siding) (Ramboll, September 2023). This infrastructure has since been demolished.

In November 2019 the Rail Corridor Site was notified to the NSW Environment Protection Authority (EPA) under Section 60 of the *Contaminated Land Management Act 1997* (CLM Act) and on 25 March 2020 the NSW EPA declared the site to be significantly contaminated under Section 11 of the CLM Act (Declaration Number: 20201103; Area Number 3455). The site was published on the EPA's list of notified sites as "contamination is regulated by the EPA under the CLM Act". The declaration defines the substance of concern in soil ("the Contaminant") to be lead.

The estimate volumes of materials requiring excavation as detailed in the Remedial Action Plan (June, 2024) are provided in Table 1-1.

Table 1-1 Volume projections for the remediation materials

Location on Site	Depth (mbgl)[1]	Volume (m^3)
Site 2		
Station Masters Cottage material (excluding house)	0.25	250
Site 3		
Redundant Woodlawn siding proposed excavation	0.5	2,000
Lead impact area surrounding the siding	0.3	1,890
Railway sleepers – GSW[2]		100
Total		**4,240**

Table notes:

[1] mbgl is metres below ground level

[2] GSW is General Solid Waste. Lead concentrations in rail sleepers do not consistently exceed site assessment criteria however offsite disposal was adopted during previous works and aesthetics may drive offsite disposal again.

Lead contaminated excavated spoil would be transported by truck to the Lake George Mine at Captains Flat, NSW. A purpose-built containment cell is being constructed for receipt of the material under EPL 21721 licenced to Department of Regional NSW. Disposal of material at the Lake George Mine must comply with all relevant management plans in place for the rehabilitation of the Lake George Mine. This assessment does not include the disposal of material at Lake George Mine, only the remediation activities within the Rail Corridor Site and SMC.

Station Masters Cottage Remediation

Stage 2 will be undertaken in accordance with the Remedial Action Plan (Ramboll, June 2024) and include excavation of approximately 250 cubic metres of contaminated soils. Soils that are validated to be less than the Health Investigation Level for commercial or industrial land use (HIL D) criteria but greater than the Health Investigation Level for residential land use (HIL A) would be relocated to the Rail Corridor Site for reuse. Soils validated to be greater than the HIL D would be transported south of Tarago to a purpose built containment cell at the Lake George Mine in Captains Flat, NSW.

The project locality is shown in Figure 1-1.

Figure 1-1 Site Location (Source: Ramboll)

1.2 Assessment Objectives

This acoustic assessment considers the potential impacts of the construction /remediation works of the proposal. The purpose is to assess potential noise and vibration from the project and to recommend mitigation measures where required.

The outcomes of this assessment include recommendations for potential noise and vibration mitigation and management measures designed to achieve an acceptable noise amenity for residential (dwelling) occupants and other sensitive receivers surrounding the study area.

1.3 Scope

The acoustic assessment scope of work included:

- Initial desk top review to identify noise sensitive receptors from aerial photography
- Undertake noise measurements to determine ambient and background noise levels
- Establish project noise goals for the construction / remediation of the proposal
- Identify the likely principal noise sources during construction and their associated noise levels
- Assessment of potential noise, vibration and sleep disturbance impacts associated with construction aspects of the project
- Provide recommendations for feasible and reasonable noise and vibration mitigation and management measures, where noise or vibration objectives may be exceeded.

1.4 Relevant Guidelines

The relevant policies and guidelines for noise and vibration assessments in NSW that have been considered during the preparation of this assessment include:

- Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change, 2009
- Construction Noise and Vibration Strategy, Transport for NSW, 2019
- Assessing Vibration: A Technical Guideline, Department of Environment and Conservation (DEC), 2006
- British Standard BS7385.2 - 1993 Evaluation and Measurement for Vibration in Buildings, Part 2 - Guide to damage levels from ground borne vibration 1993
- DIN 4150: Part 3-1999 Structural vibration – Effects of vibration on structures 1999
- NSW Road Noise Policy (RNP), Department of Environment, Climate Change and Water (DECCW), 2011
- Noise Policy for Industry (NPfI), Environment Protection Authority (EPA), 2017.

1.5 Limitations

The purpose of the report is to provide an independent acoustic assessment for the proposal.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the acoustic assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for acoustics, noise were referred to. This work has been conducted in good faith with RAPT Consulting's understanding of the client's brief and the generally accepted consulting practice.

No other warranty, expressed or implied, is made as to the information and professional advice included in this report. It is not intended for other parties or other uses.

2. Existing Environment

2.1 Background and Ambient Noise

A review of the overall ambient noise environment at in the vicinity of the project has determined that it has not substantially changed since December 2022. Therefore, the background measurements undertaken by RAPT Consulting from 6 December to 12 December 2022 were utilised. The monitoring was undertaken at the Station Master's Cottage 106 Goulburn Street, Tarago Lot 1 DP816626. Site observations noted this location was considered indicative of the local ambient noise environment and also presented a secure location whereby minimising the risk of theft or vandalism to the monitoring equipment. Additionally, it is considered as an acceptable location for determination of the background noise with consideration to the NSW Environment Protection Authority's (EPA's) – Noise Policy for Industry (NPfI). During site visits it was noted that occasional road and rail traffic, distant road traffic and natural wildlife, primarily described the ambient noise environment and is indicative of a rural noise environment.

The monitoring locations are shown in Figure 2-1 – 2-2.

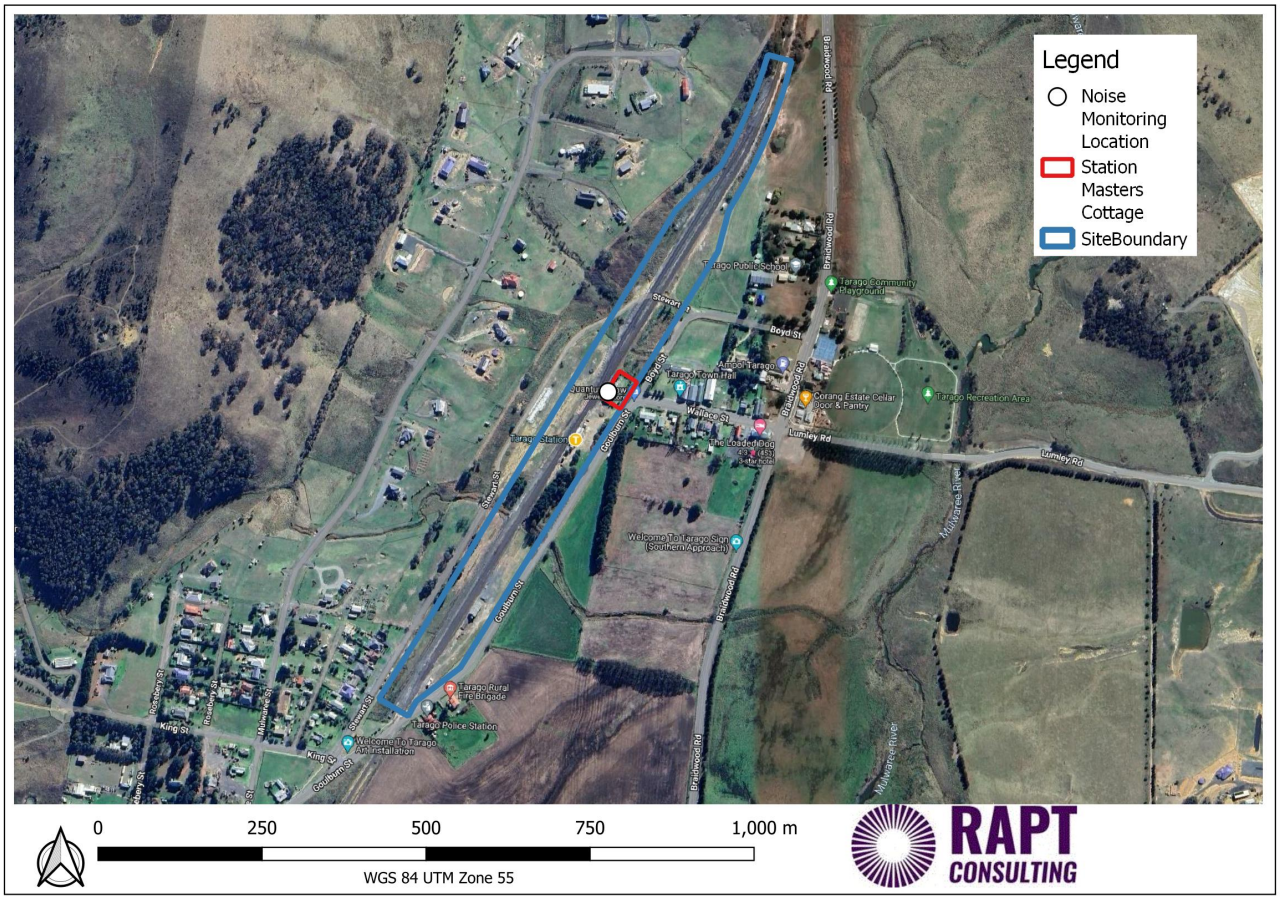


Figure 2-1 Monitoring Location.

Figure 2-2 106 Goulburn Street Noise Monitoring Location

Monitoring was undertaken using a RION NL-42 noise logger with Type 2 Precision. These loggers are capable of measuring continuous sound pressure levels and are able to record L_{Amin}, L_{A90}, L_{A10}, L_{Amax} and L_{Aeq} noise descriptors. The instrument was programmed to accumulate environmental noise data continuously over sampling periods of 15 minutes for the entire monitoring period.

The noise surveys were conducted with consideration to the procedures described in Australian Standard AS 1055:2018, “Acoustics – Description and Measurement of Environmental Noise” and the NSW Noise Policy for Industry (NPfI). Calibration was checked

before and after each measurement and no significant drift occurred. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics – Sound level meters – Specifications.

The L_{A90} descriptor is used to measure the background noise level. This descriptor represents the noise level that is exceeded for 90 percent of the time over a relevant period of measurement. In line with the procedures described in the EPA's NPfI, the assessment background level (ABL) is established by determining the lowest tenth-percentile level of the L_{A90} noise data acquired over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night-time assessment periods is based on the median of individual ABL's determined over the entire monitoring duration. The RBL is representative of the average minimum background sound level, or simply the background level.

The L_{Aeq} is the equivalent continuous noise level which would have the same total acoustic energy over the measurement period as the varying noise actually measured, so it is in effect an energy average.

Weather information for the unattended noise logging was obtained from the Bureau of Meteorology Goulburn AWS for the monitoring period and any data adversely affected by rain, wind (more than 5 m/s as per NPfI) or extraneous noise were discarded. Noise data graphs are provided in Appendix A.

The RBL and ambient LAeq levels are provided in Table 2-1 below.

Table 2-1 Summary of Measured Results dB(A)

Descriptor	NM1 106 Goulburn Street	Time Interval
$L_{A90\ (Day)}$	35[1] (31)	7:00am - 6:00pm
$L_{A90\ (Evening)}$	30[1] (25)	6:00pm - 10:00pm
$L_{A90\ (Night)}$	30[1] (19)	10:00pm - 7:00am
$L_{Aeq(day)}$	61	7:00am - 6:00pm
$L_{Aeq(evening)}$	51	6:00pm – 10:00pm
$L_{Aeq(night)}$	54	10:00pm – 7:00am

Note 1 Table 2.1 of the NPfI specifies a minimum assumed rating background noise level of 35dB(A) for day and 30 dB(A) for evening and night-time. Number in brackets (XX) represents actual measured RBL determined for assessment period.

2.2 Assessed Receptors

Nearest receptors to the project assessed in this acoustic assessment are identified in Table 2-2 and Figure 2-3. Other receptors are located in these areas however the locations selected are considered representative of the localised noise environment in the vicinity of the locations selected.

Table 2-2 Nearest Assessed Receptors to the Project

Receiver ID	Location	Receptor Type	Easting	Northing
R1	17 Wallace Street	Residential	741871	6116017
R2	22 Wallace Street	Residential	741901	6116065
R3	11 Wallace Street	Residential	741938	6116003
R4	14 Wallace Street	Residential	741968	6116025
R5	5 Wallace Street	Residential	741986	6115998
R6	Tarago Public School	Education	742027	6116202
R7	54 Mulwaree Street	Residential	741509	6115895
R8	70 Mulwaree Street	Residential	741532	6115968
R9	72 Mulwaree Street	Residential	741580	6116020
R10	82 Mulwaree Street	Residential	741642	6116078
R11	84 Mulwaree Street	Residential	741678	6116132
R12	96 Mulwaree Street	Residential	741691	6116207
R13	114 Mulwaree Street	Residential	741785	6116321
R14	95 Mulwaree Street	Residential	741524	6116241
R15	Tarago Town Hall	Community Centre	741922	6116037

Receiver ID	Location	Receptor Type	Easting	Northing
R16	150 Mulwaree Street	Residential	741948	6116477
R17	20 Stewart Street	Residential	741481	6115652

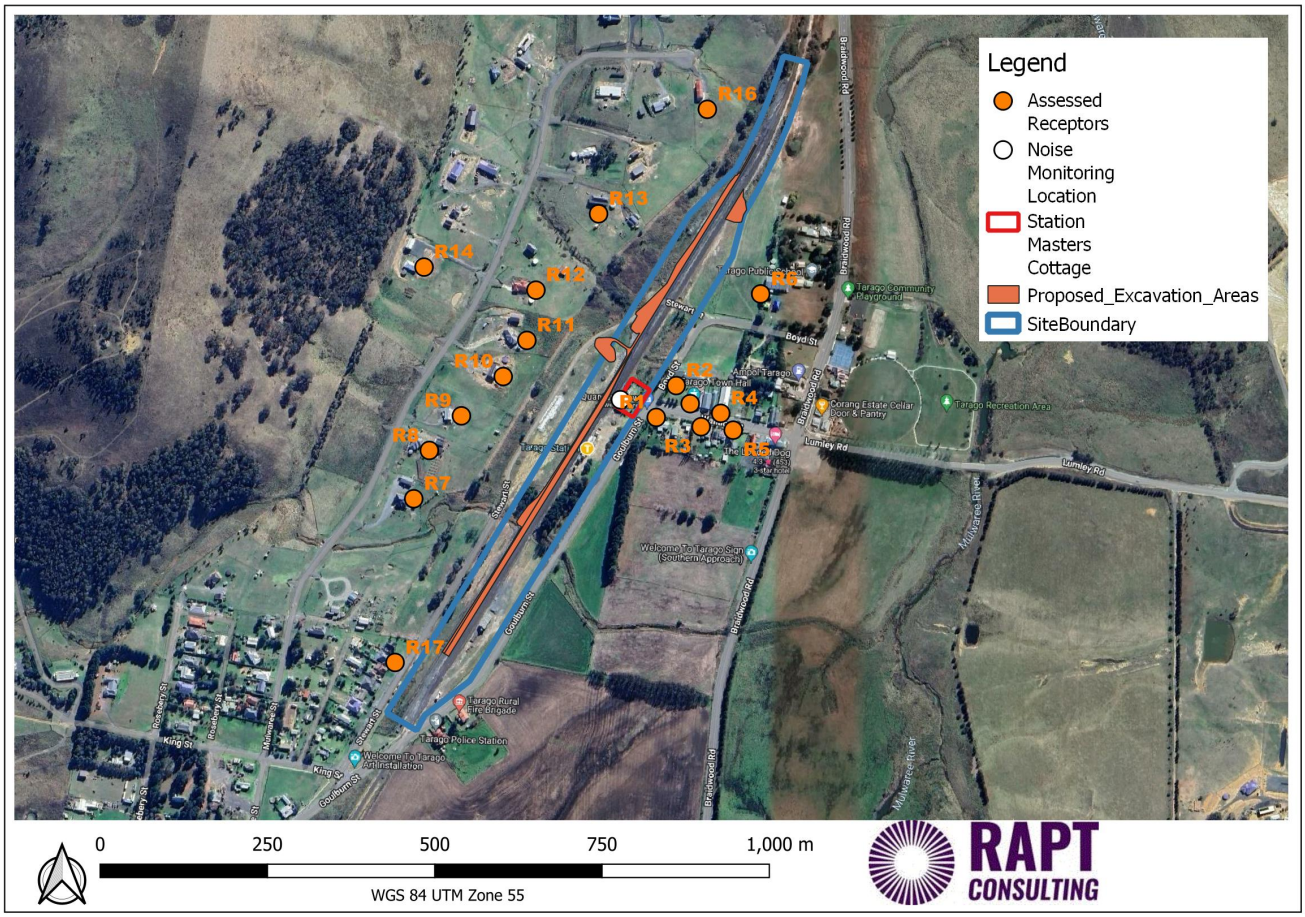


Figure 2-3 Assessed Receptors

3. Noise and Vibration Objectives

3.1 Construction Noise

Construction noise is assessed with consideration to DECCW Interim Construction Noise Guidelines (ICNG) (July 2009). The ICNG is a non-mandatory guideline that is usually referred to by local councils and other NSW government entities when construction / demolition works require development approval. The ICNG recommend standard hours for construction activity as detailed in Table 3-1.

Table 3-1 ICNG Recommended Construction Hours

Work type	Recommended standard hours of work
Normal construction	Monday to Friday: 7 am to 6 pm. Saturday: 8 am to 1 pm. No work on Sundays or Public Holidays.
Blasting	Monday to Friday: 9 am to 5 pm. Saturday: 9 am to 1 pm. No work on Sundays or Public Holidays.

The ICNG provides noise management levels for construction noise at residential and other potentially sensitive receivers. These management levels are to be calculated based on the adopted rating background level (RBL) at nearby locations, as shown in Table 3-2.

Table 3-2 ICNG Noise Guidelines at Receivers

Period	Management Level $L_{Aeq(15\ min)}$
Residential Recommended standard hours	Noise affected level: RBL + 10 Highly noise affected level: 75 dB(A)
Residential Outside recommended standard hours	Noise affected level: RBL + 5
Classrooms at schools and other educational institutions	Internal Noise Level 45 dB(A) (applies when properties are being used, Outdoor Noise Level 55 dB(A) assumes 10 dB(A) loss through an open window)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	65 dB(A)
Offices, retail outlets (external)	70 dB(A)
industrial premises (external)	75 dB(A)

The above levels apply at the boundary of the most affected residences / offices or within 30 m from the residence where the property boundary is more than 30 m from the residence.

The *noise affected level* represents the point above which there may be some community reaction to noise. Where the *noise affected level* is exceeded all feasible and reasonable work practices to minimise noise should be applied and all potentially impacted residents should be informed of the nature of the works, expected noise levels, duration of works and a method of contact. The *noise affected level* is the background noise level plus 10 dB(A) during recommended standard hours and the background noise level plus 5 dB(A) outside of recommended standard hours.

The *highly noise affected level* represents the point above which there may be strong community reaction to noise and is set at 75 dB(A). Where noise is above this level, the relevant authority may require respite periods by restricting the hours when the subject noisy activities can occur, considering:

- Times identified by the community when they are less sensitive to noise (such as mid-morning or mid-afternoon for works near residences).
- If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Based on the above and the RBL's determined from site monitoring, construction noise management levels (NML's) have been derived for residential receptors, as shown in Table 3-3.

Table 3-3 ICNG NML's for residential receivers Leq(15min) dB(A)

Period	RBL L_{A90}, dB(A)	Standard hours noise management levels, $L_{Aeq,15min}$, dB(A)	Out-of-hours noise management levels, $L_{Aeq,15min}$, dB(A)
Day	35	45	40
Evening	30	-	35
Night	30	-	35

3.2 Construction Sleep Disturbance

The ICNG requires a sleep disturbance assessment to be undertaken where construction works are planned to extend over more than two consecutive nights. The ICNG makes reference to the EPA's NSW Environment Criteria for Road Traffic Noise (ECRTN), now superseded by the NSW Road Noise Policy (RNP), for the assessment of sleep disturbance. The RNP references the recommendations in the ECRTN as providing the most appropriate assessment guidance.

The guidance provided in the RNP for assessing the potential for sleep disturbance recommends that to minimise the risk of sleep disturbance during the night-time period (10pm to 7am), the $L_{A1(1\ min)}$ noise level outside a bedroom window should not exceed the $L_{A90(15\ min)}$ background noise level by more than 15 dB(A). The EPA considers it appropriate to use this metric as a screening criterion to assess the likelihood of sleep disturbance. If this screening criterion is found to be exceeded, then a more detailed analysis must be undertaken that

should include the extent that the maximum noise level exceeds the background noise level and the number of times this is likely to happen during the night-time period.

The RNP contains a review of research into sleep disturbance which represents NSW EPA advice on the subject of sleep disturbance due to noise events. It concludes that having considered the results of research to date that, 'Maximum internal noise levels below 50-55 dB(A) are unlikely to cause awakening reactions. Therefore, given that an open window provides around 10 dB(A) in noise attenuation from outside to inside, external noise levels of 60-65 dB(A) are unlikely to result in awakening reactions.

Construction is expected to take place during standard hours, and therefore sleep disturbance is not expected to be an issue. However, for completeness sleep disturbance screening and awakening reaction noise levels are provided in Table 3-4.

Table 3-4 Construction Noise Sleep Disturbance Assessment Levels

Night-time rating background level, dB(A)	Sleep disturbance screening $L_{A1(1min)}$ criteria, dB(A)	Sleep disturbance awakening reaction $L_{A1(1min)}$ criteria, dB(A)
30	45	65

3.3 Construction Road Traffic Noise

Noise from construction traffic on public roads is not covered by the ICNG. However, the ICNG does refer to the ECRTN, which is now superseded by the RNP, for the assessment of noise relating to construction traffic on public roads.

To assess noise impacts from construction traffic, an initial screening test is undertaken by evaluating whether existing road traffic noise levels would increase by more than 2 dB(A). Where the predicted noise increase is 2 dB(A) or less, then no further assessment is required. However, where the predicted noise level increase is greater than 2 dB(A), and the predicted road traffic noise level exceeds the road category specific criterion then noise mitigation should be considered for those receivers affected. The RNP does not require assessment of noise impact to commercial or industrial receivers. In order to increase noise levels by 2 dB(A) an increase in traffic volume of 60% would be required, which based on the nature of works associated with the project is not expected to occur and therefore compliance is expected and not considered further in this assessment.

3.4 Vibration Guidelines

3.4.1 Human Exposure

Vibration goals were sourced from the DECCW's *Assessing Vibration: a technical guideline*, which is based on guidelines contained in British Standard (BS) 6472–1992, *Evaluation of human exposure to vibration in buildings (1–80 Hz).*

Vibration, at levels high enough, has the potential to cause damage to structures and disrupt human comfort. Vibration and its associated effects are usually classified as continuous, impulsive or intermittent as follows:

- continuous vibration continues uninterrupted for a defined period and includes sources such as machinery and continuous construction activities

- impulsive vibration is a rapid build up to a peak followed by a damped decay. It may consist of several cycles at around the same amplitude, with durations of typically less than two seconds and no more than three occurrences in an assessment period. This may include occasional dropping of heavy equipment or loading activities

- intermittent vibration occurs where there are interrupted periods of continuous vibration, repeated periods of impulsive vibration or continuous vibration that varies significantly in magnitude. This may include intermittent construction activity, impact pile driving, jack hammers.

The preferred and maximum values for continuous and impulsive vibration are defined in Table 2.2 of the guideline and are reproduced in Table 3-5 for the applicable receivers.

Table 3-5 Preferred and Maximum Levels for Human Comfort

Location	Assessment Period[2]	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Continuous vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Impulsive vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14

Note 2 Daytime is 7:00am to 10:00pm and Night-time is 10:00pm to 7:00am

The acceptable vibration dose values (VDV) for intermittent vibration are defined in Table 2.4 of the guideline and are reproduced in Table 3-6 for the applicable receiver type.

Table 3-6 Acceptable Vibration Dose Values for Intermittent Vibration (m/s1.75)

Location	Daytime [3]		Night-time [3]	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas[4]	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Note 3 Daytime is 7:00 to 22:00 and night-time is 22:00 to 7:00: and
Note 4 Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be needed to assess intermittent values against the continuous or impulsive criteria for critical areas.

3.4.2 Building Damage

Currently, there is no Australian Standard that sets the criteria for the assessment of building damage caused by vibration. Guidance of limiting vibration values is attained from reference to the following International Standards and Guidelines:

- British Standard BS7385.2 - 1993 *Evaluation and Measurement for Vibration in Buildings*, Part 2 - Guide to damage levels from ground borne vibration
- German Standard DIN 4150-3: 1999-02 Structural Vibration – Part 3: *Effects of vibration on structures*.

The recommended Peak Particle Velocity (PPV) guidelines for the possibility of vibration induced building damage are derived from the minimum vibration levels above which any damage may occur are presented in Table 3-7 for DIN 4150-3: 1999-02 and Table 3-8 for BS7385.2 – 1993.

Table 3-7 DIN 4150-3 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on structures

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*	
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20-40	40-50	40
Dwellings and buildings of similar design and/or occupancy	5	5-15	15-20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 of table 5-7 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

Note 5 At frequencies above 100Hz, the values given in this column may be used as minimum values

Table 3-8 BS7385.2 Transient Vibration Guideline Values for Potential building - Cosmetic Damage

Building Type[7]	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz[6]	15 Hz and above[6]
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
Unreinforced or light framed structures. Residential or light commercial type buildings.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Note 6 Values referred to are at the base of the building: and
Note 7 For transient vibration effecting unreinforced or light framed structures at frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

Unlike noise which travels through air, the transmission of vibration is highly dependent on substratum conditions between the source/s and receiver. Also dissimilar to noise travelling through air, vibration levels diminish quickly over distance, thus an adverse impact from vibration on the broader community is not typically expected. Vibration during works is considered an intermittent source associated with two main types of impact: disturbance at receivers and potential architectural/structural damage to buildings. Generally, if disturbance issues are controlled, there is limited potential for structural damage to buildings.

4. Noise and Vibration Assessment

4.1 Construction

Location and timing of construction activities can exacerbate noise levels and their effects on sensitive land uses such as residences. Construction noise by its nature is temporary, may not be amenable to purpose-built noise control measures applied to industrial processes, and may move as construction progresses. With these constraints in mind, the ICNG was developed to focus on applying a range of work practices most suited to minimise construction noise impacts, rather than focusing only on achieving numeric noise levels. While some noise from construction sites is inevitable, the aim of the Guideline is to increase protection of residences and other sensitive land uses from noise pollution most of the time.

4.1.1 Construction Hours and Duration

The proposed work would be undertaken during hours:

- Monday to Friday - 7am to 6pm
- Saturday – 8am to 1pm

4.1.2 Construction Programme and Equipment Source Noise Levels

Rail Corridor Remediation (Site 3)

The works involve:

- Site establishment
- Survey pre-excavation
- Excavation and disposal of railway sleepers
- Excavation of contaminated soils and transport to Lake George mine
- Validation of excavated areas
- Reinstate site with imported materials appropriate for the intended use
- Survey post excavation and remediation
- Demobilisation.

The works are expected to take place for 6 weeks.

Station Master Cottage Remediation (Site 2)

The Stage 2 works involve:

- Excavation and relocation of soils
- Validation sampling of excavated area

- Reinstate site with imported materials appropriate for the intended use.

The works are expected to take 2 weeks to complete.

Anticipated plant for the works has been provided to RAPT Consulting. The individual sound power levels (SWL) for the anticipated type of construction plant have been referenced from RAPT Consulting's database of noise sources and the RMS Construction Noise Estimator. Other equipment and activities may be utilised, however it is expected they would produce similar noise emissions. The plant and equipment list provided included the following in Table 4-1.

Table 4-1 Typical Construction Item Sound Power Levels

Plant and Equipment	Estimated % of use in 15 minutes[8]	Typical Sound Power Level dB(A)
Excavator	50	110
Light Vehicles	50	103
Dozer	50	116
Roller	50	109
Truck and Dog	50	108
Water Truck	50	103

Note 8 The sound power levels for the individual plant items are worst-case levels representative of the equipment operating at maximum capacity. In practice, not all plant items would operate at maximum capacity at the same time and therefore the estimated usage has been adjusted to reflect this. This adjustment is consistent with RAPT Consulting experience on similar projects.

4.1.3 Construction Assessment

Acoustic modelling was undertaken using SoftNoise's "Predictor" to predict the effects of construction noise. Predictor is a computer program for the calculation, assessment and prognosis of noise propagation. Predictor calculates environmental noise propagation according to ISO 9613-2, "Acoustics – Attenuation of sound during propagation outdoors". The method predicts the sound pressure level under meteorological conditions favourable to propagation from sources of known sound emission. These conditions are for downwind propagation or equivalently under a well-developed moderate ground based temperature inversion. Terrain topography, ground absorption, atmospheric absorption and relevant shielding objects are taken into account in the calculations.

Other Key assumptions in the model include:

- topographical information was obtained from NSW Government Spatial Services
- all cleared areas were modelled considering a conservative ground factor of 0.8 to account for grassed areas
- all residential receivers were modelled at 1.5 metres above the ground surface

Construction noise levels have been predicted based on the potential construction noise levels provided in Table 4-1. These noise levels represent different equipment noise levels

and give an idea how noise levels may change across the proposal area with different activities being undertaken.

The magnitude of off-site noise impact associated with construction would be dependent upon several factors:

- The intensity of construction activities
- The location of construction activities
- The type of equipment used
- Intervening terrain, and
- The prevailing weather conditions.

The calculated noise levels would inevitably depend on the number and type of plant items and equipment operating at any one time and their precise location relative to the receiver of interest. In practice, the noise levels would vary due to the fact that plant and equipment would move about the worksites and would not all be operating concurrently. In some cases, reductions in noise levels would occur when plant are located behind obstacles or even other items of equipment. Predicted noise levels have been assessed from each of the work scenarios outlined above in a number of work locations. As work moves away from receivers noise levels decrease as can be seen in Figure 4-1.

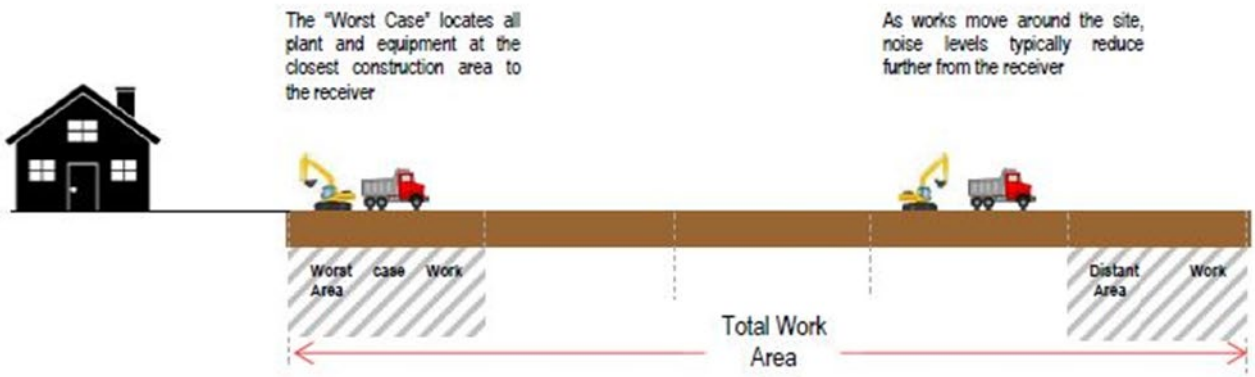


Figure 4-1 Example of Differing Work Areas

The noise levels are representative of the worst-case impact, for a given receiver type and are intended to give an indication of the possible noise levels from construction work when work is at their closest. For most construction activities, it is expected that construction noise levels would frequently be lower than predicted at the most exposed receiver. A general description of NML exceedance groups are provided below. The impact of these potential exceedances depends on the period in which they were to occur (generally night-time is more sensitive than daytime or evening for most people).

- Noise levels 1 – 10 dB(A) above NML – Impact generally marginal to minor
- Noise Levels 11 – 20 dB(A) above NML – Impact generally moderate
- Noise Levels > 20 dB(A) above NML – Impact generally high

During any given period, the machinery items to be used in the study area would operate at maximum sound power levels for only brief stages. At other times, the machinery may produce lower sound levels while carrying out activities not requiring full power. It is highly unlikely that all construction equipment would be operating at their maximum sound power levels at any one time. Finally, certain types of construction machinery would be present in the development footprint for only brief periods during construction. Therefore, the modelled construction noise results are considered to represent a worst-case scenario. 5 excavation locations and the Station Masters Cottage were modelled from north to south along the proposed works as shown in Figure 4-3. These scenarios also demonstrate how received noise levels can change due to location of construction activity.

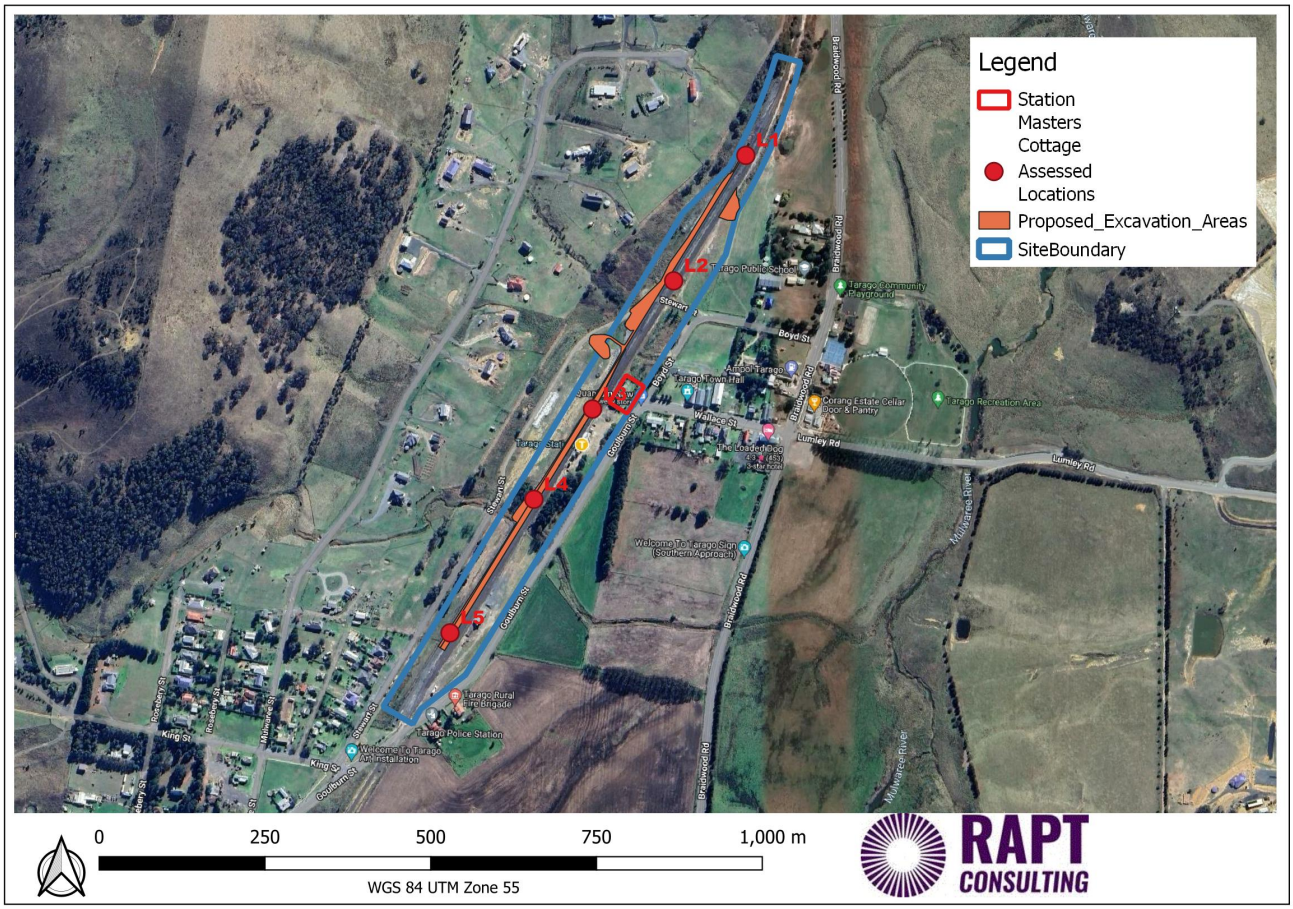


Figure 4-2 Assessed Locations

Tables 4-2 – 4-6 summarise the maximum predicted noise level the construction scenario at identified assessed receptors.

Table 4-2 Location 1 Predicted Construction Noise Results dB(A) Leq(15min)

Receiver ID	Site 2	Site 3 Location 1	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R1	70	58	70	45	Y	75	N
R2	68	57	69	45	Y	75	N
R3	66	44	66	45	Y	75	N
R4	62	48	63	45	Y	75	N
R5	61	54	62	45	Y	75	N
R6	58	62	63	55	Y	75	N
R7	54	44	55	45	Y	75	N
R8	50	33	51	45	Y	75	N
R9	60	47	60	45	Y	75	N
R10	62	49	62	45	Y	75	N
R11	61	50	61	45	Y	75	N
R12	61	51	62	45	Y	75	N
R13	57	60	62	45	Y	75	N
R14	56	46	57	45	Y	75	N

Receiver ID	Site 2	Site 3 Location 1	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R15	68	50	68	55	Y	75	N
R16	52	67	67	45	Y	75	N
R17	50	46	52	45	Y	75	N

Table 4-3 Location 2 Predicted Construction Noise Results dB(A) Leq(15min)

Receiver ID	Site 2	Site 3 Location 2	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R1	70	64	71	41	Y	75	N
R2	68	64	70	41	Y	75	N
R3	66	48	66	41	Y	75	N
R4	62	42	62	41	Y	75	N
R5	61	51	62	41	Y	75	N
R6	58	66	66	55	Y	75	N
R7	54	53	57	41	Y	75	N
R8	50	41	51	41	Y	75	N

Receiver ID	Site 2	Site 3 Location 2	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R9	60	58	62	41	Y	75	N
R10	62	58	64	41	Y	75	N
R11	61	60	63	41	Y	75	N
R12	61	63	65	41	Y	75	N
R13	57	64	64	41	Y	75	N
R14	56	56	59	41	Y	75	N
R15	68	51	68	55	Y	75	N
R16	52	60	60	41	Y	75	N
R17	50	49	53	41	Y	75	N

Table 4-4 Location 3 Predicted Construction Noise Results dB(A) Leq(15min)

Receiver ID	Site 2	Site 3 Location 3	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R1	70	68	72	41	Y	75	N
R2	68	67	71	41	Y	75	N
R3	66	54	66	41	Y	75	N

Receiver ID	Site 2	Site 3 Location 3	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R4	62	63	66	41	Y	75	N
R5	61	55	62	41	Y	75	N
R6	58	58	61	55	Y	75	N
R7	54	58	60	41	Y	75	N
R8	50	60	60	41	Y	75	N
R9	60	64	65	41	Y	75	N
R10	62	66	68	41	Y	75	N
R11	61	64	66	41	Y	75	N
R12	61	62	64	41	Y	75	N
R13	57	58	61	41	Y	75	N
R14	56	58	60	41	Y	75	N
R15	68	67	70	55	Y	75	N
R16	52	54	56	41	Y	75	N
R17	50	54	55	41	Y	75	N

Table 4-5 Location 4 Predicted Construction Noise Results dB(A) Leq(15min)

Receiver ID	Site 2	Site 3 Location 4	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R1	70	61	71	41	Y	75	N
R2	68	59	69	41	Y	75	N
R3	66	62	67	41	Y	75	N
R4	62	52	63	41	Y	75	N
R5	61	40	61	41	Y	75	N
R6	58	54	59	55	Y	75	N
R7	54	62	63	41	Y	75	N
R8	50	65	65	41	Y	75	N
R9	60	65	66	41	Y	75	N
R10	62	62	65	41	Y	75	N
R11	61	60	63	41	Y	75	N
R12	61	58	63	41	Y	75	N
R13	57	55	59	41	Y	75	N
R14	56	58	60	41	Y	75	N

Receiver ID	Site 2	Site 3 Location 4	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R15	68	50	68	55	Y	75	N
R16	52	51	54	41	Y	75	N
R17	50	58	58	41	Y	75	N

Table 4-6 Location 5 Predicted Construction Noise Results dB(A) Leq(15min)

Receiver ID	Site 2	Site 3 Location 5	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R1	70	50	70	41	Y	75	N
R2	68	53	68	41	Y	75	N
R3	66	56	66	41	Y	75	N
R4	62	47	63	41	Y	75	N
R5	61	32	61	41	Y	75	N
R6	58	46	58	55	Y	75	N
R7	54	64	64	41	Y	75	N
R8	50	61	62	41	Y	75	N
R9	60	57	62	41	Y	75	N

Receiver ID	Site 2	Site 3 Location 5	Cumulative Result	Standard Hours NML	Exceedance Y / N	Highly Affected Noise Level	Exceedance Y / N
R10	62	56	63	41	Y	75	N
R11	61	54	61	41	Y	75	N
R12	61	53	62	41	Y	75	N
R13	57	50	57	41	Y	75	N
R14	56	51	58	41	Y	75	N
R15	68	49	68	55	Y	75	N
R16	52	47	53	41	Y	75	N
R17	50	67	67	41	Y	75	N

Construction noise modelling contours are provided in Figures 4-3 – 4-13.

Figure 4-3 Site 2 Station Master Cottage Remediation dB(A) Leq(15min)

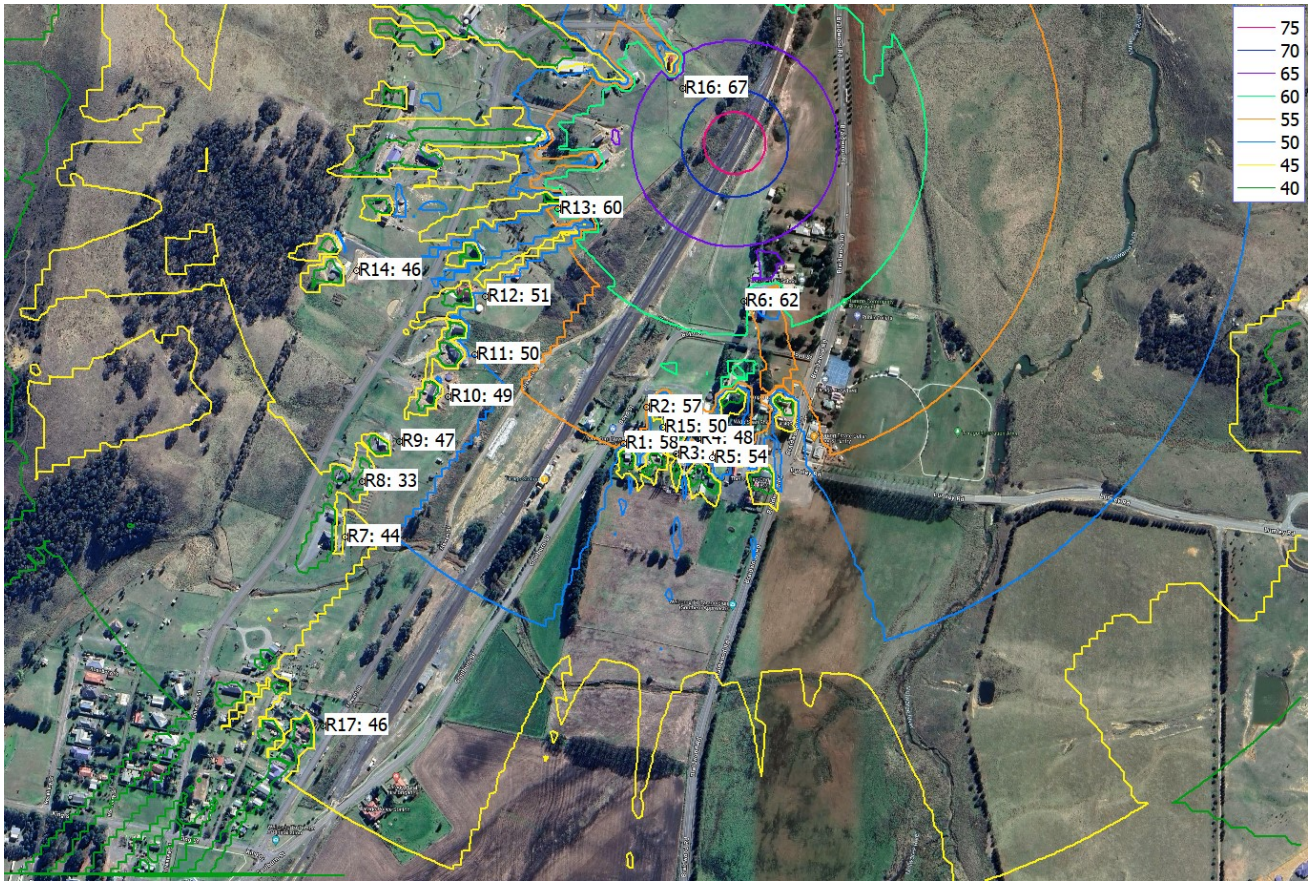


Figure 4-4 Site 3 Location 1 Remediation dB(A) Leq(15min)

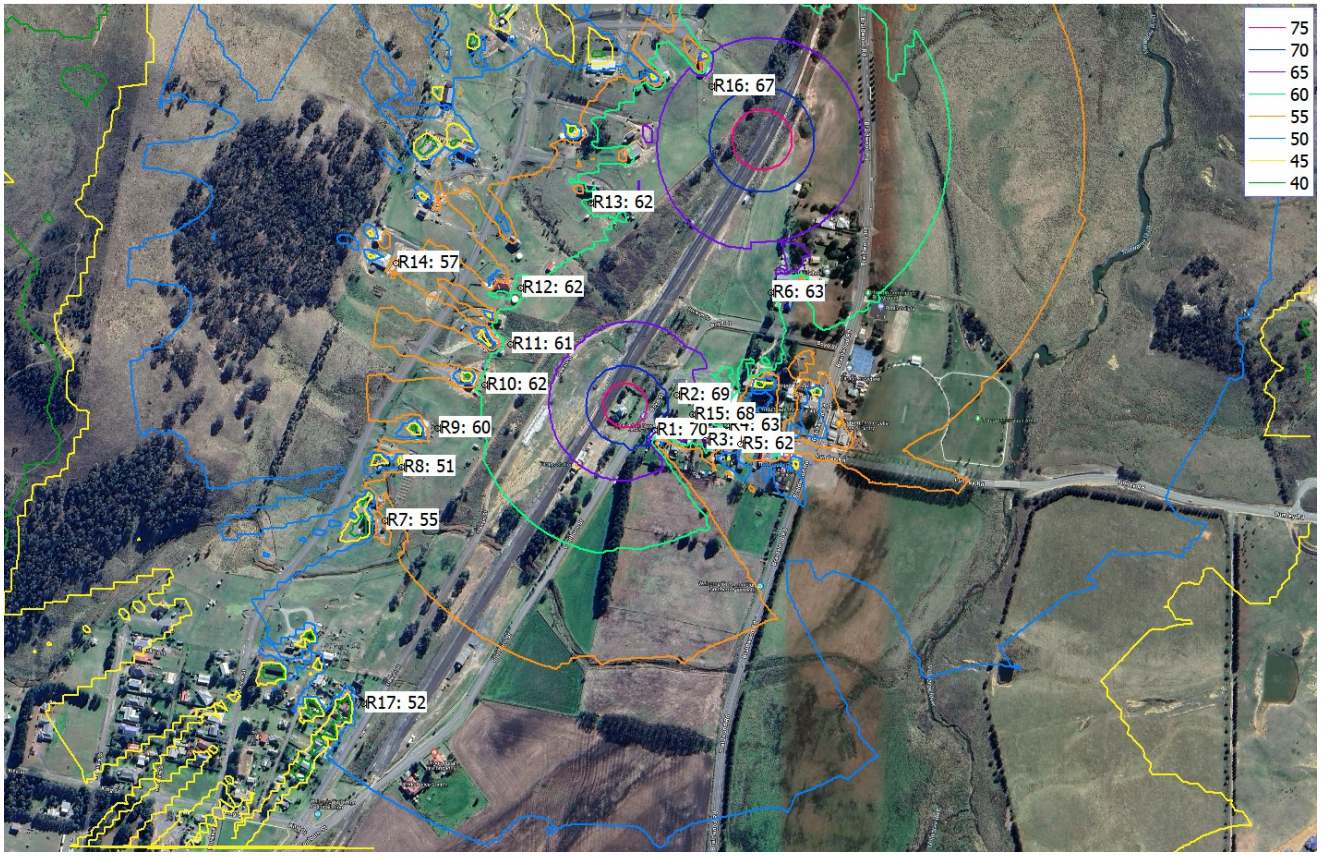


Figure 4-5 Site 3 Location 1 + Site 2 dB(A) Leq(15min)

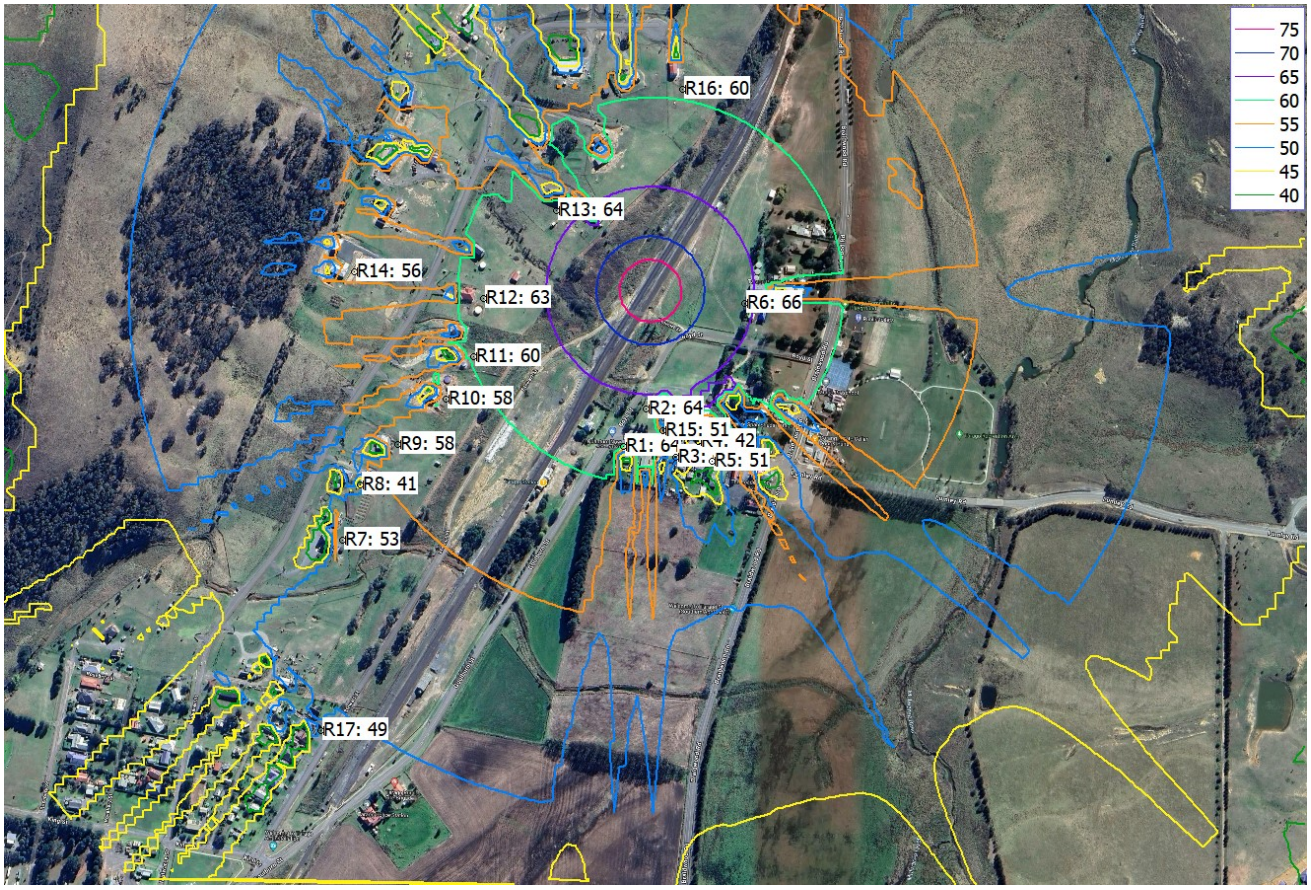


Figure 4-6 Site 3 Location 2 Remediation dB(A) Leq(15min)

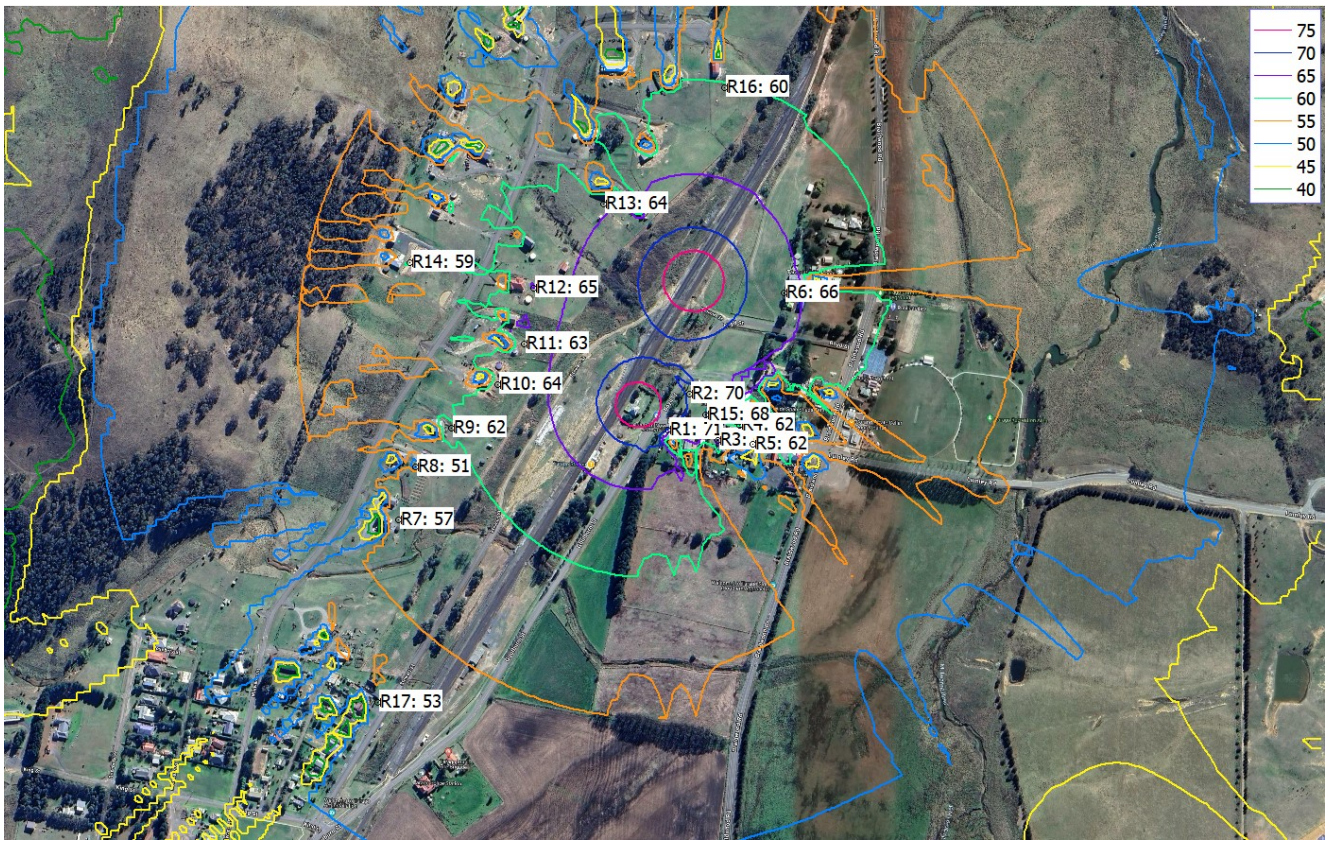


Figure 4-7 Site 3 Location 2 + Site 2 dB(A) Leq(15min)

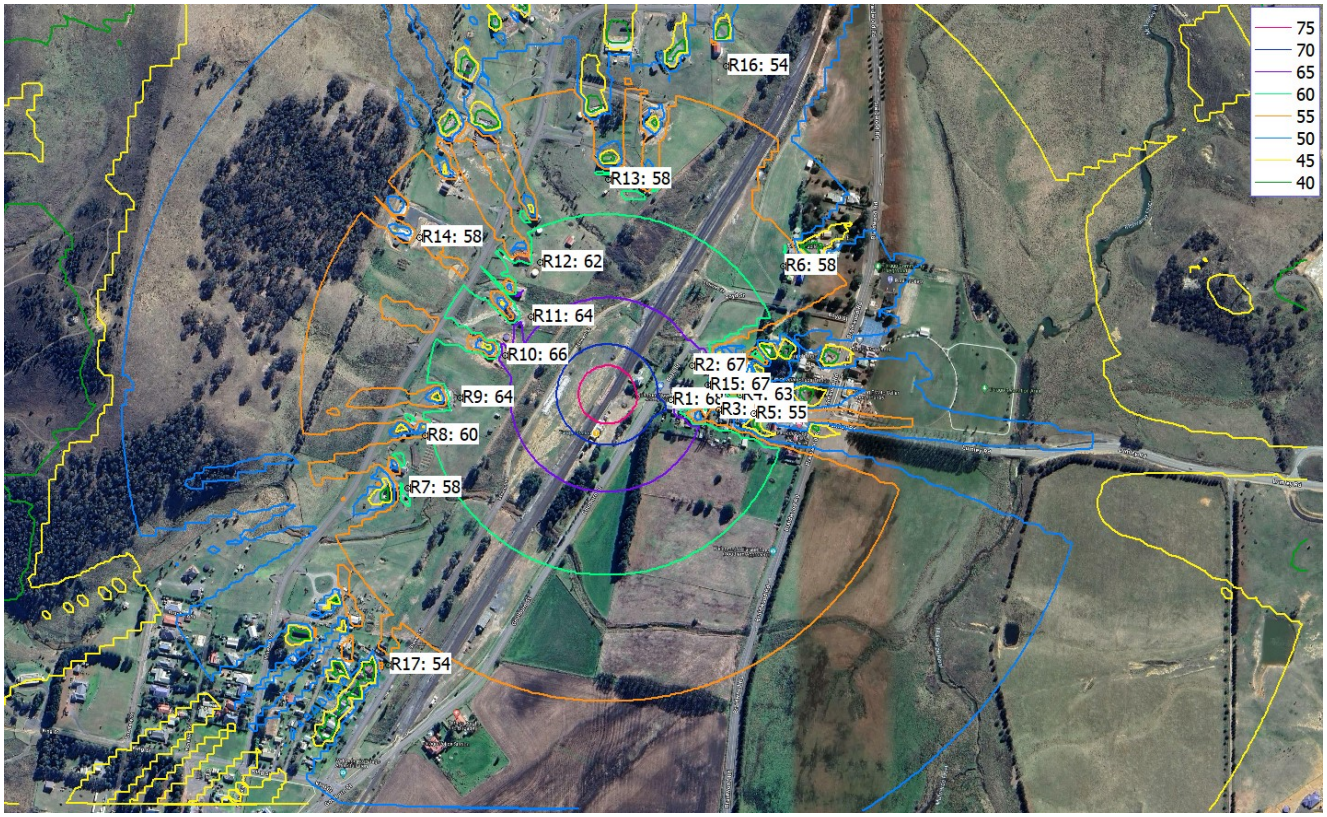


Figure 4-8 Site 3 Location 3 Remediation dB(A) Leq(15min)

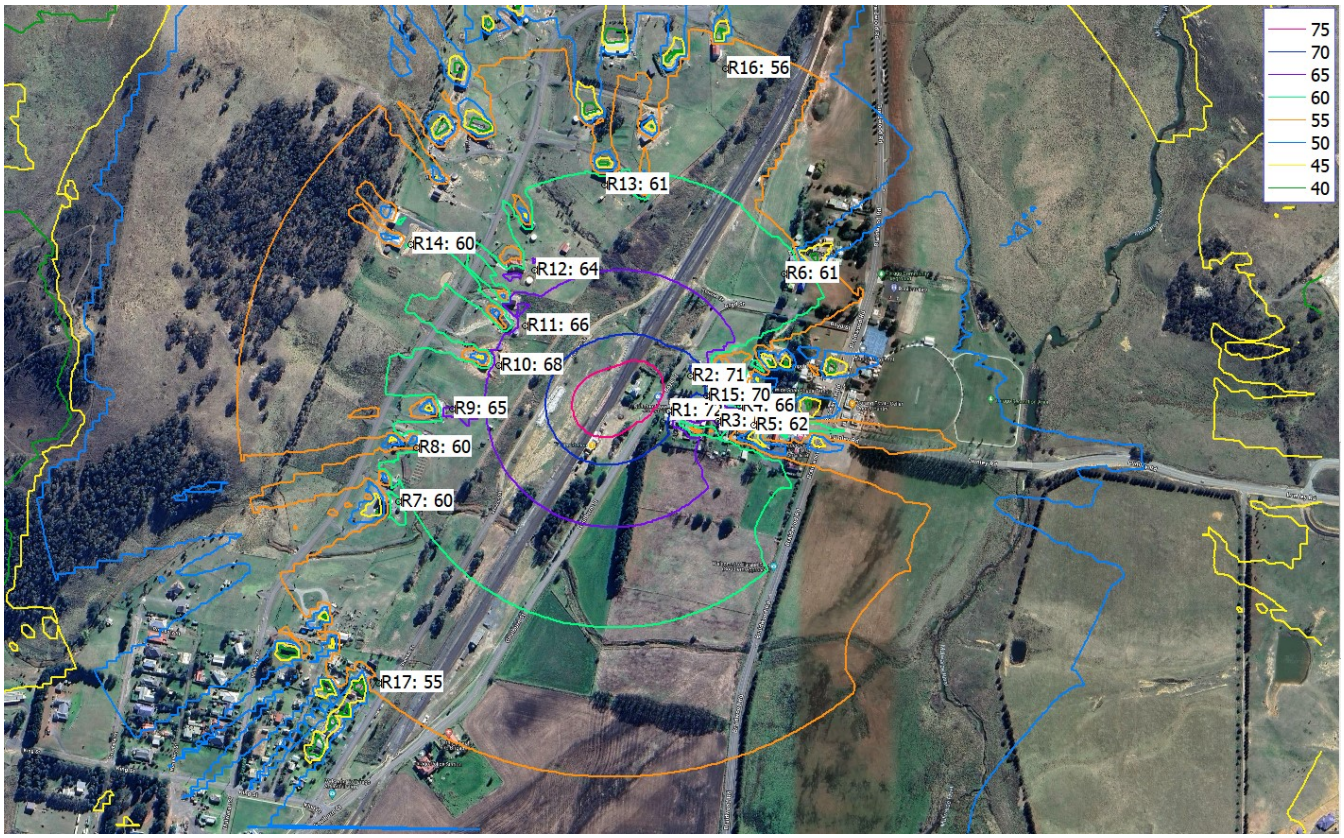


Figure 4-9 Site 3 Location 3 + Site 2 dB(A) Leq(15min)

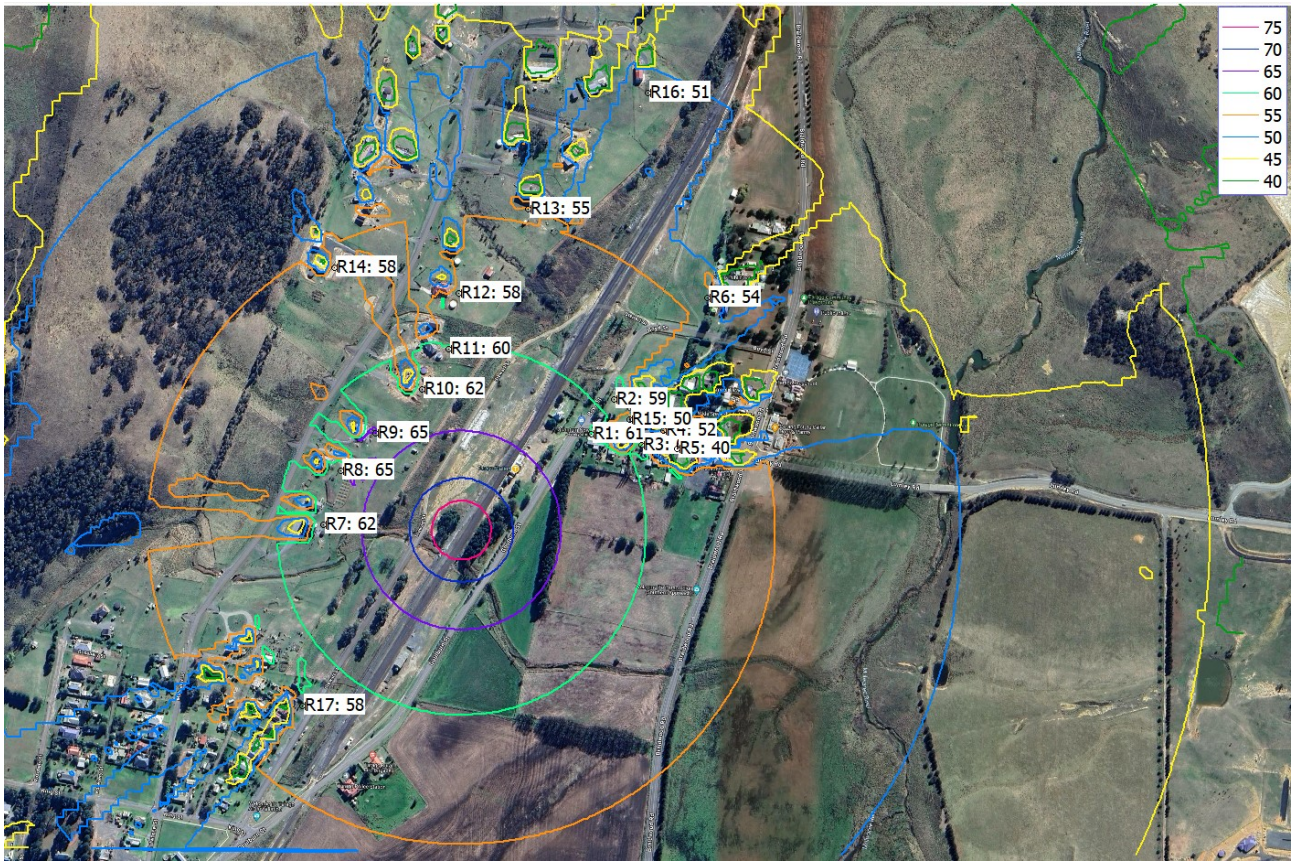


Figure 4-10 Site 3 Location 4 Remediation dB(A) Leq(15min)

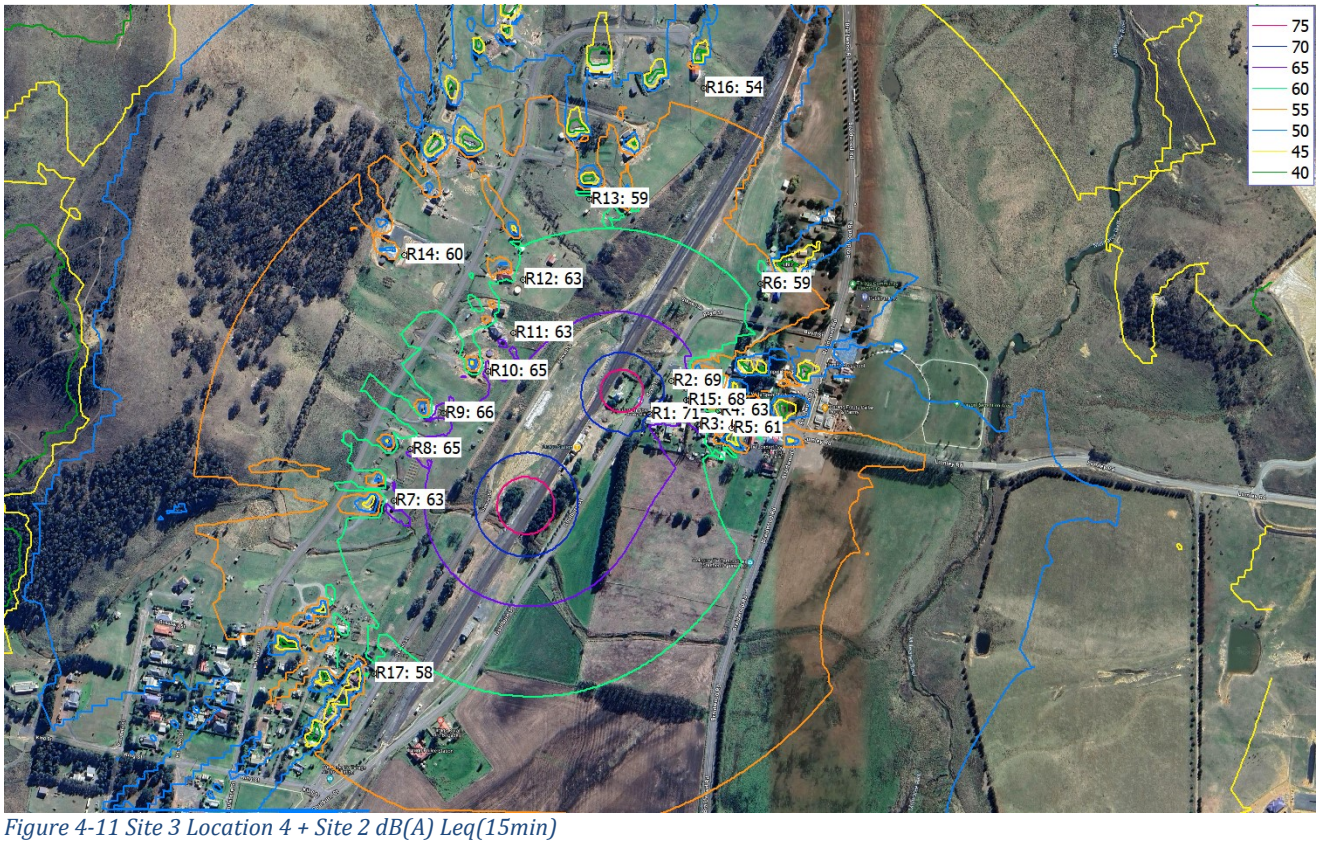


Figure 4-11 Site 3 Location 4 + Site 2 dB(A) Leq(15min)

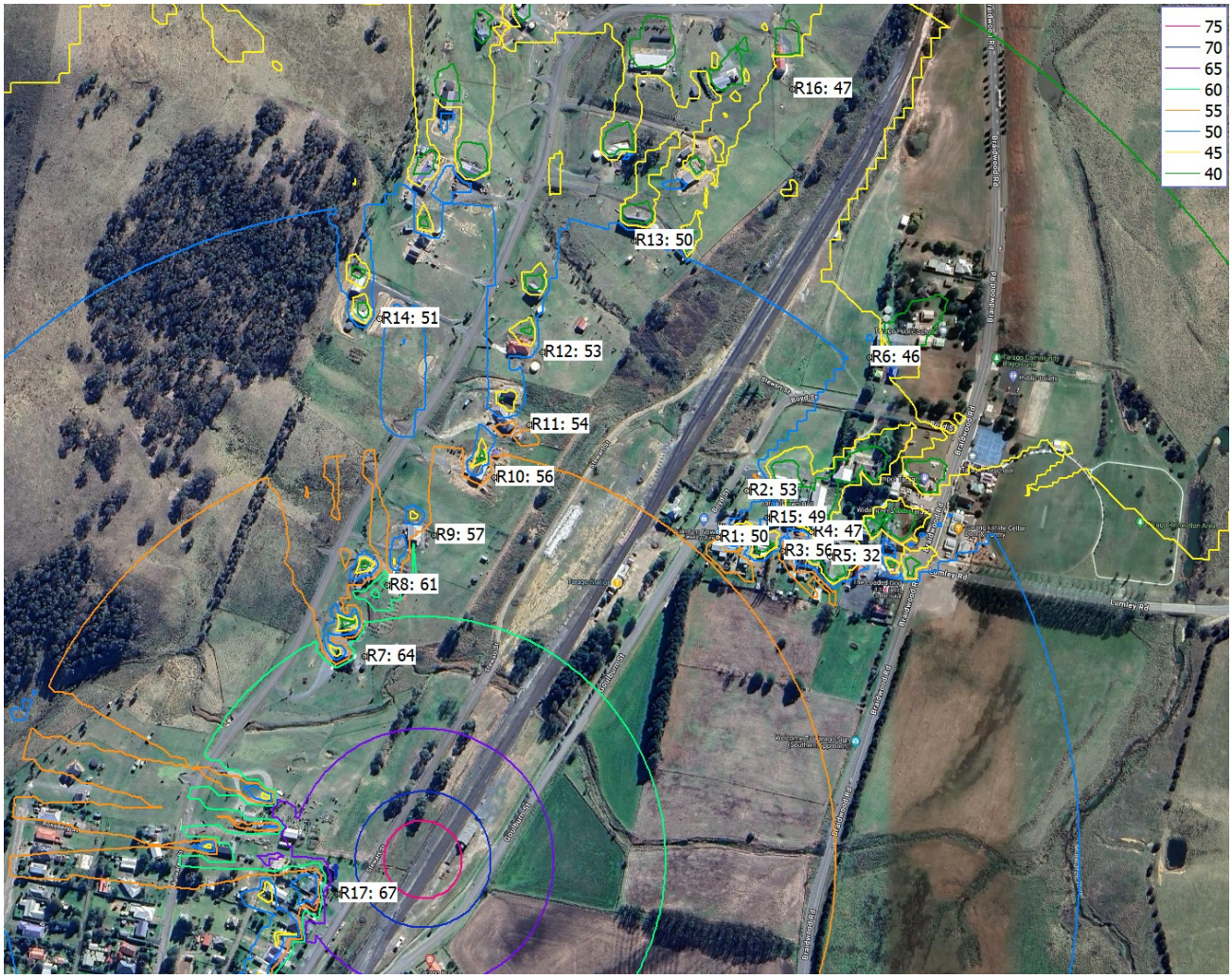


Figure 4-12 Site 3 Location 5 Remediation dB(A) Leq(15min)

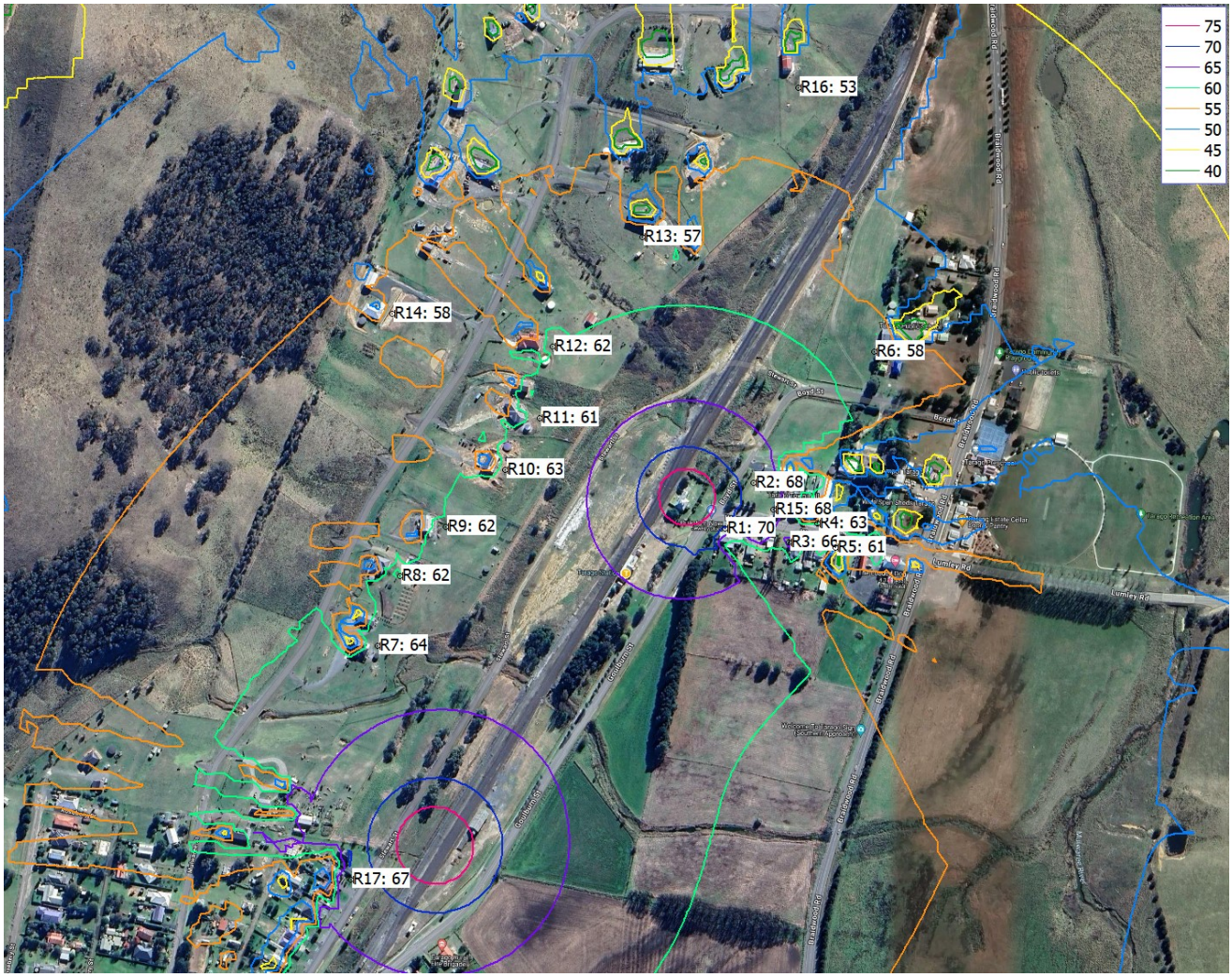


Figure 4-13 Site 3 Location 5 + Site 2 dB(A) Leq(15min)

Discussion

The results of the construction assessment indicate there is the potential for NML's to be exceeded at all assessed locations. However, the highly affected noise level is expected to be complied with in all situations even in the event of the remediation works occurring at Site 2 and Site 3 simultaneously.

While the remediation time frame is expected to only be 6 weeks, there is a risk for NML's to be exceeded depending on work activities and locations. With this in mind it is recommended a Construction Noise and Vibration Management (CNVMP) plan be implemented as part of the proposal to minimise the risk of adverse noise emanating upon the community. Refer to Section 4-3.

4.2 Construction Vibration

The relationship between vibration and the probability of causing human annoyance or damage to structures is complex. This complexity is mostly due to the magnitude of the vibration source, the particular ground conditions between the source and receiver, the foundation-to-footing interaction and the large range of structures that exist in terms of design (e.g. dimensions, materials, type and quality of construction and footing conditions). The intensity, duration, frequency content and number of occurrences of vibration, are all important aspects in both the annoyances caused and the strains induced in structures.

Energy from construction equipment is transmitted into the ground and transformed into vibrations, which attenuates with distance. The magnitude and attenuation of ground vibration is dependent on the following:

- The efficiency of the energy transfer mechanism of the equipment (i.e. impulsive, reciprocating, rolling or rotating equipment).
- The Frequency content.
- The impact medium stiffness.
- The type of wave (surface or body).
- The ground type and topography.

Due to the above factors, there is inherent variability in ground vibration predictions without site-specific measurement data.

Ground Vibration – Minimum Working Distances from Sensitive Receivers

The Transport for NSW Construction Noise and Vibration Strategy (CNVS) provides guidance for minimum working distances. As a guide, minimum working distances from sensitive receivers for typical items of vibration intensive plant are listed in Table 4-2. The minimum distances are quoted for both "cosmetic" damage (refer BS 7385) and human comfort (refer OH&E's Assessing Vibration - a technical guideline). DIN 4150 has criteria of particular reference for heritage structures. Table 4-2 provides the recommended minimum safe working distances for vibration intensive plant from sensitive receivers.

Table 4-7 Recommended Minimum Safe Working Distances for Vibration Intensive Plant from Sensitive Receiver

Plant Item	Rating / Description	Minimum Distance Cosmetic Damage		Minimum Distance Human Response (NSW EPA Guideline)
		Residential and Light Commercial (BS 7385)	Heritage Items (DIN 4150, Group 3)	
Vibratory Roller	<50 kN (1-2 tonne)	5m	11m	15m to 20m
	<100 kN (2-4 tonne)	6m	13m	20m
	<200 kN (4-6 tonne)	12m	15m	40m
	<300kN (7-13 tonne)	15m	31m	100m
	>300kN (13-18 tonne)	20m	40m	100m
	>300kN (>18 tonne)	25m	50m	100m

Plant Item	Rating / Description	Minimum Distance Cosmetic Damage		Minimum Distance Human Response (NSW EPA Guideline)
		Residential and Light Commercial (BS 7385)	Heritage Items (DIN 4150, Group 3)	
Small Hydraulic Hammer	300kg (5 to 12 t excavator)	2m	5m	7m
Medium Hydraulic Hammer	900kg (12 to 18 t excavator)	7m	15m	23m
Large Hydraulic Hammer	1600kg (18 to 34 t excavator)	22m	44m	73m
Vibratory Pile Driver	Sheet Piles	2m to 20m	5m to 40m	20m
Pile Boring	≤ 800mm	2m (nominal)	5m	4m
Jack Hammer	Hand Held	1m (nominal)	3m	2m

It is understood a State Heritage Precinct is located in the vicinity of the site. While significant vibration generating activities are not expected as part of the proposal, during construction it is recommend if any of the above activities are planned, contractors use table 4-2 as a guide when selecting plant and equipment.

4.3 Construction Noise and Vibration Management Plan

A CNVMP could be prepared prior to the commencement of works and implemented through all phases of the proposed construction works. The CNVMP would provide the framework for the management of all potential noise impacts resulting from the construction works and would detail the environmental mitigation measures to be implemented throughout the construction works.

4.3.1 Planning and design of construction works

During the detailed planning, scheduling and design of the construction works the following noise management and mitigation measures should be investigated and as required, implemented prior to the commencement of noise generating works.

Notification before and during construction

- Affected neighbours to the construction works would be advised in advance of the proposed construction period at least 1 week prior to the commencement of works.
- Consultation and communication between the site and neighbours to the site would assist in minimising uncertainty, misconceptions and adverse reactions to noise.

- All site workers (including subcontractors and temporary workforce) should be familiar with the potential for noise impacts upon residents and encouraged to take all practical and reasonable measures to minimise noise during their activities.

- The constructor or site supervisor (as appropriate) should provide a community liaison phone number and permanent site contact so that the noise related complaints, if any, can be received and addressed in a timely manner.

- The constructor (as appropriate) should establish contact with the residents and communicate, particularly when noisy activities are planned.

Best practice measures when operating on construction site

- Construction works should adopt Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) practices as addressed in the ICNG. BMP includes factors discussed within this report and encouragement of a project objective to reduce noise emissions. BATEA practices involve incorporating the most advanced and affordable technology to minimise noise emissions.

- Ensure that all construction works scheduled for standard construction hours comply with the start and finish time.

- Where practical, simultaneous operation of dominant noise generating plant should be managed to reduce noise impacts, such as operating at different times or increase the distance between plant and the nearest identified receiver.

- High noise generating activities such as vibratory rollers should only be carried out in continuous blocks, not exceeding 3 hours each, with a minimum respite period of one hour between each block.

- Where possible, reversing beepers on mobile equipment would be replaced with low-pitch tonal beepers (quackers). Alternatives to reversing beepers include the use of spotters and designing the site to reduce the need for reversing may assist in minimising the use of reversing beepers.

- Equipment which is used intermittently should be shut down when not in use.

- All engine covers should be kept close while equipment is operating.

- The construction site would be arranged to minimise noise impacts by locating potentially noisy activities away from the nearest receivers wherever possible.

- To minimise heavy equipment handling noise, material stockpiles should be located as far as possible from the nearest receptors

- Loading and unloading areas should be located as far as possible from the nearest receptors.

- Where possible, trucks associated with the work area should not be left standing with their engine operating in a street adjacent to a residential area.

- All vehicular movements to and from the site should comply with the appropriate regulatory authority requirement for such activities.

Complaints handling

Noise and vibration monitoring should be undertaken upon receipt of a complaint to identify and quantify the issue and determine options to minimise impacts.

- If valid noise and/or vibration data for an activity is available for the complainant property, from works of a similar severity and location, it is not expected that monitoring will be repeated upon receipt of repeated complaints for these activities, except where vibration levels are believed to be potentially damaging to the building.

- Any noise and/or vibration monitoring should be undertaken by a qualified professional and with consideration to the relevant standards and guidelines. Attended noise and/or vibration monitoring should be undertaken upon receipt of a noise and/or vibration complaint. Monitoring should be undertaken and reported within a timely manner (say 3 to 5 working days). If exceedance is detected, the situation should be reviewed to identify means to reduce the impact to acceptable levels.

5. Conclusion

This CNVIA assessment has been undertaken to inform an REF to facilitate the remediation of contamination identified along an approximate one kilometre stretch of the Goulburn – Bombala rail corridor at Tarago, New South Wales (NSW) (the Rail Corridor Site). The Rail Corridor Site includes part Lot 22 DP1202608, and remediation of the former Station Masters Cottage and associated above ground structures located at Lot 1 DP 816626, 106 Goulburn Road, Tarago New South Wales (NSW).

This project is a component of the larger remediation works occurring within Tarago. The three sties identified within Figure 1-1 are:

- Site 1: Stockpile Remediation
- Site 2: Station Masters Cottage Remediation
- Site 3: Rail Corridor Remediation

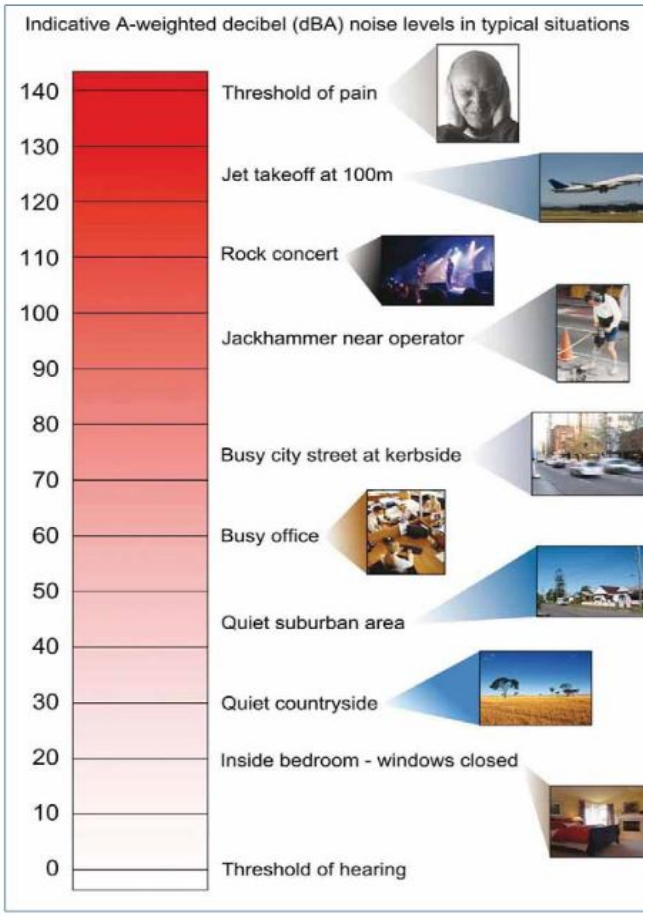
The works are to be carried out over two stages:

- Stage 1 includes the removal of fouled ballast from site 1 and the demolition of the former Station Masters Cottage and associated above-ground structures on Site 2.
- Stage 2 (this assessment) involves excavating and relocating soils from Site 2 and remediation works at Site 3.

Given the distance to nearest receptors, the assumptions made in the assessment and the nature of the remediation works, it is expected there are circumstances where NML's have the potential to be exceeded particularly when remediation works are being undertaken in close proximity to residences. However, the highly affected noise level is expected to be complied with in all situations even in the event of the Site 2 and Site 3 remediation works taking place simultaneously.

A standard set of construction noise management measures has been provided to deal with the unlikely event of any noise issues. It is believed through the implementation of a CNVMP unlikely noise issues can be managed and mitigated to ensure construction noise is minimised wherever possible.

Appendix A: Glossary of Acoustic Terms

Term	Definition
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics. The picture below indicates typical noise levels from common noise sources. 
dB(A)	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.
$L_{Aeq(period)}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{A10(period)}$	The sound pressure level that is exceeded for 10% of the measurement period.
$L_{A90(period)}$	The sound pressure level that is exceeded for 90% of the measurement period.
L_{Amax}	The maximum sound level recorded during the measurement period.
Noise sensitive receiver	An area or place potentially affected by noise which includes:

	A residential dwelling. An educational institution, library, childcare centre or kindergarten. A hospital, surgery or other medical institution. An active (e.g. sports field, golf course) or passive (e.g. national park) recreational area. Commercial or industrial premises. A place of worship.
Rating Background Level (RBL)	The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
Feasible and Reasonable (Noise Policy for Industry Definition)	**Feasible** mitigation measure is a noise mitigation measure that can be engineered and is practical to build and/or implement, given project constraints such as safety, maintenance and reliability requirements. Selecting **Reasonable** measures from those that are feasible involves judging whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the mitigation measure. To make a judgement, consider the following: Noise impacts Noise mitigation benefits Cost effectiveness of noise mitigation Community views.
Sound power level (SWL)	The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in dB(A).

Appendix 5

Statement of Heritage Impacts, prepared by OzArk (OzArk, 2024)

View of Tarago Railway Station.

STATEMENT OF HERITAGE IMPACT

TARAGO WOODLAWN SIDING REMEDIATION

TARAGO, NSW

APRIL 2025

Report prepared by

OzArk Environment & Heritage

for Transport for NSW

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DOCUMENT CONTROLS

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Acknowledgement

OzArk acknowledge the traditional custodians of the area on which this assessment took place and pay respect to their beliefs, cultural heritage, and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the Elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

OzArk Environment & Heritage has been engaged by Ramboll Australia Pty Ltd, on behalf of Transport for NSW (TfNSW, the proponent) to complete a Statement of Heritage Impact (SOHI) for the Tarago Woodlawn Siding Remediation Project (the project). The project is in the Goulburn Mulwaree Local Government Area.

In 2019, the site was identified as containing high levels of lead within the rail formation and surrounding soil resulting from the former Woodlawn Mines Ore Concentrate Loadout Complex.

A Remedial Action Plan for the rail corridor was developed in 2021 to consider the remediation of the site. Remediation involves the excavation of contaminated material to a depth between 0.5 metres (m) to 0.3 m and will also include removal of contaminated railway sleepers and fouled ballast. Some contamination located within the rail formation is inaccessible and will therefore be managed in situ.

The works will take place within the identified heritage curtilage of the Tarago Railway Station group that is listed on the State Heritage Register (SHR) (item 01262) as having state heritage values. The works will also take place within the heritage curtilage of the Tarago Railway Station that is listed as an item of local heritage significance with the Goulburn Mulwaree Local Environmental Plan (LEP) 2009 (item I591).

The site inspection was undertaken on 24 November 2022 by OzArk Principal Archaeologist, Ben Churcher.

The visual inspection confirmed that the built elements of the heritage items, such as the Tarago Railway Station and platform, signal box, and Goods Shed, are separated from the works by at least the width of one set of railway lines. As such, there will be no direct harm to the identified heritage values or fabric of these buildings.

The works will also not alter the visual amenity of the area and will not obstruct views to the heritage items. The works, being the removal of contaminated soils and its replacement with non-contaminated soil, will not dominate the significant elements of the heritage items, and when the works are complete, will not alter the aesthetic appeal of the elements being exemplars of small, rural railway buildings.

Recommendations concerning historic cultural values within the site are as follows:

1. The significant fabric of the Tarago Railway Station, the Signal Box, the associated platform, and the Goods Shed must not be harmed.
2. The proposed works within the state heritage curtilage for Tarago Railway Station group (SHR item 01262) may proceed under Standard Exemption 8 as it relates to contaminated

soils. This SOHI should be retained as a record of this determination and the documentation provided in **Appendix 1** will be completed.

3. The proposed works within the local heritage curtilage for Tarago Railway Station (Goulburn Mulwaree LEP, item I591) may proceed without further consultation with Council (Section 2.11 of the *State Environmental Planning Policy Transport and Infrastructure 2021*).
4. The assessed proposed works are those shown on **Figure 1-2**. Should the scope of the works change from those shown on **Figure 1-2**, additional heritage assessment may be required.
5. Inductions for work crews should include a cultural heritage awareness procedure to ensure the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.
6. It is assessed that there is a low potential for archaeological deposits or further unknown significant historic items within the proposed work areas. However, if during the carrying out works, suspected significant historic items are encountered, the work at that location must cease and the TfNSW *Unexpected heritage items procedure* (July 2022) must be followed.

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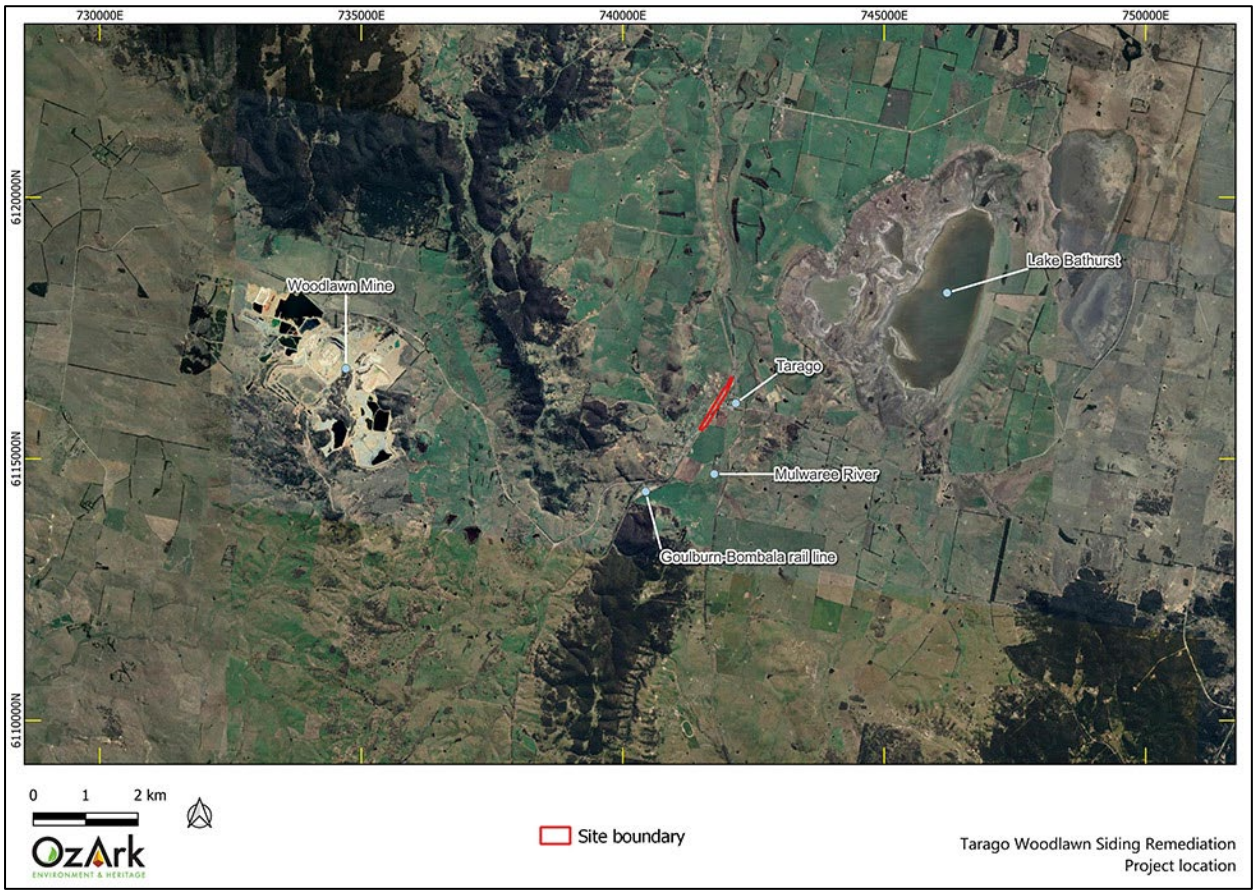
1 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT

OzArk Environment & Heritage (OzArk) has been engaged by Ramboll Australia Pty Ltd, on behalf of Transport for NSW (TfNSW, the proponent) to complete a Statement of Heritage Impact (SOHI) for the Tarago Woodlawn Siding Remediation Project (the project). The project is in the Goulburn Mulwaree Local Government Area (LGA) (**Figure 1-1**).

Figure 1-1: Aerial showing the location of the project.



1.2 BACKGROUND

Transport for NSW propose to undertake remediation works within and surrounding the Tarago Woodlawn Siding on the Goulburn-Bombala rail corridor in Tarago, NSW (the site).

In 2019, the site was identified as containing high levels of lead within the rail formation and surrounding soil resulting from the former Woodlawn Mines Ore Concentrate Loadout Complex. As a result, the site was notified to the Environment Protection Authority under Section 60 of the *Contaminated Land Act 1997*. Since then detailed investigations have characterised lead contamination to be limited to ballast in rail formations and surrounding soils to a maximum depth of approximately 0.5 metres (m) below ground level.

1.3 PROPOSED WORK

A Remedial Action Plan (RAP) for the rail corridor was developed in 2021 and the remediation of the site will be in accordance with the RAP. Remediation involves the excavation of contaminated material to a depth between 0.5 m to 0.3 m and will also include removal of contaminated railway sleepers and fouled ballast. Some contamination located within the rail formation is inaccessible and will therefore be managed in situ.

The extent of the site boundary is shown on **Figure 1-2**. All works associated with the remediation will be located within the site boundary, however, not all the site will be harmed. **Figure 1-3** shows that proposed works are separated from the Tarago Railway Station and Signal Box by two sets of existing railways lines and **Figure 1-4** shows that there is an even greater separation between the proposed works and the Goods Shed.

No works are proposed that will harm or modify the fabric of any existing building or associated platform.

1.4 THE SITE

The site includes both sides of the rail line, although works will be mostly confined to the west of the rail line (**Section 1.3**).

The site contains two heritage listed items (**Figure 1-5**):

- The Tarago Railway Station group is listed on the State Heritage Register (SHR) as item 01262 with identified state heritage significance
- The Goulburn Mulwaree Local Environmental Plan 2009 (LEP) lists the Tarago Railway Station (I591) as an item of local heritage significance.

The site is within a flat landform that has been subjected to considerable disturbance from the construction and maintenance of the existing Goulburn-Bombala rail line and the former Woodlawn Mine loading facility (**Figure 1-6**).

As can be seen on **Figure 1-6**, the proposed work area is within gradual slopes where the western side of the Goulburn-Bombala rail line is either cut into the hill slope or is significantly disturbed by former earthworks and soil emplacements (far side in this photograph). The proposed works associated with excavation are not adjacent to the Tarago Railway Station, Signal Box, or Goods Shed.

Figure 1-2: Proposed work showing the site boundary.

Figure 1-3: Proposed works near Tarago Railway Station.

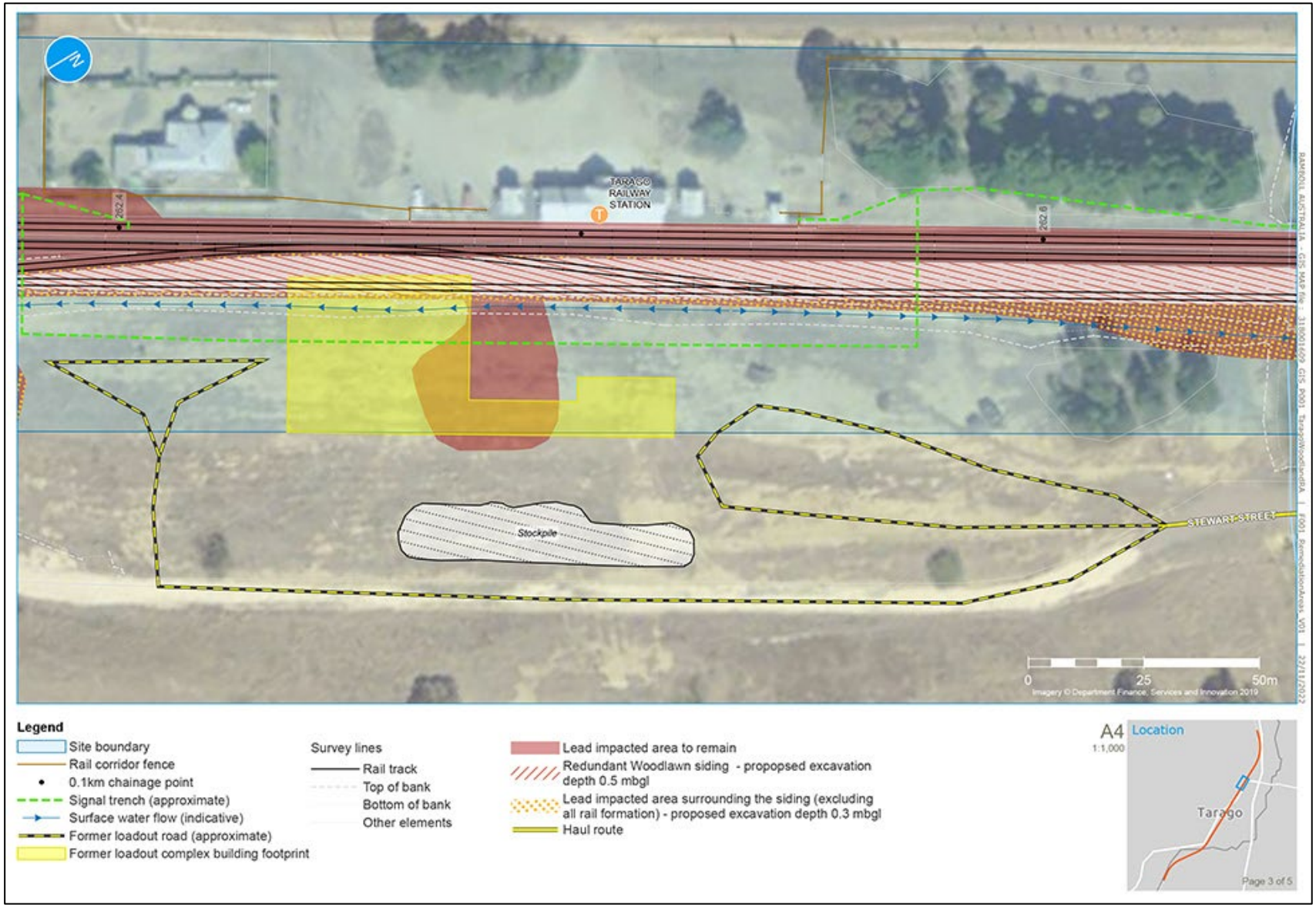


Figure 1-4: Proposed works near the Goods Shed.

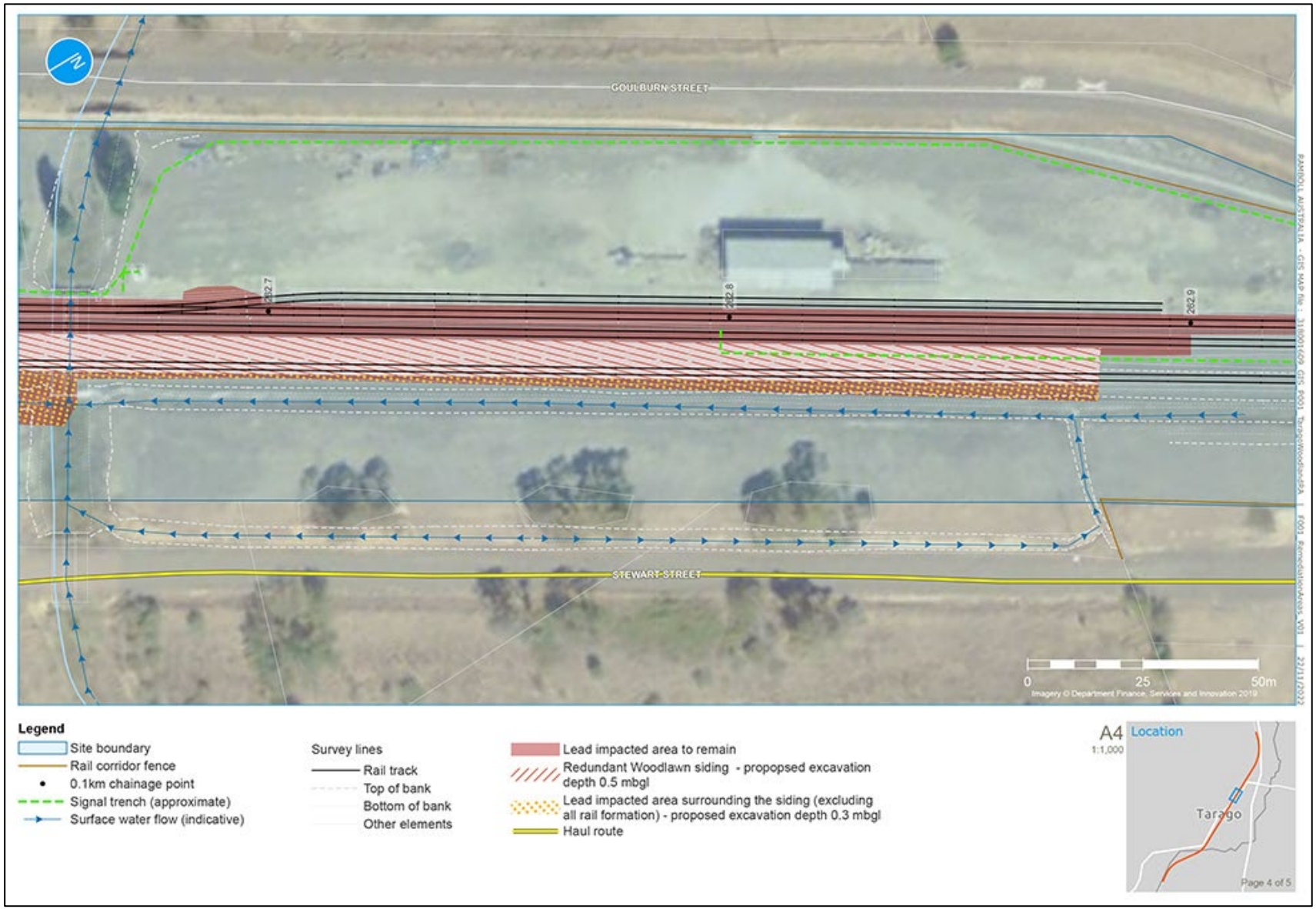


Figure 1-5: Aerial showing the site.

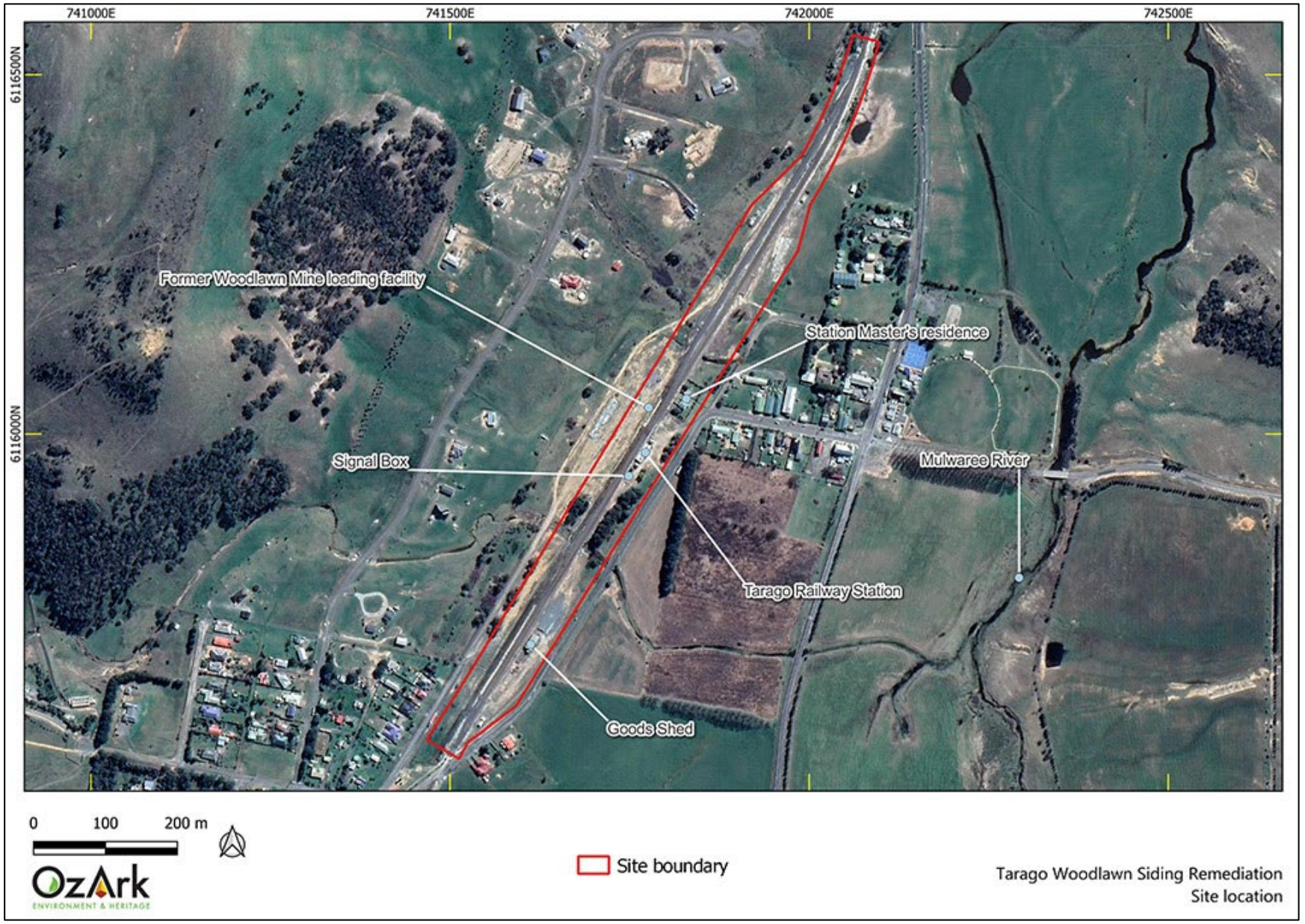


Figure 1-6: Panorama of the site.

In this view, the remediation works will be confined to the far side of the rail lines and within the largely removed Woodlawn rail siding.

The rail lines visible in this image will remain in situ.

2 HISTORIC CULTURAL HERITAGE ASSESSMENT

2.1 RELEVANT LEGISLATION

Cultural heritage is managed by several state and national Acts. Baseline principles for the conservation of heritage places and relics can be found in the *Burra Charter* (Burra Charter 2013). The *Burra Charter* has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The *Burra Charter* generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a state level.

Several Acts of parliament provide for the protection of heritage at various levels of government.

2.1.1 Commonwealth legislation

2.1.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water, provides a framework to protect nationally significant flora, fauna, ecological communities, and heritage places. The EPBC Act establishes both a National Heritage List and Commonwealth Heritage List of protected places. These lists may include Aboriginal cultural sites or sites in which Aboriginal people have interests. The assessment and permitting processes of the EPBC Act are triggered when a proposed activity or development could potentially have an impact on one of the matters of national environment significance listed by the Act. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to national/commonwealth heritage places.

2.1.1.2 Applicability to the project

It is noted there are no Commonwealth or National heritage listed places within the site, and as such, the heritage provisions of the EPBC Act and other Commonwealth Acts do not apply.

2.1.2 State legislation

2.1.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) Act established requirements relating to land use and planning. The main parts of the EP&A Act that relate to development assessment and approval are Part 4 (development assessment) and Part 5 (environmental assessment). The purpose of the Part 5 assessment system is to ensure public authorities fully consider environmental issues before they undertake or approve activities that do not require

development consent from a council or the Minister. The Minister responsible for the Act is the Minister for Planning.

The EP&A Act currently provides the primary legislative basis for planning and environmental assessment in NSW. The objects of the EP&A Act include encouragement of:

- The proper management, development, and conservation of natural resources
- The provision and coordination of the orderly and economic use and development of land
- Protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats
- Ecologically sustainable development.

The objects also provide for increased opportunity for public involvement and participation in environmental planning and assessment.

The EP&A Act includes provisions to ensure that the potential environmental impacts of a development or activity are rigorously assessed and considered in the decision-making process.

The framework governing environmental and heritage assessment in NSW is contained within the following parts of the EP&A Act:

- Part 4: Local government development assessments, including heritage. May include schedules of heritage items
- Part 5: Environmental impact assessment on any heritage items which may be impacted by activities undertaken by a state government authority or a local government acting as a self-determining authority.

2.1.2.2 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) is applicable to the current assessment. This Act established the Heritage Council of NSW. The Heritage Council's role is to advise the government on the protection of heritage assets, make listing recommendations to the Minister in relation to the SHR, and assess/approve/decline proposals involving modification to heritage items or places listed on the SHR. Most proposals involving modification are assessed under Section 60 of the Heritage Act.

Automatic protection is afforded to 'relics', defined as 'any deposit or material evidence relating to the settlement of the area that comprised New South Wales, not being Aboriginal settlement, and which holds state or local significance' (note: formerly the Act protected any 'relic' that was more than 50 years old. Now the age determination has been dropped from the Act and relics are protected according to their heritage significance assessment rather than purely on their age). Excavation of land on which it is known or where there is reasonable cause to suspect that 'relics'

will be exposed, moved, destroyed, discovered, or damaged is prohibited unless ordered under an excavation permit.

Certain activities and work are exempt from approval under the Heritage Act for items listed on the SHR. The Heritage Council recommend that before any activity or work takes place, that the following steps are taken:

- Understand what 'significant fabric' is
- Determine if the proposed activity or work can be done under a standard exemption and therefore there is no need to lodge an application for a Section 60 approval
- Understand how to comply with standard exemption requirements.

While the primary object of the Heritage Act is to conserve items listed on the SHR, it also protects local heritage items by allowing the Minister to declare interim heritage orders or emergency protection orders over locally listed places. The Heritage Act also protects items of local heritage significance under Section 170 of the Act as government instrumentalities are required to establish and keep a Heritage and Conservation Register to protect heritage assets under their control. The Heritage Act (Section 170B) establishes that the Heritage Council can act as an arbiter for any submission made under Part 3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) objecting to the identification of an item as an item of heritage significance (however described) in a proposed LEP.

2.1.3 Section 170 Heritage and Conservation register

Under Section 170 of the Heritage Act, all state government agencies must keep and administer a database of heritage assets (Section 170 Heritage and Conservation Register). This register identifies properties, infrastructure and assets that are owned by the agency and have been identified as having heritage significance.

A government instrumentality must give the Heritage Council not less than 14 days written notice before the government instrumentality:

(a) Removes any item from its register under Section 170, or

(b) Transfers ownership of any item entered in its register, or

(c) Ceases to occupy or demolishes any place, building or work entered in its register.

2.1.4 State Environmental Planning Policies

The *State Environmental Planning Policy Transport and Infrastructure 2021* (Transport and Infrastructure SEPP) is applicable to the project.

Section 2.11 of the Transport and Infrastructure SEPP states that consultation with Council is required for development carried out by or on behalf of a public authority, if the development:

(a) is likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a state heritage item, in a way that is more than minor or inconsequential.

2.1.4.1 Applicability to the project

- The Heritage Act primarily protects items of state heritage value. There is one item listed on the SHR within the site boundary, the Tarago Railway Station group item 01262. Standard exemptions may apply for certain works to an item on the SHR.
- The project will be assessed under Division 5.1 of the EP&A Act.
- The Tarago Railway Station is listed as item I591 in Schedule 5 of the Goulburn Mulwaree LEP.
- Development consent from Council is required for any proposed harm to a listed item that will have a major impact its heritage values.
- The Transport and Infrastructure SEPP (Section 2.11) establishes that consultation with Council is not required for impacts to locally listed items that are minor or inconsequential.
- The Tarago Railway Precinct is listed on the TfNSW s.170 Heritage and Conservation register (State Heritage Inventory [SHI] 4806298). As the item is not being demolished, removed from the s.170 register, or changing ownership, the Heritage Council does not need to be notified of the works.

2.2 ASSESSMENT APPROACH

The current assessment will apply the Heritage Council's *Investigating Heritage Significance. A guide to identifying and examining heritage items in NSW* (Heritage Council 2021) in the completion of a historical heritage assessment, including field investigations, to meet the following objectives:

Objective One: To identify whether historical heritage items or areas are, or are likely to be, harmed by the project

Objective Two: Prepare a SOHI to assess the likely harm to significant heritage items

Objective Three: Provide management recommendations and options for avoiding harm to significant heritage items.

2.3 DATE OF HISTORIC HERITAGE ASSESSMENT

The site inspection took place on 24 November 2022.

2.4 OZARK INVOLVEMENT

The fieldwork and reporting of the historic heritage assessment was completed by OzArk Principal Archaeologist, Ben Churcher (BA Hons, Dip Ed).

3 HERITAGE VALUES WITHIN THE SITE

The Tarago Railway Station group is listed on the SHR as item 01262 with identified state heritage significance and the Tarago Railway Station is listed as an item with identified local heritage vales on the Goulburn Mulwaree LEP Tarago Railway Station (I591). As the built items associated with the railway precinct have recognised heritage values, the precinct will be described below.

3.1 DESCRIPTION OF THE TARAGO RAILWAY PRECINCT

3.1.1 Tarago Railway Station (1884)

The station, identical to that at Bungendore and several other towns, consists of a main building flanked by two smaller buildings at either end. The building is simply planned with central waiting room flanked by the station master's office and ticket office on one side and a ladies' waiting room at the other. The station buildings are constructed of brick with a painted finish and feature gabled roofs clad in corrugated iron with corbelled brick chimneys. The central building features a rear porch entry to the central room which is marked by a transverse gable. Gable ends feature decorative timber barge boards and timber finials. The platform verandah has a decorative timber valance and is supported on timber posts with curved iron brackets. Timber sash windows have moulded surrounds and sills.

The brick platform also dates from 1884. The asphalt surface is modern.

3.1.2 Signal Box (1938)

The Signal Box is a simple square structure with a hipped roof clad in corrugated iron and timber framed walls clad in fibro. The internal fixtures remain intact.

3.1.3 Goods Shed (1884)

The Goods Shed is a large rectangular structure with a gabled roof clad in corrugated iron extending to form awnings on either side of the building. The awnings are supported on timber brackets. The building is timber framed with corrugated iron wall cladding. A small weatherboard office wing is clad in weatherboard. The structure features a large timber platform and timber sliding doors with shows views of the main intact buildings with heritage significance at the site. diagonal boarding.

Figure 3-1 shows views of the intact buildings with heritage significance at the site.

Figure 3-1: Views of the main elements of the SHR item 01262.

1. View of Tarago Railway Station from the southeast.

2. View of the Signal Box from the southwest.

3. View of the Goods Shed from the northeast.

3.2 HISTORICAL CONTEXT

Tarago Railway Station, comprising station, including main building, two lavatory blocks and Station Master's residence, was built as part of the extension of the railway into the region. The railway reached Goulburn in 1869, Gunning in 1875, Tarago in about 1884, Bungendore the following year, and Queanbeyan in 1887. Rail's arrival brought with it great changes in transport, communications, and local economies. As with virtually any small town, the station is a major feature among Tarago's buildings.

3.3 IDENTIFIED HERITAGE VALUES

Table 3-1 presents the results of the desktop searches undertaken.

Table 3-1: Historic cultural heritage: desktop-database search results.

Name of database searched	Date of search	Type of search	Comment
National and Commonwealth Heritage Listings	19/09/24	NSW	The place is not on the statutory National or Commonwealth heritage lists. The Register of the National Estate (a non-statutory archive) lists the Tarago Railway Station (place ID 1133).

Name of database searched	Date of search	Type of search	Comment
State Heritage Listings	19/09/24	Name of place	The Tarago Railway Station group is listed on the SHR as item 01262.
Local Environmental Plan (LEP)	19/09/24	Name of place	The Tarago Railway Station is listed in the LEP as item I591.

The identified state and local heritage values of the Tarago Railway precinct are detailed below.

3.3.1 State heritage listings

The Tarago Railway Station group is listed on the SHR (#01262) as a significant Victorian period railway precinct that retains several original or early items from the 1880s including the 1884 roadside station building and the c.1884 Goods Shed.

The group has state heritage significance because the extant railway buildings and structures form an important landmark for the small town at Tarago and are important elements within the wider townscape. The station building and Goods Shed are also good representative examples of a series of similar items located on the Main Southern Line and on the Bombala Line.

The heritage curtilage of the SHR listing includes the Tarago Railway Station, Signal Box, and Goods Shed (Figure 3-2: Location of heritage curtilages in relation to the site.).

3.3.2 Local heritage listings

The Goulburn Mulwaree LEP lists the Tarago Railway Station (I591) as an item of local heritage significance. The listing notes that the station derives its significance from its association with the extension of the railway into the region during the second half of the 19th century, its similarity to several other nearby stations, its contribution to the continuity of architectural style of railway station buildings, and because it is an important landmark feature of the small town.

The heritage curtilage of the LEP listing includes the Tarago Railway Station, Signal Box, and the Goods Shed (**Figure 3-2**).

The Station Master's Residence is described as having a hipped iron roof, three chimneys, sash windows and a concave verandah with iron roof and timber posts. The residence is described as being part of the group of buildings that comprise the railway precinct in the local heritage listing.

The Goods Shed is within the LEP heritage curtilage shown on the SHI but is not individually noted in the listing.

Figure 3-2: Location of heritage curtilages in relation to the site.

4 STATEMENT OF HERITAGE IMPACT

4.1 SAMPLING STRATEGY AND FIELD METHODS

The site was inspected by Ben Churcher from publicly accessible land. This included viewing the site from the station platform and from along the perimeter fence. This provided a close view of the site but did not include walking over some portions of the site due to rail safety constraints and soil contamination hazards.

4.2 SITE INSPECTION RESULTS

As shown on **Figure 1-2**, the main area of for the remediation works will in the disused Woodlawn rail siding that has already been largely removed (not the main and loop rail lines that are closest to the railway station), as well as in landforms immediately to the west of the railway line.

Figure 4-1 presents views of the main areas where remediation is proposed. In these views, the soil/ballast that is proposed to be removed is either within the disused Woodlawn rail siding or in the landforms immediately adjacent to the west. Remediation will also occur within the grounds of the former Station Master's Residence but not directly adjacent the Tarago Railway Station, platform, or Signal Box. No remediation is required adjacent to the Goods Shed.

Generally, the landforms that will be impacted are in an earthen bund in a highly modified area, within simple slopes that the existing rail line has been cut into, or in modified landforms where structures were once located.

The assessment concluded that the works have a very low likelihood of harming significant unknown heritage items or archaeological deposits.

Figure 4-1: Views of the site.

1. View of the northern end of the site showing the former Woodlawn Mine loading facility (demarcated with safety fencing) and the flat area adjacent that was used for stockpiles. Proposed works do not include excavation of the visible rail lines closest to the station.

2. View of the earthen bund along the western side of the rail line that will be remediated.

3. Another view of the earthen bund that occupies the proposed work area to the west of the rail line.

4. View of the southern portion of the site showing that the rail line has been cut into the adjacent hill slope.

4.1 ARCHAEOLOGICAL ASSESSMENT

All work within the heritage curtilage of the Tarago Railway Station group (SHR item 01262), is within existing rail corridor where there is no potential for archaeological deposits. The rail corridor has been cut into surrounding slopes and this excavation would have removed previous archaeological deposits if they had been present.

The works will remove the remaining portion of the disused Woodlawn rail siding that has been largely already removed. This element is intrusive into the railway group and post-dates the construction of the railway station and its associated buildings. The remaining rails do not have

archaeological significance, and it is very unlikely that there are significant archaeological deposits associated with the Woodlawn rail siding.

Works beyond the Woodlawn rail siding in the area of the former Woodlawn loadout building are within a modified landform that has been subject to considerable earthmoving activities. It is therefore assessed that significant archaeological deposits will not be present in this area.

Given the level of observed disturbances across the site boundary, it is assessed that there is a very low likelihood of the works harming significant archaeological deposits.

4.2 LIKELIHOOD OF HARM TO SIGNIFICANT HERITAGE ITEMS

4.2.1 State heritage listing

The significant elements of the SHR listing, such as the Tarago Railway Station, Signal Box, and Goods Shed (SHR item 01262), are separated from the works by at least the width of two sets of railway lines (**Figure 1-3, Figure 1-4**).

The works will impact the ground surface at selected areas within the SHR curtilage and contaminated wooden sleepers from the disused Woodlawn siding will be removed, along with short lengths of associated railway lines. These sleepers and railway lines are intrusive elements associated with the Woodlawn siding and do not date to the construction period of the station and associated buildings.

The works will not alter the visual amenity of the area and will not obstruct views to the heritage items. The works, being the removal of contaminated soils and its replacement with non-contaminated soil, will not dominate the item, and when the works are complete, will not alter the aesthetic appeal of the item being an exemplar of a small, rural railway station.

As only intrusive materials will be removed and significant fabric will not be harmed, there will be an inconsequential impact to the state heritage values of item 01262.

4.2.2 Local heritage listing

The listed heritage item, the Tarago Railway Station (item I591), will not be harmed. No ground disturbing impacts are proposed near the railway station, and as such, there will be no direct harm to the identified heritage values of this listing.

The works will not alter the visual amenity of the area and will not obstruct views to the heritage item.

As no significant fabric will be harmed, there will be no impact to the local heritage values of item I591.

5 CONCLUSIONS

5.1 STATE HERITAGE LISTING

Certain activities and work are exempt from approval under the Heritage Act for items listed on the SHR.

Standard Exemption 8 (Excavation) is for minor excavation or disturbance of land without removal of state significant relics. If substantial intact archaeological relics of state or local significance or any Aboriginal objects are discovered during excavation, all activities/works must stop, and Heritage NSW is to be notified.

The following specified activities/works to an item on the SHR do not require approval under subsection 57(1) of the Heritage Act if the specified activities/works will not harm significant fabric or archaeological deposits. These include:

a. Excavation or disturbance of land that is:

   i. For the purpose of exposing underground utility services infrastructure which occurs within an existing service trench, or
   ii. To carry out inspections or emergency maintenance or repair on underground utility services, or
   iii. To maintain, repair, or replace underground utility services to buildings, or
   iv. To maintain or repair the foundations of an existing building, or
   v. To expose survey marks, or
   vi. Associated with feral animal/insect eradication.

b. Removing contaminated soils.

As this assessment has determined that the project is unlikely to harm items or archaeological deposits of state or local heritage significance and is for the purpose of removing contaminated soils, Standard Exemption 8 is applicable.

General conditions apply to the use of all standard exemptions and must be complied with:

a. Activities/works must not disturb or remove any relics
b. Excavation must not compromise the structural integrity of any heritage structure or significant landscape elements
c. Activities/works must not affect archaeological evidence, for example the archaeology of foundation trench deposits from the time of original construction
d. If an environmental assessment is required in relation to (b) of the specified activities/works, the assessment must be undertaken prior to Part 5 of the EP&A Act commencing any work to remove the contaminated soil.

To record and evaluate the application of a Standard Exemption to an item of state heritage significance, the Heritage Council recommends that the person undertaking the works document the results of the works in the form presented in **Appendix 1**. The pre-work aspects of the form have been pre-filled, but the post-works questions will need to be documented following the works.

5.2 LOCAL HERITAGE LISTING

The Goulburn Mulwaree LEP lists the Tarago Railway Station (I591) as an item of local heritage significance. The listing notes that the station derives its significance from its association with the extension of the railway into the region during the second half of the 19th century, its similarity to several other nearby stations, its contribution to the continuity of architectural style of railway station buildings, and because it is an important landmark feature of the small town.

The heritage curtilage of the LEP listing includes the Tarago Railway Station, Signal Box, and the Goods Shed, but the listing description does not note the Goods Shed.

While ground disturbing works will be within the LEP heritage curtilage, the proposed works will not harm the significant elements of the heritage listing.

As there are no plans to harm or modify the existing significant fabric of the Tarago Railway Station and Signal Box, or the associated platform, the works will have an inconsequential impact on the local heritage values of the station building.

According to Section 5.10 of the Goulburn Mulwaree LEP, TfNSW must notify Council of the proposed development, and the Council has advised TfNSW in writing before any work is carried out that it is satisfied that the proposed development will not adversely affect the heritage significance of the heritage item.

However, under Section 2.11 of the Transport and Infrastructure SEPP, consultation with Council is not required to carry out works that will have a minor or inconsequential impact to the heritage values of a locally listed item.

As such, provided that significant fabric associated with the Tarago Railway Station and Signal Box is not harmed, the works may proceed without further consultation with Council.

5.3 RECOMMENDATIONS

Recommendations concerning historic cultural values within the site are as follows:

1. The significant fabric of the Tarago Railway Station, the Signal Box, the associated platform, and the Goods Shed must not be harmed.
2. The proposed works within the state heritage curtilage for Tarago Railway Station group (SHR item 01262) may proceed under Standard Exemption 8 as it relates to contaminated

soils. This SOHI should be retained as a record of this determination and the documentation provided in **Appendix 1** will be completed.

3. The proposed works within the local heritage curtilage for Tarago Railway Station (Goulburn Mulwaree LEP, item I591) may proceed without further consultation with Council (Section 2.11 of the Transport and Infrastructure SEPP).
4. The assessed proposed works are those shown on **Figure 1-2**. Should the scope of the works change from those shown on **Figure 1-2**, additional heritage assessment may be required.
5. Inductions for work crews should include a cultural heritage awareness procedure to ensure the significant heritage items are identified and that no harm occurs to these places. Further, work crews must be informed that it is not permitted to disturb items or archaeological deposits that may have state heritage values.
6. It is assessed that there is a low potential for archaeological deposits or further unknown significant historic items within the proposed work areas. However, if during the carrying out works, suspected significant historic items are encountered, the work at that location must cease and the TfNSW *Unexpected heritage items procedure* (July 2022) must be followed.

APPENDIX 1: STANDARD EXEMPTION RECORD KEEPING FORM

Standard Exemption Record Keeping Form

This form is to assist owners and managers when recording the use of standard exemptions under section 57(2) of the *Heritage Act 1977*. Use the form each time a standard exemption is used. Retain copies of completed forms and all relevant information for your records and to demonstrate compliance with the general conditions of use for the standard exemptions.

Use of the standard exemptions is self-assessed. In completing this form you acknowledge that this record is not for assessment purposes and does not represent an endorsement of the Heritage Council for the work or use of exemptions. This form may be requested as part of an audit or compliance investigation. This information cannot be relied on as a defence to prosecution.

Affected heritage item

Name of State Heritage Register item/IHO item:	Tarago Railway Station group
Street address of heritage item:	Goulburn-Bombala railway TARAGO / NSW

Local government area: Goulburn Mulwaree Council

State Heritage Register/ interim heritage order reference number: 01262

Activity/works

Description of works:

Include at a minimum what the activity/work is, how it will be carried out, what parts of the item it affects, what materials will be used.

A Remedial Action Plan (RAP) for the rail corridor was developed in 2021 and the remediation of the site will be in accordance with the RAP. Remediation involves the excavation of contaminated material to a depth between 0.5 m to 0.3 m and will also include removal of contaminated railway sleepers and fouled ballast. Some contamination located within the rail formation is inaccessible and will therefore be managed in situ.

The proposed activities and works will not change the existing fabric of any existing building or associated platforms etc.

Standard Exemption: 8: Excavation

Statement of Significance Referred to: State Heritage Register

If not the State Heritage Register, record the document title, author and date:

Document Title	Author	Date

Was professional advice required to use the Standard Exemption? Yes: ☒ No: ☐

Was professional advice sought to use the Standard Exemption (even if it was not required by the relevant standards)? Yes: ☒ No: ☐

If yes to either of the above questions on professional advice, complete the table below (add additional rows if required):

Name of company/ person who advised	Date of advice	Title of any document containing the advice
Ben CHURCHER, OzArk	April 2025	Statement of Heritage Impact. Tarago Woodlawn Siding Remediation. 2025

Cost of works:	$	Start date:	Click or tap to enter a date.	Completion date:	Click or tap to enter a date.

Were any inspections undertaken? Yes: ☒ No: ☐

If yes, complete below (add additional rows if required):

Date of inspection	Who inspected (name and organisation)	Purpose of inspection	Inspection findings
24/11/2022	Ben Churcher, OzArk	Heritage assessment	Works will not harm significant fabric

Challenges encountered and/or change of plans

Describe here the challenge or change and how you managed it. Remember: any change of plans that would not comply with the Standard Exemption require approval under the *Heritage Act 1977* before activity/works can be undertaken.

Heritage impact

Summarise how the activity/ work will change the heritage item. What elements of the item will be affected? Are those elements significant or non-significant? How will those elements change? Is the change permanent or temporary and will the change be reversible? Does the change to those elements affect their significance and/or the item's overall significance? Remember: there must be no impact to the item's overall significance to work under a Standard Exemption.

Heritage controls

What measures were put in place to minimise or avoid impact from the activity/ work to significant elements, fabric, values and the item's overall heritage significance?

Contact details (person completing this form)

Name	
Organisation/role	
Postal address	
Email	
Phone number	

Name of heritage item owner (if not the contact who completed this form)	

Attachments

List the names of any other documents or files that form part of the exemption record in addition to this form.

Appendix 6
Transport for NSW PACHCI

12th December 2024

Vincent Gillies
Environment & Sustainability Manager
Safety, Policy, Environment & Regulation
Transport for NSW

Dear Vince,

Preliminary assessment results Tarago Rail Corridor – Remediation Planning on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project, as described in the Stage 1 assessment, was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project is unlikely to harm known Aboriginal objects or places.
- The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the areas of tree removal.
- The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Heritage NSW's *Due diligence Code of Practice for the Protection of Aboriginal objects in NSW* and the Transport for NSW's procedure.
- The cultural heritage potential of the study area appears to be reduced due to past disturbance.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

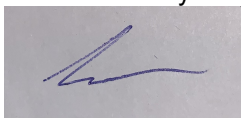
If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

Please ensure works stay close to the proposed site and away from nearby water sources (currently not in scope of work).

If any potential Aboriginal objects (including skeletal remains) are discovered during the course of the project, all works in the vicinity of the find must cease. Follow the steps outlined in the Transport for NSW's *Unexpected Archaeological Finds Procedure*.

For further assistance in this matter do not hesitate to contact me.

Yours sincerely



Layne Brown
Aboriginal Community and Heritage Partner - Southern, Aboriginal Engagement
Customer Strategy & Experience | Customer, Strategy & Technology
Transport for NSW
M 0447 678 619

Appendix 7
AHIMS search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Tarago

Client Service ID : 910670

Ramboll Australia Pty Ltd

Suite 18 Level 3 50 Glebe Road
The Junction New South Wales 2291

Attention: Hannah Whitfield

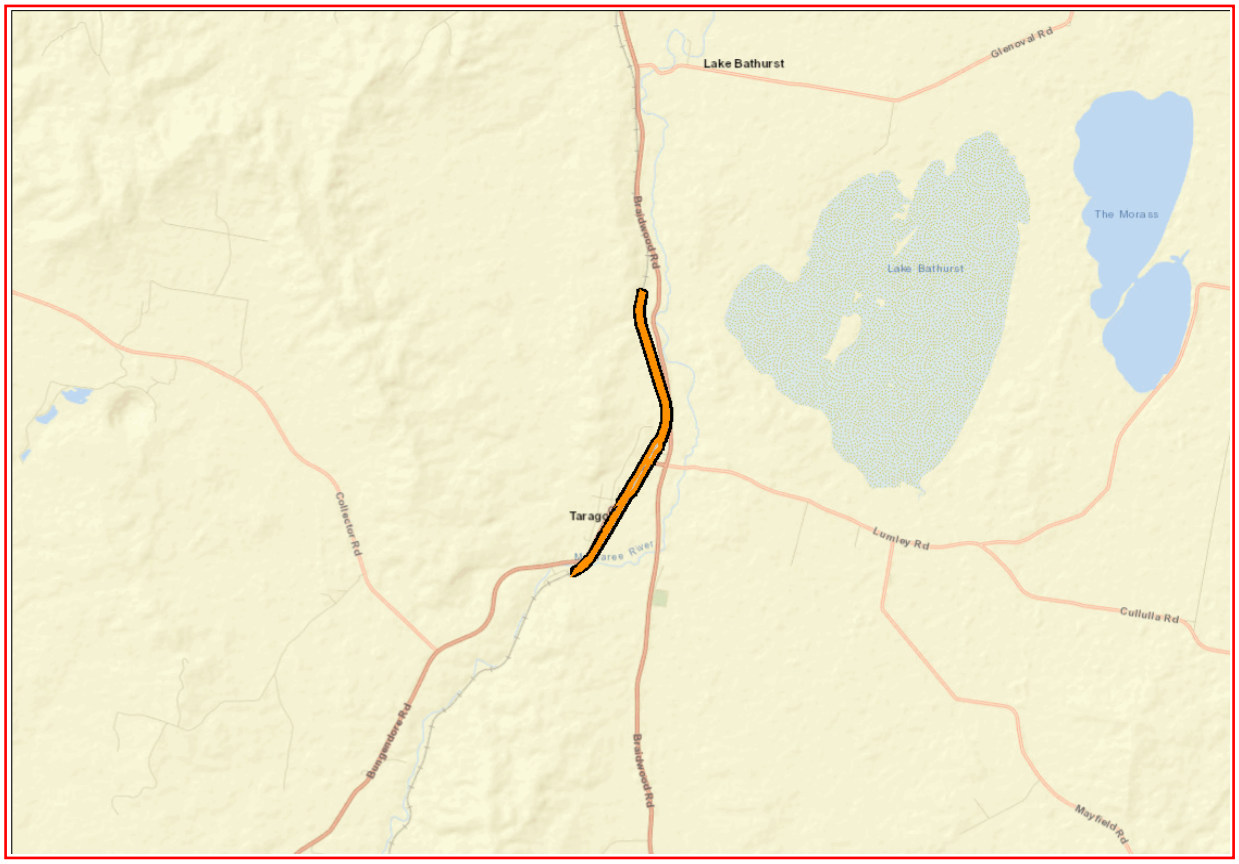
Email: hwhitfield@ramboll.com

Date: 16 July 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 22, DP:DP1202608, Section : - with a Buffer of 50 meters, conducted by Hannah Whitfield on 16 July 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:

0	**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) 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 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.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Tarago

Client Service ID : 910671

Ramboll Australia Pty Ltd

Date: 16 July 2024

Suite 18 Level 3 50 Glebe Road
The Junction New South Wales 2291

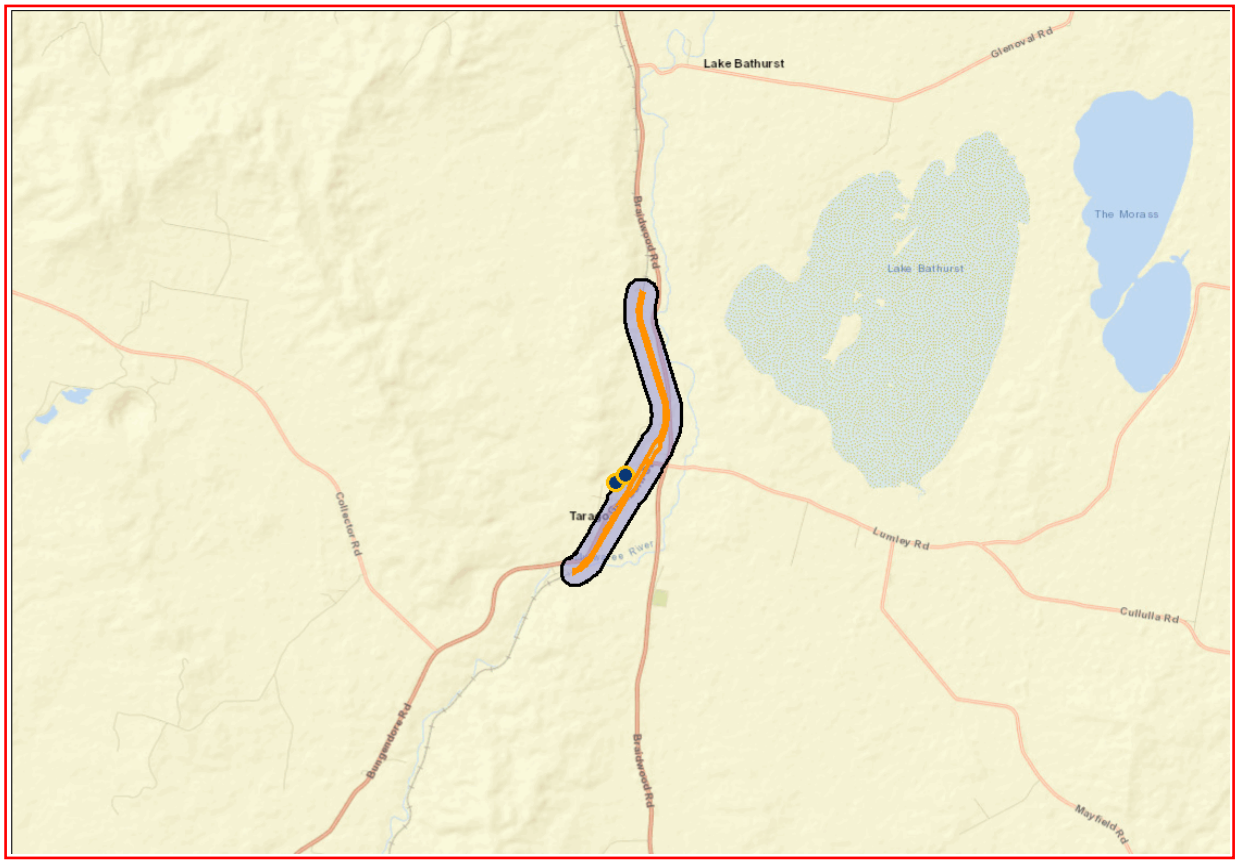
Attention: Hannah Whitfield

Email: hwhitfield@ramboll.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 22, DP:DP1202608, Section : - with a Buffer of 200 meters, conducted by Hannah Whitfield on 16 July 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:

2	**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) 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 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.
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