

# Coolamon Rail Loop Extension

## Rail Review of Environmental Factors

March 2023



## Acknowledgement of Country

Transport for NSW acknowledges Wiradjuri the traditional custodians of the land on which the Coolamon Loop Extension works are proposed.


We pay our respects to their Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.



## Approval and authorisation

Title	Coolamon Rail Loop Extension Review of Environmental Factors
Accepted on behalf of Transport for NSW by:	Simon Bingham Senior Program Manager Regional Strategic Contracts, Network and Assets Regional and Outer Metropolitan
Signed	
Date:	13/06/2023

## Document review tracking

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Draft 1.0	October 2022	Draft
Final 1.0	October 2022	Final
Final 2.0	Jan 2023	New template (Trail draft Country Rail Network Project REF template) (TfNSW Comments Adopted)
Final 3.0	March 2023	Contamination report and Operational noise assessment included
Final 3.1	20 March 2023	Updated to address TfNSW comments/requests



# Executive summary

## The proposal

The proposal involves the extension of the Coolamon Loop in Coolamon Shire Council in the rural township located in the Riverina, 40km north-west of Wagga Wagga, NSW. The proposed works are around Coolamon station in the Junee to Griffith rail line. The Junee to Griffith rail line is part of the Country Regional Network (CRN) which is owned by Transport for New South Wales (TfNSW) and operated and maintained by United Group Limited (UGL).

The Junee to Griffith line is a passenger and freight line serving numerous freight terminals generating over one million tonnes per annum for the corridor. The line is approximately a 180km long single line without any long passing loops for overtaking opportunities. This limits the ability to programme efficient operations for freight and passenger services and causes frequent crossing delays, particularly during the grain harvest season. Additionally, NSW Trains will be implementing a second weekly passenger return service to Griffith which has created further passing needs along the corridor.

TfNSW received funding to extend the Coolamon rail siding as part of the Fixing Country Rail (FCR) program in May 2018. TfNSW and UGL propose to construct a 1530m rail siding which would address current operational constraints at Coolamon and create new passing capacity between Junee and Griffith.

The work would increase line capabilities to 25 tonne axle load (TAL) and speeds up to 60 km/hr for heavier locomotives and up to 140km/hr for passenger trains. This would increase train numbers and improve programme efficiencies. More detailed description of the upgrade works is provided in Chapter 3.

Transport for NSW ('Transport') proposes to extend the capacity of Siding to 1530m at Coolamon. Key features of the proposal include:

- New compacted earthen rail formation and capping.
- Realignment of longitudinal drainage and installation of scour protection.
- Extension of the siding capacity to 1530m.
- Rehabilitation and realignment of the existing mainline.
- Other ancillary works such as installation or relocation of rail furniture and signage and the formation of drainage within the rail corridor.
- Initiating protection of heritage item (Crane) as per the recommendation of Statement of Heritage Impact (SOHI).
- Minor vegetation clearing.
- Site rehabilitation/revegetation activities.

Construction is expected to commence in January-2023 and would take around 18 months to complete.

## Need for the Proposal

The existing line between Junee and Griffith limits the ability to programme efficient operations and causes frequent crossing delays, particularly during the grain harvest and grain out loading seasons.

The existing identified constraints between Junee and Griffith include:

- Delays caused by inadequate siding/loop infrastructure length.
- Lack of crossing capacity for trains longer than 920m.

The extension of the existing siding is needed to:

- Allow longer train capability for grain out-loading at the Coolamon GrainCorp site.
- Allow longer train capability for grain out-loading at the Emerald Grain main line load point on the Junee side of Coolamon.
- Allow storage capacity for trains up to 1500m long.

- To provide increases in freight and passenger pathing capacity between Junee and Griffith.
- Provide greater reliability for passenger services.
- Provide improved efficiency for services transiting through the Coolamon yard.
- Reduce in line maintenance complexity and cost.

## Proposal objectives

The objectives of the proposal are to:

- Allow longer train capability for grain out-loading.
- Allow crossing capacity for services up to 1500m long.
- Provide improved efficiency for freight and passenger services.
- Minimise impact on the community.

## Options considered

Two options were considered for this proposal which are discussed below:

Option 1- Do Nothing: would have no environmental impacts related to construction. However, this option does not satisfy the objectives of the proposal.

Option 2 – Rail Loop Extension works. This option includes lengthening the sidings to allow for additional capacity and rehabilitating and realigning the existing lines, while minimising environmental impacts. The design of this option was developed to avoid and minimise environmental impacts: This option meets the proposal objectives and is the preferred option. The construction of the loop extension would have minimal impact on the environment due to the disturbed condition of the land and surrounding vegetation. Construction noise during the works would impact residences within 212m of the proposal. However, the duration of the noise would be short term. The proposal has the potential for environmental risks described in Section 6, which would be avoided or minimised with appropriate mitigation measures.

## Statutory and planning framework

The proposal is for a railway and railway infrastructure facilities and is to be carried out on behalf of Transport for NSW (Transport) and can therefore be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979 (NSW)*. Development consent from council is not required.

The assessment of the proposal's impact, on matters of national environmental significance and the environment of Commonwealth land, found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government Department of Climate Change, Energy, the Environment and Water under the Commonwealth *Environment Planning and Biodiversity Conservation Act 1999* (EPBC Act).

## Community and stakeholder consultation

Local community and business have been consulted regarding the proposal through a letterbox drop in December 2022. No comments have been received from the local community at this stage.

Coolamon Shire Council have been consulted about the proposal as per the requirements of section 2.2 of State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP Transport and Infrastructure). The discussions have been mainly focused on using council land for access purposes and site traffic management. Council has not raised any objections about the proposal.

## Environmental impacts

The main environmental impacts of the proposal are:

### **Topography, geology and soils**

Short term risks to soils would be high, but localised, and only occur over a short period of time. Known (demonstrated to be effective on similar projects) mitigation strategies are considered highly likely to be able to adequately address these risks. Medium to long term impacts would be low provided stabilisation strategies are effectively implemented. Stabilisation and revegetation should prevent soil erosion to the same extent that existing vegetation now functions.

### **Hydrology, groundwater and flooding**

The removal of vegetation at the proposal site may destabilise banks and potentially result in the exposure of soils to erosion hazards, causing sedimentation of the waterway and destabilisation of soils. There is a risk that sediment from stockpiled soils and materials could potentially be transported into drainage lines and then into waterways during heavy rain events. During construction, there is potential for a wide range of pollutants to enter drainage areas and the local water system, especially during rainfall events.

While the site is not within a flood planning area, a flood contingency plan will be prepared to identify any potential flood threats and the evacuation procedure for dispersible materials, hazardous materials and equipment containing hazardous or dispersible materials.

### **Biodiversity**

The proposed work would temporarily disturb the groundcover of 4.2ha of exotic vegetation, 0.98ha of planted native vegetation and 0.9ha of native vegetation PCT 80. The work would require the permanent removal of 0.97ha of exotic vegetation, 0.031ha of planted native vegetation, and 0.07ha native vegetation PCT 80. Four immature Inland Grey Box (*Eucalyptus microcarpa*) within the rail corridor would be removed.

Minor removal of exotic aquatic vegetation would occur within the minor drainage line; however, this habitat offers very limited habitat for amphibians. No threatened amphibians or fish are considered likely to occur or rely upon this habitat within the development footprint; Figure 1-1).

Construction of the proposal would have a negligible impact on native vegetation. The removal of this vegetation constitutes the loss of minor foraging habitat for native fauna. Connectivity would not be affected by the proposed works. The existing vegetation provides good soil stability, which means that revegetation activities should occur quickly after works are undertaken. It is likely that post construction, similar vegetation would recolonise the affected areas.

An assessment of significance was completed for the Grey Box Woodland EEC (Appendix G - Threatened species evaluation). The assessment concluded that there is unlikely to be a significant impact.

To limit the impact on biodiversity, prior to the commencement of any works, a physical clearing boundary would be demarcated and implemented. The demarcation of the exclusion zone will be in accordance with Transport for NSW *Biodiversity Guidelines – Protecting and Managing Biodiversity on RTA Projects: Guide 2: exclusion zones* (RTA 2011).

An Environmental Work Method Statement (EWMS) for Clearing and Grubbing would also be prepared and approved by the project Environmental Officer prior to starting work.

### **Climate and air quality**

The proposal would have a minimal impact on local air quality and no impact on regional air quality. During construction, there may be a small contribution to air pollution through the operation of plant and disturbance from earthworks. However, this would be short in duration and would not be such that it would cause any undue concern to local sensitive receivers.

Exhaust emissions from construction plant could similarly cause some minimal impact to air quality. Overall, any reduction in air quality would be highly localised and short in duration and would not cause undue impact on the public or on the surrounding environment. Emissions from construction plant and vehicles would be in accordance with Australian Standards.

Given the low level of dust likely to be generated from the works, no significant impact on potential sensitive receivers is expected. Potential air quality impacts can be readily managed by utilizing dust suppression techniques, covering the load during transport, and maintaining vehicles and equipment to comply with Part 4 of the Protection of the Environment Operations (Clean Air) Regulation 2002.

### **Noise and vibration**

The predicted noise levels for the proposed construction works were calculated using UGL Rail Noise Estimator. Two different scenarios were modelled for noise impact on the surrounding receivers:

- **Bulk earthworks:** excavation of topsoil and placement of engineered fill material for rail formation.
- **Rail works:** Placement and regulation of ballast, sleepers and rails.

The distance of noise impacts were determined for 40, 50, 60 and 70 dB(A) noise levels for each scenario. Both scenarios are modelled as having all plant operating at an 80% machinery-on rate for the duration of the scenario as a conservative measure.

Distance-based attenuation was used to determine noise levels at highly noise affected and NML exceedance distances.

Noise impacts under the rail works scenario are considerably greater than the bulk earthworks scenario, due to the considerable sound levels emitted by the ballast tamper and ballast regulator. With the exclusion of these plant, the distance for a 40dB(A) impact reduces to 600m. The closest residence is located approximately 50m from the railway line, this residence is expected to be highly noise affected (>75dB(A)) under the rail works scenario during OOHW Period 2.

Mitigation measures have been derived from the NML exceedance compared to the working hours provided. As distance from the site increases, mitigation measures ease.

The new track alignment increases the distance between the points of change of direction and the closest residence from approximately 100 m to 260 m. As a result, the operational noise effect on the residences in the surrounding area would be reduced after completion of this Proposal.

### **Waste minimization and management**

All waste generated by the proposed work to be classified in accordance with the NSW Waste Classification Guidelines Part 1: Classifying Wastes (DECCW 2008) and managed accordingly on a regular basis. Once the works have been completed, all waste material is to be removed from site and disposed of at a licenced facility. Waste is not to be buried on site.

### **Traffic and access**

Existing access to the proposal area is via several points off Wade Street. During construction, the proposal would require deliveries of construction equipment, materials and machinery via the entrance points off Wade Road. This would result in additional heavy and light vehicle movements along Wade Road within the vicinity of the proposal area.

A traffic management plan (TMP) will be prepared in accordance with the 'Traffic control at work sites manual' (RTA, 2010a) and Australian Standard 1742.3 Manual of uniform control devices. The TMP would be approved by Coolamon Shire Council before implementation. Local road users would be informed of any expected traffic or access changes and delays prior to construction commencing. Any impacts during construction on traffic would be mitigated through the implementation of the TMP.

No noticeable impacts would occur to traffic volumes on the local roads following the completion of the work and during operation.

### **Aboriginal and cultural heritage**

A Stage 1 Procedure for Aboriginal Cultural Heritage consultation and investigation (PACHCI) was prepared by NGH. The proposed works would occur within the rail corridor where previous disturbance has already occurred for the construction and ongoing maintenance of the GrainCorp facilities and the rail corridor.

It was concluded that the proposed works can proceed with caution. However, further assessment would be required if the development is to move away from the existing rail corridor and areas that have been disturbed by rail works. Both factors are listed as mitigation measures below.

If any items suspected of being Aboriginal in origin are discovered during the work, all work in the immediate vicinity must stop and Heritage NSW must be notified. The find will need to be assessed and if found to be an Aboriginal object an Aboriginal Heritage Impact Permit (AHIP) may be required.

### **Non-Aboriginal heritage**

The proposal area contains two items (Crane (I43) and the Railway Station Group – Platform and Station (I41), listed within the Coolamon Local Environmental Plan 2011. The Cowabbie Street Heritage Conservation Area also intersects the

development footprint. Further assessment in the form of a Statement of Heritage Impact (SoHI) has been prepared for impacts to the Railway Station Group and the conservation area.

Along with the SoHI an Historic heritage impact report is provided in Appendix I as well as a recommendation on the status of the crane by Stantec (Appendix I). The Stantec recommendation to keep the crane in the existing location and strengthening the foundation would be implemented and the impact to the heritage item minimised. In doing so, all the recommendations of this report would be followed and if any damage is done to the crane, all works must stop and specific heritage advice shall be sought prior to works recommencing.

### **Visual amenity**

Minor changes to the immediate visual amenity of the proposal area would occur during construction only. Construction of the proposal would disturb groundcover, involve minor excavation works, and the placement of stockpiles areas.

The operation of the proposal would involve very few features that would affect the landscape visually. The new rail siding would be low to the ground and therefore not readily visible. In addition, they would be located adjacent to the existing mainline. Minor vegetation clearing of including the removal of four trees within the rail corridor are likely to have negligible impact. No views are likely to be impeded as a result of the proposal. Overall, the proposal is expected to have a negligible impact on the visual amenity of Coolamon.

### **Socio-economic impacts**

The proposal has the potential to impact local residents during construction as a result of Air Quality Noise and Traffic. These impacts are assessed as separate individual impacts in the above sections.

These impacts would be temporary and minor during the construction period. It is unlikely that the proposal would have a negative impact on surrounding business operations. The proposed work would generate employment and economic activity with an increase in demand for local goods and services.

The project would improve freight movements for grain. Longer trains would be accommodated by the loop extension without fouling/impacting the crossing or mainline. Longer trains and faster loading results in a reduction of freight prices for grain transport on the rail. Any reduction in grain freight prices would improve the profitability of grain production for farms serviced by the Griffith Junee rail line. Additional grain freight movement on the rail reduce truck grain movements improving safety and congestion on the road network.

### **Cumulative impacts**

There are no known other major projects nearby the proposal, and no known other projects in the vicinity of the works. If other works are undertaken concurrently with the proposal, the cumulative impact is considered to be minimal given the small scale of the proposed activity.

## **Justification and conclusion**

The proposed Coolamon rail loop extension is subject to assessment under Part 5.1 of the EP&A Act. The REF has examined and considered to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. This has included consideration of conservation agreements and plans of management under the NPW Act, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

No significant impact on state or federally listed threatened biota is considered likely. A Species Impact Statement is not required. No Referral to the federal Environment minister is considered necessary.

All predicted environmental impacts can be avoided, mitigated and/or managed such that the proposal would not lead to significant impacts on the environment. Temporary and minor noise and traffic impacts are likely to arise as a result of the proposal. The proposal, as described in the REF, best meets the project objectives but would still result in some impacts on Non-Aboriginal Heritage; safeguards and management measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also increase capacity of the rail line. On balance, the proposal is considered justified and the following conclusions are made. The proponent would implement the identified safeguards and management measures for potential environmental impacts would be rigorously implemented by the proponent to ensure that the impacts associated with the proposal do not have a significant impact on the environment and biodiversity within the study area.



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# 1. Introduction

This chapter introduces the proposal and provides context for the environmental assessment. In introducing the proposal, the objectives and project development history are detailed and the purpose of the report provided.

## 1.1 Proposal identification

The Proposal is located in a rural township of Coolamon within Coolamon Shire Council Local Government Area (LGA) approximately 40km north-west of Wagga Wagga. The proposal aims to do upgrade works near Coolamon station within the Junee to Griffith rail line.

The Junee to Griffith rail line is part of the Country Regional Network (CRN) which is owned by Transport for New South Wales (TfNSW) and operated and maintained by United Group Limited (UGL).

The Junee to Griffith line is a passenger and freight line serving numerous freight terminals generating over one million tonnes per annum for the corridor. The line is approximately a 180km long single line without any long passing loops for overtaking opportunities. This limits the ability to programme efficient operations for freight and passenger services and causes frequent crossing delays, particularly during the grain harvest season. Additionally, NSW Trains will be implementing a second weekly passenger return service to Griffith which has created further passing needs along the corridor.

TfNSW received funding to extend the Coolamon rail siding as part of the Fixing Country Rail (FCR) program in May 2018. TfNSW and UGL propose to construct a 1530m rail siding which would address current operational constraints at Coolamon and create new passing capacity between Junee and Griffith.

The work would increase line capabilities to 25 tonne axle load (TAL) and speeds up to 80 km/hr for heavier locomotives and up to 140km/hr for passenger trains. This would increase train numbers and improve programme efficiencies. More detailed description of the upgrade works is provided in Chapter 3.

Transport for NSW ('Transport') proposes to extend the capacity of the Siding at Coolamon to 1530m. Key features of the proposal include:

- A new compacted earthen rail formation and capping.
- Realignment of longitudinal drainage and installation of scour protection.
- Extension of the siding capacity to 1530m.
- Rehabilitation and realignment of the existing mainline.
- Other ancillary works such as installation or relocation of rail furniture and signage and the formation of drainage within the rail corridor.
- Minor vegetation clearing.
- Site rehabilitation/revegetation activities.

The location of the proposal is shown and an overview of the proposal is provided in Figure 1-1. Chapter 3 describes the proposal in more detail.

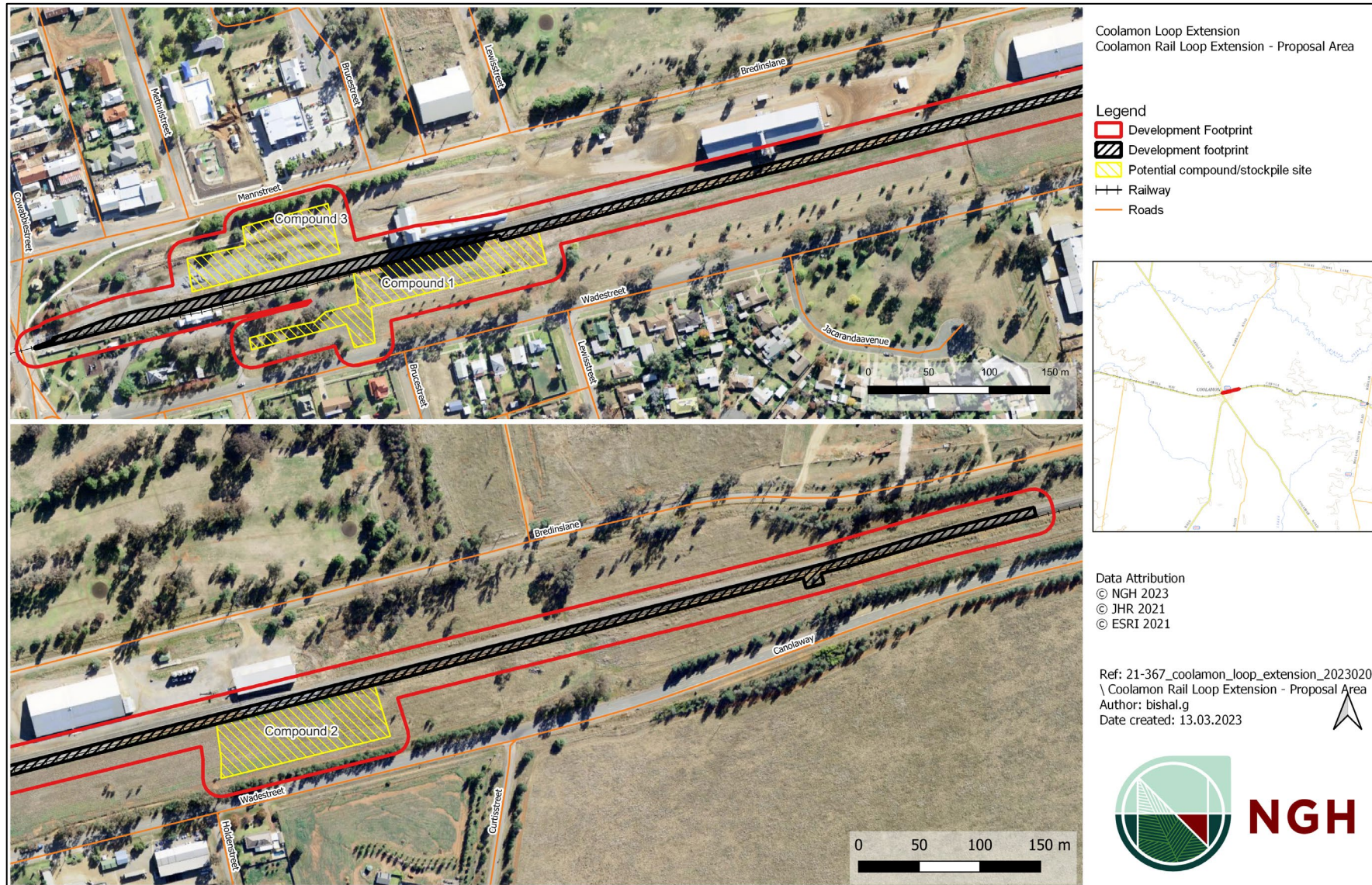


Figure 1-1 Location and overview of the proposal

## 1.2 Purpose of the report

This review of environmental factors (REF) has been prepared by NGH Pty Ltd on behalf of UGL. For the purposes of these works, Transport is the proponent and determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act).

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail mitigation and management measures to be implemented.

The description of the proposed work and assessment of associated environmental impacts has been undertaken in the context of Section 171 of the Environmental Planning and Assessment Regulation 2021, the factors in *Guidelines for Division 5.1 assessments, (DPE 2022)*, the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act).

In doing so, the REF helps to fulfil the requirements of:

- Section 5.5 of the EP&A Act including that Transport examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval sought from the Minister for Planning under Division 5.2 of the EP&A Act.
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report.
- The significance of any impact on nationally-listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and if offsets are required and able to be secured.

The potential for the proposal to significantly impact any other matters of national environmental significance or Commonwealth land and the need to make a referral to the Australian Department of Climate Change, Energy, the Environment and Water for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

Appendices and references in this REF are listed below and referred to throughout this document:

Appendix A	Consideration of section 171 Factors and MNES
Appendix B	Statutory consultation checklists
Appendix C	Neutral or beneficial effect on water quality assessment
Appendix D	Background searches
Appendix E	Field data (biodiversity)
Appendix F	Rail noise estimator
Appendix G	Threatened species evaluation
Appendix H	BC Act Test of Significance
Appendix I	Historic Heritage Impact Reports
Appendix J	Detailed design
Appendix K	Preliminary Site Investigation (PSI)

## 2. Need and options considered

This chapter describes the need for the proposal in terms of its strategic setting and operational need. It identifies the various options considered and the selection of the preferred option for the proposal.

### 2.1 Strategic need for the proposal

Fixing Country Rail (FCR) is a \$400 million NSW Government program providing targeted infrastructure funding from Restart NSW for regional freight projects.

The program improves capacity, access, efficiency, and reliability by upgrading parts of the regional rail network.

The Fixing Country Rail program is about:

- Moving freight more efficiently around NSW.
- Increasing the capacity, access, and reliability of the rail network.
- Reducing the cost of getting goods to market.
- Supporting jobs, growth, and the economic productivity.
- Supporting a freight modal shift from road to rail.

The efficient movement of food, produce and raw materials that feed and power the state contributes to economic growth in rural areas.

As detailed above, TfNSW received funding to extend the Coolamon rail siding as part of the FCR program in May 2018. TfNSW and UGL propose to construct a 1530m rail siding which would address current operational constraints at Coolamon and create new passing capacity between Junee and Griffith.

### 2.2 Limitations of existing infrastructure

The existing line between Junee and Griffith is approximately 180km long and is a single line without any long passing loops for overtaking opportunities. This limits the ability to programme efficient operations and causes frequent crossing delays, particularly during the grain harvest and grain out loading seasons.

The capacities of the existing components of Coolamon Sidings are as follows and as described in Figure 2-1 below:

- Mainline: Unchanged Continuous between Junee and Griffith, the chainage span of the loop siding is CH 522.150km to CH 523.314km (to be extended).
- Loop Siding CH 522.767km to CH 523.300km (to be renamed Siding 1 and extended): 467m.
- Goods Siding CH 522.160 to 523.220km (to be renamed Siding 2): 904m.



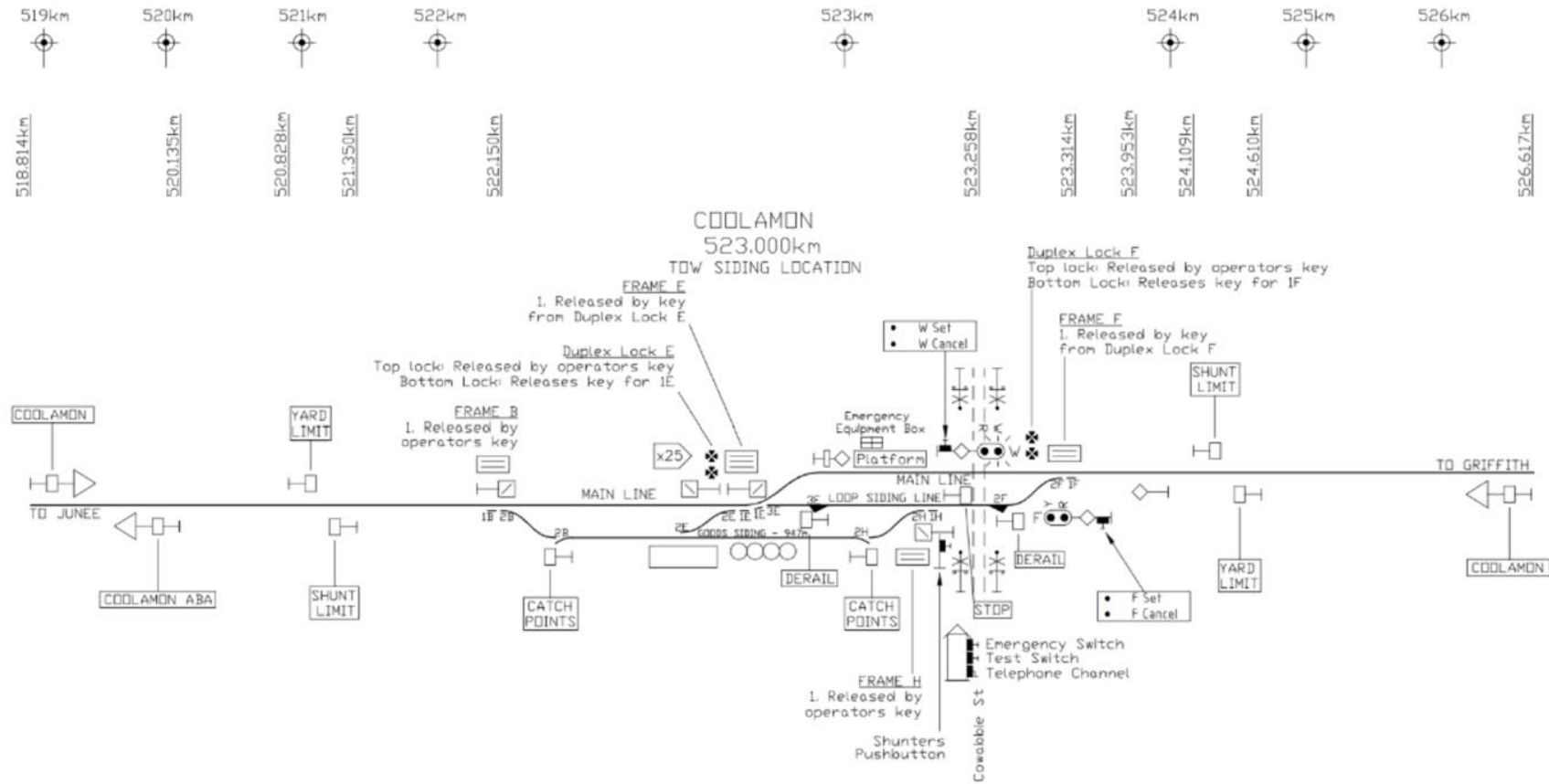


Figure 2-1 Existing Coolamon Sidings Infrastructure Layout

The existing identified constraints between Junee and Griffith include:

- Delays caused by inadequate siding/loop infrastructure length.
- Inefficiencies from crossing delays and long single line sections.
- Long transit times determined by the number of available crossing locations.
- Lack of crossing capacity for trains longer than 920m.
- Non-homogeneous loop or siding lengths and uneven sectional running times.

The extension of the existing siding is needed to:

- Allow longer train capability for grain out-loading at the Coolamon GrainCorp site.
- Allow longer train capability for grain out-loading at the Emerald Grain main line load point on the Junee side of Coolamon.
- Allow storage capacity for trains up to 1500m long.
- To provide increases in freight and passenger pathing capacity between Junee and Griffith.
- Provide greater reliability for passenger services.
- Provide improved efficiency for services transiting through the Coolamon yard.
- Reduce in line maintenance complexity and cost.

## 2.3 Proposal objectives and development criteria

### 2.3.1 Proposal objectives

The objectives of the proposal include:

- Allow longer train capability for grain out-loading.
- Allow crossing capacity for services up to 1500m long.
- Provide improved efficiency for freight and passenger services.
- Minimise impact on the community.
- Minimise impact on the environment.

### 2.3.2 Development criteria

The development criteria for the proposal include:

- To provide improved efficiency for Freight and passenger services.
- Longer train capability for loading at GrainCorp site and Emerald Grain main line.
- Improve crossing capacity for additional services.
- Greater reliability of passenger services and frequency.
- Improving maintenance in line and reduction in cost and infrastructure complexity.
- Minimise environmental impacts by keeping the project within the rail corridor.

### 2.3.3 Urban design objectives

Urban design objectives for the proposal include:

- Enhance the urban connectivity and respond to the desired future character and functioning of the area.
- Minimise impact on the community and the environment.
- Design for low maintenance.
- Respect the values of the surrounding heritage listed items.

- Minimise visual impacts to the existing character of the setting.

## 2.4 Alternatives and options considered

### 2.4.1 Methodology for selection of preferred option

The selection of the Coolamon site for a loop extension is driven by the current infrastructure at Coolamon limiting the efficiency of the freight corridor. The Coolamon Sidings Extension was progressed by TfNSW and UGL to meet customer (freight operator) demand, not necessarily because of the constructability / suitability of the site itself, however the site limitations were a consideration in the development of the proposal. Site selection was undertaken by TfNSW, with UGL supporting with the definition of the scope based on operational requirements.

The option to go with the upgrade or a no-go option were considered. Both positive and negative impacts were analysed and weighted against each other to come up with an option that had more positive impacts and the negative impacts were acceptable or could be minimized to acceptable limits. The upgrade option was developed to meet the development criteria and to work with the existing constraints of the site.

The shortlisted options are discussed in Section 2.4.2 and an options analysis is provided in Section 2.4.3.

### 2.4.2 Identified options

Option 1 – Do Nothing: this option would have no change to the status quo and therefore would not support the increase the capacity.

Option 2 – Construction of the rail loop extension: This option involves constructing the loop extension allowing longer trains up to 1500m long to pass through without having to impact other rail traffic.

### 2.4.3 Analysis of options

#### Option 1 – Do nothing

This option involves not constructing the loop extension. This option would not allow longer trains for grain out-loading and would not allow crossing capacity for trains up to 1500m long. Inefficiencies from crossing delays, inadequate siding/loop infrastructure and lack of crossing capacity for services longer than 920m would continue to cause long transit times for freight and passenger services.

The 'Do Nothing' option would not have any new impacts on the environment or nearby residential receivers.

Advantages:

- No wastes would be produced, or vegetation removed.
- No construction disturbance would occur to the environment or residential receivers.
- Construction funding and resources would not be expended.

Disadvantages

- This option would not meet the proposal needs and objectives.
- Ongoing long transit times for freight and passenger services.

#### Option 2 – Construction of the rail loop extension

This option involves constructing the loop extension. Construction of the loop extension would allow longer trains for grain out-loading and would allow storage capacity for trains up to 1500m long. This would provide improved efficiency for freight and passenger services. It would also ensure that the Cowabbie Street level crossing would be less impacted by train movements for grain loading. This option was designed around the physical infrastructure and environmental constraints of the site; keeping within the rail corridor and designing around the existing infrastructure, avoiding vegetation clearing where possible, ensured minimal environmental and community impacts.

Advantages:

- This option would meet the objectives of the proposal:
  - Allow longer train capability for grain out-loading.

- Allow crossing capacity for services up to 1500m long.
- Provide improved efficiency for freight and passenger services.
- Minimise impact on the community.
- The proposal has minimal environmental impacts other than impact to heritage-listed structure.
- Construction methodology has been designed to manage and minimise environmental impacts resulting from the construction of the proposal.

#### Disadvantages

- Temporary disturbances to the environment and community may occur.
- Some removal of vegetation is required:
  - Permanent removal of 0.97ha of exotic vegetation.
  - Permanent removal of 0.031ha of Planted native vegetation.
  - Permanent removal of 0.07ha of native vegetation - PCT 80.
- Temporary noise impacts to adjacent receivers during construction.
- Construction funding and resources would be expended.
- Some construction wastes would be produced.

## 2.5 Design refinements

There have been several minor amendments to the approved IFC design (Option 2) throughout the development of the project considering design and environmental impacts, following the options selection process, including:

- Replacement with the tangential turnout design to a conventional turnout design.
- Minor changes to ballast depths at several locations along the corridor.
- Minor corrections to chainages following site investigation / survey.

As the project continued to evolve, Option 2 has been further developed to avoid and minimise impacts to the heritage listed Derrick structure, shaving a portion of the structure rather than relocating it, resulting in reduced environmental impacts.

## 2.6 Preferred option

Option 1 would have no environmental impacts related to construction. However, this option does not satisfy the objectives of the proposal.

Option 2 meets the proposal objectives and is the preferred option. This option would allow for a 'pass by' for longer trains in the 180km long rail corridor which was previously only limited to shorter trains causing delays and reducing efficiency of the rail line itself. This would be a major boost to the rail infrastructure and to the local and regional economy of the region. The construction of the loop extension would have minimal impact on the environment due to the disturbed condition of the land and surrounding vegetation. Construction noise during the works would impact residences within 212m of the proposal. However, the duration of the noise would be short term. The proposal has the potential for environmental risks described in Section 6, which would be avoided or minimised with appropriate mitigation measures.

## 3. Description of the proposal

This chapter describes the proposal and provides descriptions of existing conditions, the design parameters including major design features, the construction method and associated infrastructure and activities.

### 3.1 The proposal

Transport proposes to build an extension to the train line in Coolamon. The proposal is shown in Figure 1-1.

Key features of the proposal would include:

- New compacted earthen rail formation and capping
- Realignment of longitudinal drainage and installation of scour protection
- Extension of the siding capacity to 1530m
- Construction of new track infrastructure. This would involve placing ballast, installation of sleepers, track laying and adjustment.
- Rehabilitation and realignment of the existing mainline; this would include sleeper and track replacement and the addition of new rail ballast.
- Other ancillary works such as installation or relocation of rail furniture and signage and the formation of drainage within the rail corridor
- Initiating protection of heritage item (Crane) as per the recommendation of Statement of Heritage Impact (SOHI).
- Minor vegetation clearing of 0.074ha including the removal of four trees within the rail corridor.
- Site rehabilitation/revegetation activities.

A material and plant laydown area would be required for the proposed work. The site would be established on one of the existing cleared areas within the Proposal area (Figure 1-1). The site would be used to store material, machinery, and park vehicles.

### 3.2 Design

#### 3.2.1 Design criteria

Table 3-1 outlines the design criteria adopted for this Proposal.

Table 3-1 Design criteria adopted for Coolamon Siding Extension

EXISTING CONFIGURATION	DESIGN CONFIGURATION	REFERENCE / JUSTIFICATION	COMPLIANT WITH JHR STANDARDS
Standard (1435mm)	Standard (1435mm)	CRN CS210 Cl.7.4.1	Compliant
Varies: Narrow Non-Electric	Varies: Narrow Non-Electric	CRN CS 215 Table 17	Compliant
Narrow Square	Narrow Square		
Narrow Container	Narrow Container		
Narrow Hopper	Narrow Hopper		
N/A	1,500m	Functional Specification Report (FSR), Section 2.2	Not Applicable
track	3.1m	4.0m for new mainline extension 3.5m for existing sidings to be slewed	CRN CS 215 Cl. 7.1.4 Minimum 3.5m track centres adopted as

EXISTING CONFIGURATION	DESIGN CONFIGURATION	REFERENCE / JUSTIFICATION	COMPLIANT WITH JHR STANDARDS
			directed by JHR due to constrained track geometry on site. Waiver required as this is below standard.
posted	Mix of 100km/h, 60km/h, 40km/h and 25km/h	60km/h	Functional Specification Report (FSR), Section 2.7. Reduced design speed to suit track geometry.
posted	25km/h	25km/h	CRN CS 210 Cl. 7.5 Functional Specification Report (FSR), Section 2.7
25km/h	25km/h	CRN CS 210 Cl. 7.5 Functional Specification Report (FSR), Section 2.7	Compliant
Mix of 1:9 and 1:10.5 conventional	Maintain all existing turnouts. New 1 x 1:10.5 tangential turnout placed along mainline extension.	CRN CS 250 Cl. 7.1.6	Non-Compliant
25 TAL (from Dec '21)	25 TAL	Functional Specification Report (FSR), Section 2.8	Compliant
47kg/m (Mainline) 80lb/yd (Loop Siding and Goods Siding)	53kg/m	CRN CS 200 Cl.4.3 & 5.3.1	Compliant
Class 3	Class 3	CRN CS 200 Appendix 1	Compliant
Steel (Mainline) Mix of Steel and Timber (Loop Siding and Goods Siding)	Steel (all)	CRN CS 200 Cl.4.3, 5.3.1 & 5.3.2	Compliant (Class 3) Class compliance requires concrete sleepers.
-	600mm ±20mm (Class 1)	CRN CS 230 Cl.5.3.4.1	Compliant
-	Pandrol e-clip	CRN CS 230 Cl.5.10.5 CRN CS 230 Appendix 1	Compliant
-	60mm	CRN CS 240 Cl.5.1	Compliant
-	270mm min (under the low rail) (Class 1)	CRN CS 240 Cl.5.2	Compliant
-	400mm (Class 1)	CRN CS 240 Cl.5.2	Compliant
-	1 in 1.5 (Vertical: Horizontal)	CRN CS 240 Cl.5.2	Compliant
-	1%	(curve)	
CRN CS 210 Table 1	Compliant		
Curve Radius	-	160m	(absolute minimum)
(desirable minimum)	CRN CS 210 Table 1	Compliant	
	1300m minimum	CRN CS 210 Table 1	Compliant
-	4.25m (mainline)		

EXISTING CONFIGURATION	DESIGN CONFIGURATION	REFERENCE / JUSTIFICATION	COMPLIANT WITH JHR STANDARDS
CRN CS 410 Cl.4.4	Compliant		
layer thickness	-	150mm min	CRN CS 410 Cl.9
	1:2 (Vertical: Horizontal)	CRN CS 410 Cl.6.3	Compliant
Clearance Point	Clearance Point	Clearance Point	Clearance Point

### 3.2.2 Major design features

#### Alignment

The Coolamon Siding Extension track geometry has been developed using survey data provided by Hanlons Consulting (supplied on 08/09/2021). The proposed detailed design track layout for Coolamon is shown in Figure 3-1.

Figure 3-2 shows a schematic from the proposed Coolamon Sidings Extension IFC Design.

The proposed design layout largely retains the existing functionality of the yard whilst providing a dedicated crossing loop facility due to the extension of the Loop Siding Line. This is achieved by extending the mainline by approximately 1,275m. Retaining the Goods Siding and associated catchpoints near Frame H allows loose unattended wagons to be stowed without upgrading the derail on the Loop Siding. Track centres have been maintained at a minimum of 3.5m throughout the design between Frames E and F, with the new portion of the mainline featuring 4m track centres.

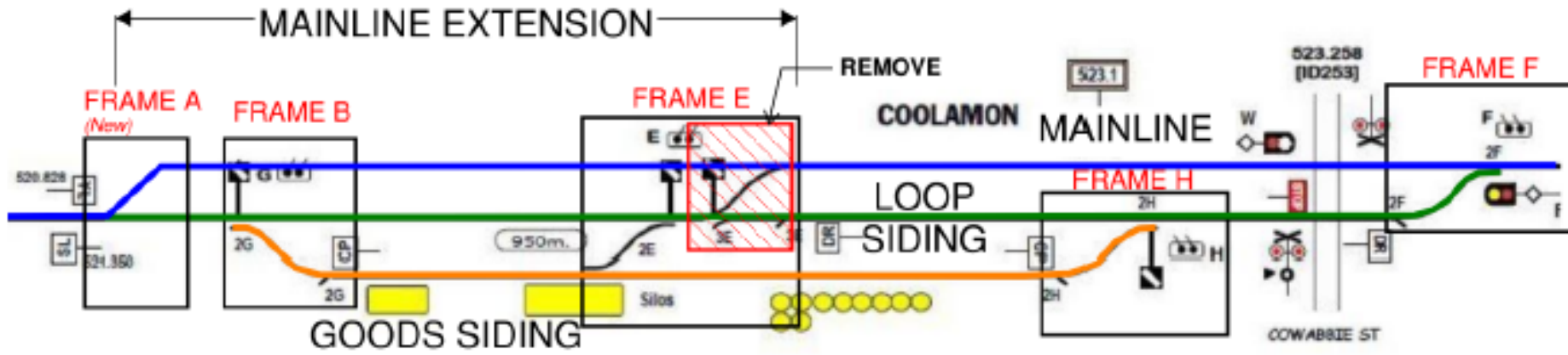


Figure 3-1 Coolamon Design Track Layout

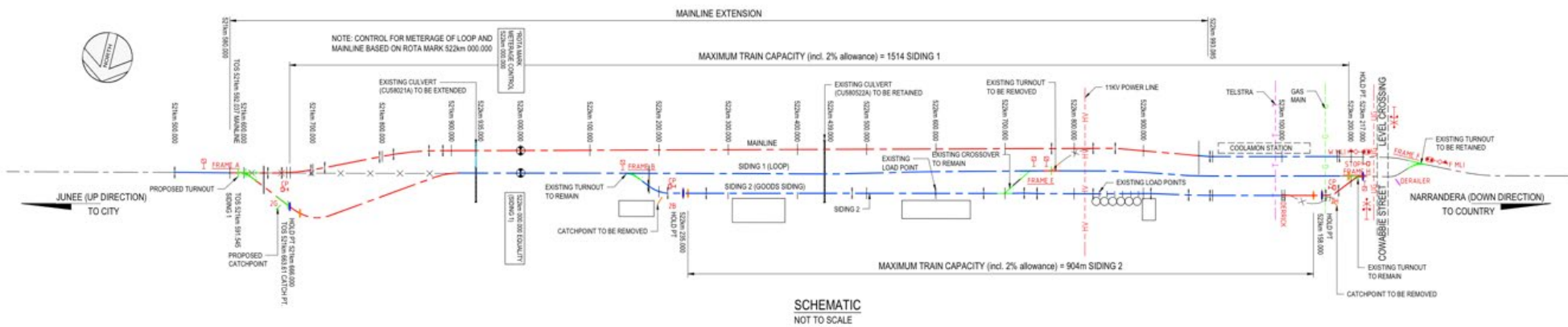


Figure 3-2 Schematic diagram from the Coolamon Sidings Extension IFC Design



**CRN mainline**

The CRN Mainline is proposed to be extended by approximately 1,275m on the southern side towards the city end, as shown in Figure 3-2, with a new 1 in 10.5 tangential turnout connecting the mainline extension to the previous mainline (now considered the Loop Siding) at Frame A. A single set of turnouts in Frame E which connects the mainline to the Loop Siding is proposed to be removed. A typical cross section of these sidings is provided in Figure 3-4.

The mainline extension would feature the same track configuration as existing, using 47kg rail on steel sleepers. No significant works are proposed along the existing portion of track due to clearance constraints along Coolamon Station. Minor adjustments to straighten the alignment have been undertaken and clearance checks have also been performed to ensure vehicles do not clash with the station platform.

**Loop siding (Siding 1)**

Due to the mainline extension, the Loop Siding would increase in length by utilising an existing portion of track previously allocated as the mainline from Frame E to just past Frame B. This would increase the Loop Siding capacity by approximately 1,215m.

The loop siding would have all existing timber sleepers replaced with steel. No significant works are proposed along the Loop Siding. Slight adjustments to straighten the alignment have been undertaken in order to improve track geometry and ensure minimum 3.3m track centres are met.

**Goods siding**

The Goods Siding is proposed to have minor changes as part of the works. Key changes as part of the design include the following:

- All existing timber sleepers replaced with steel and the rail upgraded to 47kg/m.
- Removal of existing catchpoints located on both ends of the Goods Siding and minor re-alignment works.
- Relocation or alteration to existing derrick located on the northern side of the Goods Siding.



Figure 3-3 Existing Derrick and Catchpoint Location (Country Side)

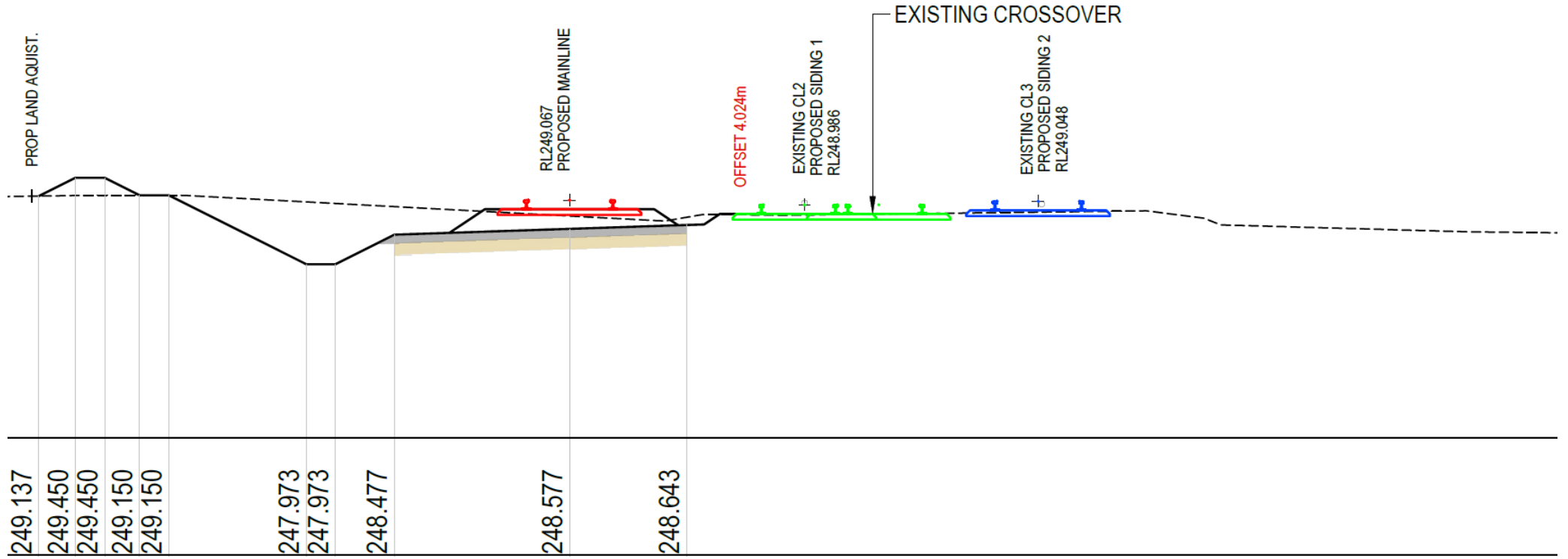


Figure 3-4 Typical cross section of section of track with all three lines

## Transport for NSW

As listed above, removal of both existing catchpoints has been proposed as part of the preliminary design. This has been included due to centre and end throw effects of a thrown vehicle and the proposed track centres at both locations designed to be less than 4m. Centre and end throw effects were assessed for a vehicle thrown-off a catchpoint, and it was found that these effects to the rear of a wagon would clash with another train located along the Loop Siding and would result in a collision. The removal of both catchpoints ensures a wagon will not deliberately be thrown, and the design remains compliant to UGL standards as catchpoints are only required between a siding and mainline (CRN CS 250, Section 5.4.8). Minor re-alignment works are also proposed between the Goods Siding and Loop Siding connection points to straighten the track and improve geometry.

An unused derrick has been identified on the northern side of the Goods Siding, as shown in Figure 3-3. This is required to be altered with a portion of the structure “shaved” to meet the minimum track centres of 3.5m between the mainline, loop siding and goods siding. TfNSW have been notified of the derrick.

### Rail Maintenance Access Road (RMAR)

There are currently existing rail maintenance access roads along portions of the site which are accessed by either Mann Street on the north, or Wade Street on the south. No changes to the RMAR or access points are proposed as part of the detailed design.

### Fencing

All proposed design works are within the existing corridor, therefore no changes to fencing are proposed as part of this design submission.

It should be noted that JHR have submitted details of a potential land purchase area on 24 November 2021. This area is located in close proximity to the proposed mainline extension area. If this purchase is approved, this resumption is likely to impact accessibility to the rail corridor in addition to the current fencing arrangement.

### Stockpiles

All suitable stockpile locations in the project footprint / land acquisition have been evaluated, resulting in the locations selected. The north side, city end may also be utilised for material laydown if needed.

As the design (by BG&E) has already progressed to the IFC stage and has been approved by various stakeholders, there is no potential for further flexibility in design / footprint. Sensitive receivers were considered in the design process and ultimate approval.

### Roads and road rail interfaces

The existing Cowabbie Street level crossing would not be impacted by the civil works. The civil works would stop short of the level crossing; however, the signalling works may improve operational interaction at the level crossing.

No changes to the existing local road network are required. The existing road network appears adequate to facilitate access for construction and maintenance.

## 3.3 Construction activities

Construction of the proposal would involve the following:

- Establishment of work site including site office, amenities, fencing and signage.
- Establishing environmental controls.
- Stripping and stockpiling of topsoils and unsuitable materials.
- Construction of a new compacted earthen rail formation and capping.
- Realignment of longitudinal drainage and installation of any required scour protection.
- Construction of new track infrastructure. This would involve placing ballast, installation of sleepers, track laying and adjustment.
- Rehabilitation and realignment of the existing mainline where necessary, this would include sleeper and track replacement and the addition of new rail ballast.
- Other ancillary works such as installation or relocation of rail furniture and signage and the formation of drainage within the rail corridor.
- Removal of site offices, amenities, fencing, waste, laydown areas and environmental controls.
- Minor vegetation clearing of 0.074ha including the removal of four trees within the rail corridor.
- Site rehabilitation/revegetation activities.

### 3.3.1 Work methodology

The proposed works methodology is provided in Table 3-2.

Table 3-2 Work methodology

Works component	Associated tasks
Pre-construction	<ul style="list-style-type: none"> <li>• Notify key stakeholders of intent to start works.</li> <li>• Carry out investigation work.</li> <li>• Locate &amp; protect existing utilities.</li> <li>• Manage heritage listed crane (Derrick) in line with the methodology defined in the SOHI.</li> <li>• Demark no-go zones and install fencing as required.</li> <li>• Install safety barriers, traffic controls and environmental measures (e.g., erosion and sediment controls).</li> <li>• Establish site and ancillary facilities, such as construction compound and parking areas.</li> </ul>
Demolition/Removal	<ul style="list-style-type: none"> <li>• Removal of redundant siding infrastructure, including ballast, sleepers and rail.</li> </ul>
Derrick works	<ul style="list-style-type: none"> <li>• Shaving of heritage listed crane (Derrick) in line with the methodology defined in the SoHI.</li> <li>• Careful removal of the existing bricks to allow for salvage and cleaned for reinstatement/reconstruction of the front of the crane 'in the exactly matching bond and coursing' to the remainder of the base. The works would include: <ul style="list-style-type: none"> <li>○ Installation of temporary props on the crane in case of any unforeseen movement during the modification of the base.</li> <li>○ Careful removal of outmost layer of bricks.</li> <li>○ Should further layers of brick be identified behind the outermost layer, then removal of subsequent layers would continue until either 200mm reduction in the base length is achieved or the internal concrete core is reached.</li> <li>○ Should the internal concrete core be reached, the concrete will be cut to a distance that will allow a single course of bricks to be reinstalled outside the 200mm clearance required and allow for the 2 courses of bricks to be reinstalled on the top surface, as per existing configuration.</li> <li>○ The retained brick façade will be reconstructed using exactly matching bond and coursing materials in order to minimise any impact to the heritage value of the item.</li> </ul> </li> </ul>
Installation of new infrastructure	<ul style="list-style-type: none"> <li>• Earthworks, including forming / shaping: <ul style="list-style-type: none"> <li>○ Embankments.</li> <li>○ Cuttings.</li> <li>○ Drains.</li> <li>○ Capping layers.</li> </ul> </li> <li>• Construction of the rail track, which would include the installation of: <ul style="list-style-type: none"> <li>○ Bottom ballast.</li> <li>○ Sleepers.</li> <li>○ Track and fastening sleepers.</li> <li>○ Top ballast.</li> </ul> </li> <li>• Construct baulks and arrestor beds, using stockpiled material.</li> <li>• Install one 1:10.5 turnout</li> <li>• Install drainage, including: <ul style="list-style-type: none"> <li>○ Drains.</li> </ul> </li> </ul>

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Works component	Associated tasks
	<ul style="list-style-type: none"> <li>○ End structures.</li> <li>● Construct permanent survey monuments.</li> </ul>
Demobilisation/ remediation	<ul style="list-style-type: none"> <li>● Demobilise the site compounds and remove temporary traffic management controls.</li> <li>● All areas disturbed during the construction works would be stabilised and rehabilitated.</li> <li>● Topsoil removed from excavations would be stockpiled separately to the subsoil and would be respread over disturbed areas as appropriate to encourage natural regeneration.</li> <li>● Construction erosion and sediment control structures would be maintained until the disturbed areas are stable.</li> </ul>

### 3.3.2 Construction workforce

About 20-40 construction staff are expected to be working on site, depending on the Project maturity. However, the workforce would fluctuate depending on the stage and that final numbers would be identified by the construction contractor.

### 3.3.3 Construction hours and duration

Hours of work have been set at 6am to 6pm. When rail works are required outside of these hours to accommodate reduction of impacts to mainline operational reliability, notification to residents and the EPA would be undertaken in line with UGL's EPL.

Onsite activities associated with Coolamon Multi-User Siding Extension – Track & Civil Project are planned to commence on 9 January 2023 and continue until final completion on 31 July 2023.

This is based upon the hours of operation approved in the REF, for which possessions have been granted, detailed below.

Table 3-3 Schedule and timing of construction

Construction phase	Date (s)	Hours of operation
Pre-work (including site establishment, installation of erosion and sediment control structures, deliveries etc.)	January 9 – January 20 2023	6am-6pm Mon – Friday 6am-6pm Saturday
Site construction	May 1 – July 20 2023	6am-6pm Mon – Friday 6am-6pm Saturday
Possession work	June 25 – June 26 2023 July 2 – July 3 2023 July 9 – July 10 2023 July 16 – July 17 2023	24 Hr Working Mon – Sun
Demobilisation / completion works	July 21 – July 31 2023	6am-6pm Mon – Friday 6am-6pm Saturday

### 3.3.4 Plant and equipment

General equipment used during construction is likely to include the following:

- Excavators.
- Front end loaders.
- Scraper.

## Transport for NSW

- Vibrating rollers.
- Bobcat.
- Power tools including drills, grinders, and welders.
- Tipping trucks.
- Delivery trucks.
- Water carts.
- Sleep/track layer.
- Light vehicles.

### 3.3.5 Earthworks

It is difficult to quantify exact amount of earthworks at this stage but below is the estimate of what is required at this stage:

- Site Clearing and Grubbing area 17625 m<sup>2</sup>.
- Embankment Construction 8500 m<sup>3</sup>.
- Subgrade Preparation 4100m<sup>3</sup>.

### 3.3.6 Source and quantity of materials

Estimate of quantity of required construction materials is provided in Table 3-4.

Table 3-4 Source and quantity of materials used for the proposal

Material	Estimated Quantity	Suppliers	Supplier Location
Capping Fill	1500 m <sup>3</sup>	D&L McCallum	2366 Tooyal Road, Coolamon NSW 2701
Structure Fill	5745 m <sup>3</sup>	D&L McCallum	2366 Tooyal Road, Coolamon NSW 2701
Ballast	3000 T	Milbrae Quarries	Leeton NSW 2665
Sleeper	2350 No	Liberty One Steel	Whyall SA 5600
Rails	2725 m	Cold Forged Product	19 Resolution Dr, Caringbah NSW 2229
Turnout & its Components	1 No	Progress rail	24 Daisy Street, Reversby NSW 2212

### 3.3.7 Traffic management and access

Access to the proposal area would be via a network of sealed public roads. Highways and local roads near the proposal would be used as transport routes. Access is available from Wade Street, Mann Street and Cowabbie Street.

Proposed work would be scheduled wherever possible to coincide with major shutdowns and track possessions of the network as required. All other work would occur as train movements permit.

## 3.4 Ancillary facilities

A material and plant laydown area would be required for the proposed work. The site would be established on one of the existing cleared areas within the Proposal area. The site would be used to store material, machinery, and park vehicles.

An enclosed works compound would also be required for the proposal. The compound would comprise of transportable buildings, ablution facilities, a stockpiling area and plant storage area. The site would be established on one of the existing cleared areas within the Proposal area (Figure 1-1).

Upon the completion of the works, the compound site, construction materials and equipment would be removed, and the site would be established as appropriate.

## 3.5 Public utility adjustment

## Transport for NSW

A Dial Before You Dig services search has been undertaken within the project area. Telstra, NBN, Jemema Gas and Essential Energy assets were identified, with gas and fibre optic services crossing the rail corridor. All service locations are displayed within the detailed design drawings contained in Appendix K.

JHR signalling cables are also located within the project area at Coolamon. These would require locating and identification for consideration of impacts on the project. Rail corridor land would be used for the Mainline extension works and any rail utilities that would be affected is to be dealt by TfNSW.

### 3.6 Property acquisition

No property acquisition would be required for the proposal. Rail corridor land would be used for the Mainline extension works.

### 3.7 Operation and maintenance

The future operation and maintenance of the rail line is subject to further discussions with Sydney Trains, Transport for NSW and Coolamon Shire Council. Structures constructed under this Proposal would be maintained by Sydney Trains. However, it is expected that adjacent garden/landscape areas (Outside of rail corridor) would continue to be maintained by the Council.

## 4. Statutory and planning framework

This chapter provides the statutory and planning framework for the proposal and considers the provisions of relevant state environmental planning policies, local environmental plans, and other legislation.

### 4.1 Environmental Planning and Assessment Act 1979

#### 4.1.1 State Environmental Planning Policies

##### **State Environmental Planning Policy (Transport and Infrastructure) 2021**

State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the State.

Division 15 Section 2.92 of SEPP (Transport and Infrastructure) permits development on any land for the purpose of a railway or railway infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for a Rail loop extension and is to be carried out *on behalf of Transport*, it can be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (NSW). Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under:

- State Environmental Planning Policy (Resilience and Hazards) 2021
- State Environmental Planning Policy (Planning Systems) 2021
- State Environmental Planning Policy (Precincts – Central River City)
- State Environmental Planning Policy (Precincts – Eastern Harbour City)
- State Environmental Planning Policy (Precincts – Regional) 2021
- State Environmental Planning Policy (Precincts – Western Parkland City) 2021.

Part 2.2 Section 2.10 to 2.15 of SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by SEPP (Transport and Infrastructure) (where applicable), is discussed in Chapter 5 of this REF.

#### 4.1.2 Local Environmental Plans

##### **Coolamon Local Environmental Plan LEP 2011**

The development area is zoned SP2 Infrastructure under the Coolamon LEP 2011.

‘Permitted with consent’ land uses in the SP2 zone is limited to roads and the purpose shown on the Land Zone Map. The Land Zone Map identifies the proposal area as ‘Railway’.

The proposal is therefore permitted with Consent.

However, the LEP is subject to the provisions of any State environmental planning policy that prevails over this LEP. The proposal is subject to SEPP (Transport and Infrastructure) which removes the requirement for consent.

Therefore, the proposal does not require consent from Coolamon Shire Council.

### 4.2 Other relevant NSW legislation

#### 4.2.1 Heritage Act 1977

Natural, cultural, and built heritage is protected in NSW under the *Heritage Act 1977*. The Heritage Act allows for heritage items or places to be listed on the State Heritage Register or for interim heritage orders to be made to protect heritage items or places. Approval must be obtained from the Heritage Council or local council before work can be done which might damage the item or place.



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A person who wishes to demolish, move, alter or in some way develop a place, building or land covered by an interim heritage order or a State Heritage Register listing (called "environmental heritage") must first obtain approval from the Heritage Council. Any activity which might damage or destroy a tree or other vegetation on land or within a precinct relating to a heritage item also requires approval.

A person must not disturb or excavate land if they know or have reasonable cause to suspect that they might discover, expose, move or damage a relic, unless they have an excavation permit. A "relic" means any deposit, artefact, object or material evidence that relates to the non-Aboriginal settlement of NSW and that is of State of local heritage significance. Excavation permits are issued by the Heritage Council. All discoveries of relics must be notified to the Heritage Council, whether the person has been issued with a permit, and the location of the relic disclosed.

Historic Heritage impacts are considered in Section 6.9 of this report.

### 4.2.2 Biosecurity Act 2015

Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised.

Biosecurity risks are discussed in Section 6.3 of this report.

### 4.2.3 National Parks and Wildlife Act 1974 (NPW Act)

The NPW Act provides the basis for legal protection and management of Aboriginal sites in NSW. All Aboriginal objects within New South Wales are protected under Part 6 of the NPW Act. The implementation of the Aboriginal heritage provisions in the NPW Act is the NSW Department of Environment's (DPE) responsibility.

Consent from the Director-General of DPE is required under Section 87 to investigate Aboriginal sites, or Section 90, to destroy an Aboriginal object or Aboriginal place.

An assessment of potential impacts to Aboriginal cultural heritage is provided in Section 6.8.

### 4.2.4 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (NSW) (BC Act) regulates the clearing of native vegetation in NSW.

Under Part 7 of the Act, an assessment of the potential impacts of the proposed activity on threatened species, populations, ecological communities and critical habitat listed in the BC Act must be undertaken. This includes an assessment of the potential for a significant impact under section 7.3 (5-part test) and whether an impact is likely on an area of Outstanding Biodiversity Value.

The REF has assessed impacts to threatened species and communities in Section 6.3.

### 4.2.5 Roads Act 1993

The proposal is likely to generate a small temporary increase in local traffic during the construction phase. In the operational phase, the facility is expected to benefit by allowing more efficient movement of rail traffic.

The relevant road authority for the proposal is Coolamon Shire Council, responsible for the management of Wade Street, Cowabbie Street and Mann Street, which borders the proposal area and allows direct access to the proposal area.

There would be no changes to the arrangement or traffic on local roads within the Coolamon.

Sensitive receivers within the local community would be notified of any construction traffic prior to works commencing.

## 4.3 Commonwealth legislation

### 4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in Appendix H and chapter 6 of the REF.

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### **Findings - matters of national environmental significance**

The assessment of the proposal's impact, on matters of national environmental significance and the environment of Commonwealth land, found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act.

### 4.3.2 Other relevant Commonwealth legislation

#### 4.3.3 Native Title Act 1993

The *Native Title Act 1993* recognises and protects native title. The Act covers actions affecting native title and the processes for determining whether native title exists and compensation for actions affecting native title. It establishes the Native Title Registrar, the National Native Title Tribunal, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements, and the National Native Title Register. Under the Act, a future act includes proposed public infrastructure on land or waters that affects native title rights or interest.

A search of the [Native Title Tribunal Native Title Vision](#) website was undertaken, with no Native Title holders/claimants identified.

## 4.4 Confirmation of statutory position

The proposal is categorised as development for the purpose of a railway and railway infrastructure facilities and is being carried out by or on behalf of a public authority. Under Division 15 Section 2.92 of SEPP (Transport and Infrastructure) the proposal is permissible without consent. The proposal is not State significant infrastructure or State significant development. The proposal can be assessed under Division 5.1 of the EP&A Act.

Transport for NSW is the determining authority for the proposal. This REF fulfils Transport's obligation under section 5.5 of the EP&A Act including to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

## 5. Consultation

This chapter discusses the consultation undertaken to date for the proposal and the consultation proposed for the future.

### 5.1 Consultation strategy

Details of the consultation undertaken for this project is provided below. The consultation strategy for this proposal is in line with Transport for NSW Community Engagement Policy.

### 5.2 Community involvement

A community letter drop-in was completed on 7 December 2022 to introduce the proposal. There has been no correspondence from community members in terms on feedback on the project.

As the initial project phases were completed under the previous operator of CRN (John Holland CRN), prior to UGL's involvement. It is understood that any community issues on project feasibility / concept design would have been managed and closed by JHCRN.

### 5.3 Aboriginal community involvement

Under the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW and TfNSW PACHCI guidelines, consultation with the Aboriginal community is not a formal requirement. Due to the limited nature of works and potential for environmental impact, consultation was not deemed necessary. Refer to Section 6.8 for details on Aboriginal heritage.

### 5.4 SEPP (Transport and Infrastructure) consultation

Coolamon Shire Council has been consulted about the proposal as per the requirements of section 2.2 of SEPP (Transport and Infrastructure). Appendix B contains a SEPP (Transport and Infrastructure) consultation checklist that documents how these consultation requirements have been considered.

## 6. Environmental assessment

This section of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment, potentially impacted upon by the proposal, are considered. This includes consideration of:

- Potential impacts on matters of national environmental significance under the EPBC Act.
- The factors specified in the Guideline for Division 5.1 assessments (DPE 2022) and as required under section 171 of the Environmental Planning and Assessment Regulation 2021. The factors specified in section 171 of the Environmental Planning and Assessment Regulation 2021 are also considered in Appendix A.
- Site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

### 6.1 Topography, geology and soils

#### 6.1.1 Existing environment

##### Soils

Under the Australian Soil Classification system (DPIE 2010) the soils on site are mapped as Chromosols and Kandosols. Under the Great Soil Groups system (DPIE 2012), soils on site are mapped as Non-calciic Brown Soils and Red Earths (less fertile). There were no soil profile descriptions available in the locality (OEH 1999) but soil descriptions were obtained during the site inspection. From the site inspection, topsoils were described as well drained fill material or residual brown light-sandy clay-loam topsoils. Fill material is likely from previous rail construction activities and contained some isolated coal deposits. Topsoils were generally rich with organic matter and moisture. Subsoils were identified as reddish brown and red sandy medium clays. pH, clay content and calcareous deposits are likely to increase with depth.

##### Landform and topography

Two soil landscapes were identified to be mapped across the site. Pine Valley landscape is mapped across the western extent of the site and Becks Lane landscape covers the eastern portion. The landform and topography of these landscapes are described as gentle to undulating low hills and rises, foot slopes and plains with slopes ranging from 1–10% across landscape features. Elevation ranges from 194–360m with local relief from 20m to 60m but generally less than 30m. Slope lengths are typically less than 1500m. Stream channels are erosional, tributary, and widely spaced.

##### Geology

Soils have formed on recent Quaternary colluvium underlain by Ordovician metasediments. Parent materials include colluvium and eluvium. The Ordovician metasediments are associated with the Wagga Wagga Group, which consists of siltstone, sandstone, quartz mica schist, minor graphite schist, minor graphitic schists and hornfels.

No areas of naturally occurring asbestos are mapped within or adjacent to the site (NSW GRG 2018). The site is far from any mapped area of Acid Sulphate Soil Risk (DPIE 1998).

##### Limitations

The following potential limitations are associated with the Pine Valley and Becks Lane soil landscapes, in which the site lies:

- Sheet erosion hazard
- Gully erosion hazard (localised)
- High run-on (localised)
- Shallow soil
- Hard setting surfaces
- Potential discharge area
- Seasonal waterlogging (localised)
- Low wet bearing strength
- High erodibility
- Low fertility

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- Sodicity/dispersibility–subsoil (localised)
- Low permeability–subsoil (localised)
- Hard setting surfaces (localised)
- Acidity–topsoil (localised)
- Alkalinity–subsoil (localised)
- High plasticity – subsoils (localised).
- Stoniness (localised).

### 6.1.2 Contamination

A Preliminary Site Investigation (PSI) with supplementary soil sampling was undertaken in general accordance with the following guidelines:

- *National Environment Protection (Assessment of Site Contamination) Measure (2013) (the ASC NEPM).*
- *NSW EPA Consultants reporting on contaminated land – contaminated land guidelines (2020).*
- *NSW EPA Sampling Design Guidelines (2022).*
- *Managing Land Contamination: Planning Guidelines – State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2022.*
- *Transport Guideline for the Management of Contamination (2013).*

The full report is provided as Appendix K and summarised below.

#### Background searches

A search of the Contaminated Land Register was conducted on 2 March 2023; results are included in Appendix D. No sites are recorded within the Coolamon Shire Council LGA. There are no results on the list of notified sites for the suburb of Coolamon (NSW EPA 2022). There are 18 sites on the POEO Public Register within Coolamon, none are located on or upgradient of the proposal. Potential sources of contamination identified from the desktop assessment and site inspection includes rail activities and herbicide and pesticide use associated with upgradient agricultural land.

#### Preliminary Site Investigation (PSI)

The objective of the PSI is to provide information on the type, extent, and concentration of contamination at the site. This PSI assesses the:

- Primary sources of contamination onsite.
- Mechanisms for contaminant dispersal in soil.
- Contaminant characterisation and behaviour.
- Potential effects of contaminants on human health, including the health of occupants of built structures and the environment.
- Potential and actual contaminant migration routes including potential preferential pathways.
- The adequacy and completeness of all information used in the assessment.

An intrusive investigation was undertaken on 21 and 22 February 2023 by an NGH Environmental Scientist. Twenty-four (24) boreholes were advanced using a mechanical auger to a maximum depth of 1.5 metres below ground level (mbgl) or refusal. Surface samples were taken from the top 150 millimetres (mm) of the soil profile, immediately below any vegetative or detritus layers. Subsurface soil samples were taken at 0.5mbgl, 1.0mbgl and 1.5mbgl (maximum four samples per borehole). Refer to Figure 6-1 and Figure 6-2 for sampling locations.

A portable photoionisation detector (PID) was used as an onsite screening tool for volatile organic compounds (VOCs). VOCs are chemical compounds that possess significant vapour pressures which can have serious effects on our health and to the environment. A PID reading was taken and recorded at every sampling depth, except for BH15 (1.4-1.5 m) due to refusal of the auger.

#### Results

A total of 96 primary soil samples and six (6) soil samples for Quality Assurance / Quality Control (QA/QC) were submitted to ALS Environmental (ALS), a NATA accredited laboratory, for analysis of the Contaminants of Potential Concern (CoPC) refer to Appendix K. One sample (SP18\_1.4-1.5 m) was broken in transit and unable to be analysed.

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Forty-eight (48) samples were analysed for this PSI. Remaining samples were placed on hold with ALS.

All samples tested were below the limit of reporting (< LOR) for Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Total Recoverable Hydrocarbons (TRH)s, Phenols, Halogenated Benzene's, Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Inorganics (including Ammonia, Nitrate and Nitrite) and Organochlorine Pesticides (OCPs).

All 48 samples analysed returned results below the adopted site assessment criteria (SAC), refer to Appendix K for the SAC. Minor detections above the laboratory LOR for heavy metals (Arsenic, Chromium VI, Copper, Lead, Nickel, and Zinc) were observed across the 48 soil samples.

Three boreholes (BH07, BH17 and BH23) returned a PID reading between 1.6 – 2.5 ppm for VOCs. Laboratory results for all samples tested were below the LOR for BTEXN and TRHs.

### Limitations

The following data gaps were identified in the preparation of this PSI:

- Areas underneath existing sheds or hardstands were not assessed in this PSI.
- Soils from Compound 1 were not sampled for analysis in this PSI. Compound 1 was not assessed due to ongoing Council activities. At the time of sampling, the area had been fenced off. The Client has indicated that Compound 1 is unlikely to be utilised for the Project for this reason. Sampling points to the north of the subject land (BH20, BH21, BH22 and BH23, refer to Figure 6-2) are representative of an alternative compound location and are considered representative for the purposes of this PSI.
- Soils from Compound 2 were not sampled for analysis due to concerns over proximity to services. It is noted that sampling locations BH5, BH6 and BH19 are in proximity to Compound 2 and returned results that were below the site assessment criteria. Should another compound location be chosen that falls outside of the scope of this PSI, further assessment may be required.
- The CoPC were limited to the chemicals associated with railway activities and agriculture. Should it become known that other CoPC may have been present on the site further testing may be required.

### Conclusion

NGH has completed this PSI with supplementary soil sampling to support the proposed Coolamon Rail Loop Extension in Coolamon, NSW. This PSI has been carried out in general accordance with the Guidance documents endorsed by the NSW Environment Protection Authority.

The soil investigation and analytical testing undertaken concludes that all chemical analysis results were below the adopted site assessment criteria. This analysis indicates that the site is not likely to present a risk to human health or the environment. No recommendations for further investigation are required for the proposal.

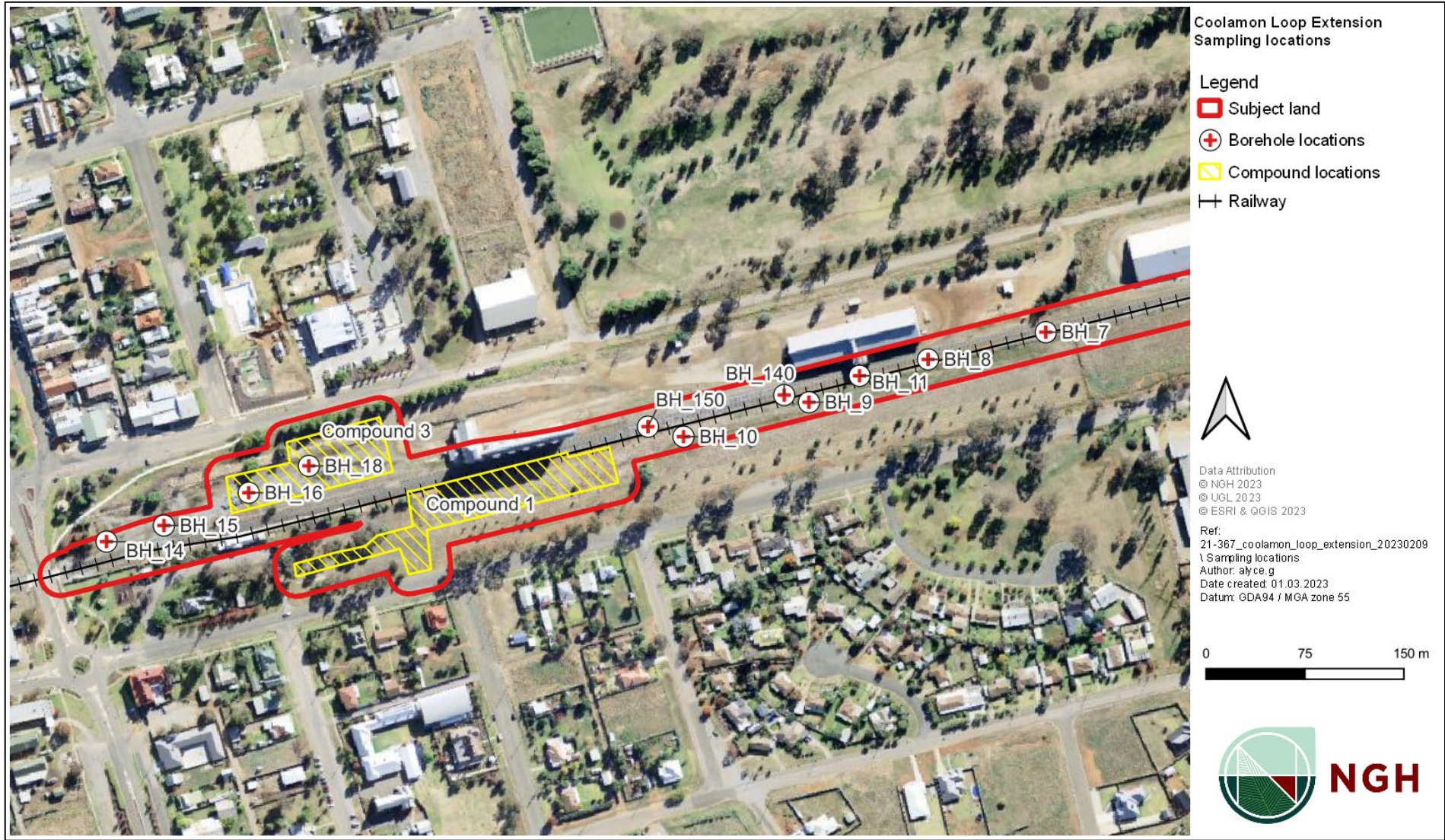


Figure 6-1 Sampling locations for the PSI – Map 1 of 2

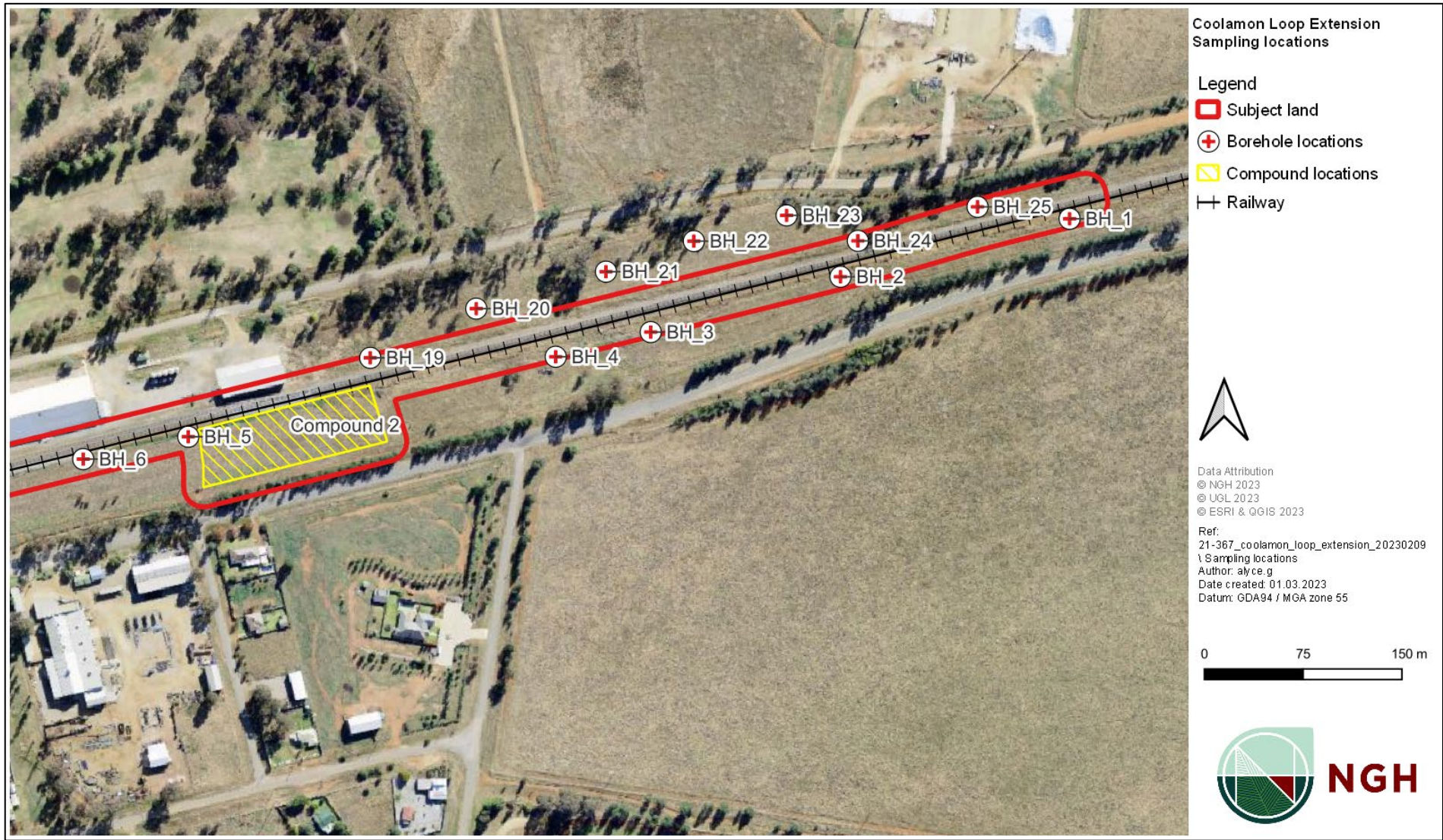


Figure 6-2 Sampling locations for the PSI – Map 2 of 2



### 6.1.3 Potential impacts

Generally, the potential sources of impact to soils during construction would be from:

- Vegetation clearing works.
- Minor excavation activities.
- Compaction through the use of heavy machinery.
- The use of consumable chemicals such as fuels and hydraulic oils.

A majority of the development footprint would experience disturbance as part of the works. Removal of vegetation can expose the topsoil layer to erosive forces, including water and wind, this can induce erosion and subsequent loss of this valuable soil resource. Topsoil loss can slow rehabilitation and the re-establishment of native ecosystems. The potential soil landscapes present at the site have erosion risk hazards.

Vehicles and machinery would be required to access the proposal area as part of the proposal. Movement of machinery and vehicles would be confined to the development footprint. Compaction of soils may occur as a result of machinery movement and parking and stockpiling of materials. Compaction of soils can retard the natural regeneration of groundcover and adversely affect soil stability. Areas disturbed by work activities would be stabilised and rehabilitated as soon as practical.

The proposal may result in several potential contamination sources being introduced to the site and surrounds during construction. Fuel and oil for construction plant and equipment are potential sources of pollution. Fuels, oils and other chemicals would not be directly stored on site. Refuelling would occur offsite when possible and within the designated compound site when not. Refilling activities should occur as far from drainage lines as practically possible.

There is potential for the identified contamination sources to impact site material, this may further impede natural regeneration. Upgradient agricultural areas may have a higher risk of buried and concentrated contaminants, this is not expected to be exacerbated as a result of construction works.

Overall, short term risks to soils would be high, but localised, and only occur over a short period of time during construction. Known (demonstrated to be effective on similar projects) mitigation strategies are considered highly likely to be able to adequately address these risks. Medium to long term impacts would be low provided stabilisation strategies are effectively implemented. Stabilisation and revegetation should prevent soil erosion to the same extent that existing vegetation now functions.

Once operational the site will continue to be managed as currently, no additional impacts are expected for soils and contamination.

### 6.1.4 Safeguards and management measures

Soil and geological impacts are considered highly manageable. Table 6-1 details safeguards and mitigation measures recommended to minimise soil impacts from the proposal.

Table 6-1 Topography, Geology and soils safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Topography, Geology and soils	All works will occur within the development footprint as outlined in Figure 1-1. Any works that are to occur outside this proposal site will require further assessment and additional approval.	Contractor	Pre-construction and construction	
Topography, Geology and soils	Development of a site-specific sediment and erosion control plan, in accordance with the Blue Book (Landcom 2004), should be considered prior to the works commencing.	Contractor	Pre-construction	
Topography, Geology and soils	Installation of erosion and sediment controls prior to commencement of construction.	Contractor	Pre-construction	

Impact	Environmental safeguards	Responsibility	Timing	Reference
Topography, Geology and soils	Maintenance of erosion and sediment controls throughout the duration of the works and until the site is stable.	Contractor	Pre-construction and construction	
Topography, Geology and soils	Works will not be undertaken in forecast heavy rain or flooding events.	Contractor	Pre-construction and construction	
Topography, Geology and soils	Delineation of works areas, including access and stockpile areas, and fencing of 'no go' zones to stop unnecessary disturbance outside the works footprint.	Contractor	Pre-construction	
Topography, Geology and soils	Placement of compound site as well as potential pollutants (such as soil and hazardous materials) will be located away from drainage lines (more than 40m where practical) on relatively flat ground and preferably already cleared of vegetation.	Contractor	Pre-construction	
Topography, Geology and soils	Separation of topsoil and subsoil during any stockpiling activities. Topsoil shall be reused to assist stabilisation of disturbed areas.	Contractor	Pre-construction and construction	
Topography, Geology and soils	If contaminated areas are encountered or created during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions have been implemented.	Contractor	Pre-construction and construction	
Topography, Geology and soils	An Emergency Spill Management Plan will be developed for the project and will contain measures to avoid spillages of hydrocarbons onto any ground surfaces or into any waterways. The plan will include, but not limited to: <ul style="list-style-type: none"> <li>o No storage of hydrocarbons on the site to reduce risk of flooding impacts.</li> <li>o Impervious bunded areas for refuelling, away from waterways and drainage lines.</li> <li>o Spill kits kept onsite and, on all machinery,</li> <li>o Training of staff in the response, notification, spill kit location and management of hydrocarbon spills.</li> </ul>	Contractor	Pre-construction and construction	
Topography, Geology and soils	Progressive stabilisation of disturbed areas is recommended to include:	Contractor	Post-construction	

Impact	Environmental safeguards	Responsibility	Timing	Reference
	<ul style="list-style-type: none"> <li>○ Respreading topsoil and mulch (thinly layered) to assist natural revegetation.</li> <li>○ Maintenance of sediment and erosion controls until soil surfaces are deemed suitable.</li> </ul> <p>Consideration of seeding and supplementary planting based on success of previous actions.</p>			
Topography, Geology and soils	<p>Waste classification is required for all soil and soil impacted material that will require offsite disposal, including:</p> <ul style="list-style-type: none"> <li>○ Assessment of material for waste classification prepared by a suitably qualified environmental consultant and comply with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009).</li> <li>○ Building and demolition waste can be disposed offsite as pre-classified waste in accordance with NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). All building and demolition waste that is stockpiled with soil material will be required to be divided and classified separately.</li> </ul>	Contractor	Pre-construction Construction	
Topography, Geology and soils	<p>An unexpected finds protocol will be developed and implemented, in the event that Asbestos Containing Material (ACM) is discovered onsite.</p>	Contractor	Pre-construction Construction	

## 6.2 Hydrology, groundwater and flooding

### 6.2.1 Existing environment

#### Surface water

The site is within the Murrumbidgee catchment and forms part of the Murrumbidgee North Water Source. Surface water is regulated under the Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2012 (NSW GL 2011).

No recognised drainage lines are mapped on site (DFSI 2010), although there are man-made drainage lines running parallel to the rail line and two culverts underlying the rail line. Surface water on site would generally drain north-west into Boggy Creek. Boggy Creek is a fourth order drainage line which runs west and drains into Bundidgerry Creek, south of Grong Grong NSW. Bundidgerry creek runs into the Murrumbidgee River which also flows west as a major tributary of the Murray-Darling Basin system.

#### Groundwater

There are no terrestrial Groundwater Dependant Ecosystems (GDE's) mapped within the subject site. The closest potential terrestrial GDE's mapped are located in Kindra Park to the north, these GDE's are mapped as low potential. There are no alluvial GDE's mapped within the subject site. The closest potential alluvial GDE is associated with Redbank Creek, ~8km to the north. This GDE is mapped as having moderate potential.

There are no groundwater bore records available within the subject land. There are two groundwater bore records available within close proximity to the subject land. From the construction records of these bores, both did not encounter useful

water sources to the drilled depths of 137m below ground level (mbgl) and 170mbgl. Groundwater beneath the site is part of the Lachlan Fold Belt Groundwater Management Area and regulated under the *NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011* (NSW GL 2021). Groundwater in the area is likely to be fractured and limited if present, as is characteristic of the groundwater resource.

### Flooding

The site is not within a Flood Planning Area on the Flood Planning Map (Sheet FLD\_003G) under the Coolamon Local Environmental Plan 2011 (NSWG 2011). The nearest Flood Planning Area is located approximately 600m south-west in the western part of the Coolamon township.

## 6.2.2 Potential impacts

The removal of vegetation at the proposal site may destabilise banks and potentially result in the exposure of soils to erosion hazards, causing sedimentation of the waterway and destabilisation of soils. Disturbance of the channel banks during the removal of vegetation is likely to result in temporary minor increases in turbid runoff. There is a risk that sediment from stockpiled soils and materials could potentially be transported into drainage lines and then into waterways during heavy rain events.

During construction there is potential for a wide range of pollutants to enter drainage areas and the local water system, especially during rainfall events. These pollutants may include:

- Sediment laden water and soil nutrients (including construction wastewater).
- Construction waste during demolition works.
- Fuels spilled during refueling of plants and equipment.
- Hydraulic and lubricating oil leaking from plants and equipment.
- Rinse water from plant washing.
- Water containing biological contaminants such as nutrients and bacteria from site toilets (if required).

Introduction of the above pollutants from the proposal area into the surrounding environment, if uncontrolled, could potentially have the following impacts on water quality in nearby and downstream creek systems:

- Increased sediment load and organic matter resulting in adverse impacts to aquatic fauna and flora.
- Reduction in photosynthetic productivity of water bodies from increasing turbidity.
- Reduction of habitat from sediment deposition in drainage areas.
- Potentially harmful pollutants entering the creek system.
- Decline in water quality due to influx of man-made substances, resulting in adverse impacts to aquatic flora and fauna downstream.

With the implementation of the proposed mitigation measures, and the short term nature of the work, any potential impacts would be managed during construction.

Once operational the site will continue to be managed as currently, no additional impacts are expected for hydrology, groundwater and flooding.

## 6.2.3 Safeguard and management measures

In addition to soil management measures, in Section 6.1, the safeguards and mitigation measures in Table 6-2 are required to minimise water quality and hydrology related impacts from the proposal:

Table 6-2 Hydrology, groundwater and flooding safeguard and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Hydrology, groundwater and flooding	<ul style="list-style-type: none"> <li>• A flood contingency plan will be prepared to identify any potential flood threats and the evacuation procedure for dispersible materials, hazardous materials and equipment containing hazardous or dispersible</li> </ul>	Contractor	Construction	

Impact	Environmental safeguards	Responsibility	Timing	Reference
	<p>materials. The flood contingency plan will include:</p> <ul style="list-style-type: none"> <li>○ Detail who will be responsible for monitoring flood threat and how this will be done. It is expected that flood warning information will be sourced from the BoM website.</li> <li>○ Regular consultation of the BoM website for weather forecasts and flood warnings.</li> <li>○ A process for removing equipment and materials off site and out of flood risk areas quickly.</li> </ul>			

## 6.3 Biodiversity

### 6.3.1 Methodology

#### Threatened species evaluation

Database searches were completed for records of Commonwealth and State listed threatened species, populations, and ecological communities. Searches were conducted on 13 September 2021 and 5 October 2022 and included the following:

- EPBC Protected Matters Search tool records within 10km of the proposal area.
- NSW BioNet Atlas Search within 10km of the proposal area.

Relevant literature was reviewed, which included OEHL and EPBC Threatened Species Profiles.

No areas of declared outstanding biodiversity value listed under the *Biodiversity Conservation Act 2016* (NSW) (BC Act) are present within the development area. In addition, the development area does not contain significant wetland communities.

An evaluation of the potential for threatened species to occur and be impacted by the proposal is shown in Appendix G - Threatened species evaluation.

#### Site inspection

A field survey was conducted on 15 September 2021 by an ecologist and an environmental consultant from NGH. Floristic surveys were completed to determine the vegetation communities present. The proposal area was surveyed using the 'random meander' method, as documented by Cropper (Cropper, 1993). The survey included an assessment of the condition and composition of existing vegetation. Hollow bearing trees and potentially threatened species habitat were assessed. Opportunistic fauna sightings were also recorded. Any priority weeds were recorded opportunistically. Based on the field survey, vegetation within the development area was assigned to a Plant Community Type (PCT) in accordance with the Vegetation Information System (VIS) Classification Database (OEHL).

Threatened Ecological Communities (TEC) were confirmed based on the relevant Scientific Committee – final determinations for each TEC. Botanical nomenclature follows Harden (1990–2002) and the PlantNet website, updated with recent changes recognised in Angiosperm Phylogeny Group (2017) and the Australian Plant Census.

### 6.3.2 Existing environment

A majority of the development footprint is dominated by exotic groundcover with scattered Eucalypts, White Cypress Pine and Acacia shrubs. The exotic vegetation consisted of predominately exotic grasses and forbs such as Onion Grass (*Romulea rosea*\*), Cape Weed (*Arctotheca calendula*\*), Clover (*Trifolium spp.*\*), Patterson's Curse (*Echium plantagineum*\*), Chickweed

(*Stellaria media*\*), Lamb's Tongue (*Plantago lanceolata*\*), Sheep's Burnet (*Sanguisorba minor*\*), Barley Grass (*Hordeum leporinum*\*), Wild Oats (*Avena fatua*\*) and Phalaris (*Phalaris aquatic\**) (Figure 6-3).

A linear section of planted native vegetation was also present along the southern side of the study area, outside of the development footprint (Figure 6-4). Species included Spotted Gum (*Corymbia maculata*), Red Mallee (*Eucalyptus socialis*) and Mugga Ironbark (*Eucalyptus sideroxylon*).

A complete flora list is detailed in Appendix E - Field Data.



Figure 6-3 Example of exotic groundcover within the development footprint



Figure 6-4 Example of planted vegetation within the study area


**Plant Community Types (PCTs)**

One PCT was identified within the development footprint:

- PCT 80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW southwestern Slopes Bioregion and Riverina Bioregion.

Table 6-3 PCT within the development footprint

PCT 80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW southwestern Slopes Bioregion and Riverina Bioregion.	
<b>Vegetation Formation</b>	Grassy Woodland
<b>Vegetation Class</b>	Floodplain Transition Woodland
<b>Description</b>	<p>Tall open woodland with a sparse shrub layer and a sparse to mid-dense ground cover.</p> <p>This vegetation community within the development footprint is an open woodland dominated by Western Grey Box (<i>E. macrocarpa</i>) and White Cypress Pine (<i>Callitris glaucophylla</i>). Some Yellow Box (<i>E. melliodora</i>) and Blakely's Red Gum (<i>E. blakelyi</i>) are also scattered throughout.</p> <p>The mid storey is sparse and includes a few scattered shrubs including Hakea Wattle (<i>Acacia hakeoides</i>) and Bottlebrush (<i>Callistemon sp.</i>).</p> <p>The ground stratum is dominated by exotic species including Onion Grass (<i>Romulea rosea*</i>), Cape Weed</p>

<b>PCT 80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW southwestern Slopes Bioregion and Riverina Bioregion.</b>	
	<p>(<i>Arctotheca calendula</i>*), Clover (<i>Trifolium spp.</i>*), Patterson's Curse (<i>Echium plantagineum</i>*), Chickweed (<i>Stellaria media</i>*), Lamb's Tongue (<i>Plantago lanceolata</i>*), Sheep's Burnet (<i>Sanguisorba minor</i>*), Barley Grass (<i>Hordeum leporinum</i>*), Wild Oats (<i>Avena fatua</i>*) and Phalaris (<i>Phalaris aquatic*</i>). Scattered natives were also present including Rock fern (<i>Cheilanthes austrotenuifolia</i>), Mountain Burr-daisy (<i>Calotis cuneata</i>), Rice Flower (<i>Pimelea sp.</i>), Fuzzweed (<i>Vittadinia sp.</i>), Speargrass (<i>Austrostipa scabra</i>), Windmill Grass (<i>Chloris truncata</i>), Wallaby Grass (<i>Rytidosperma sp.</i>) Kanagaroo Grass (<i>Themeda triandra</i>) and Wiregrass (<i>Aristida sp.</i>).</p>
<p><b>Figure 6-5 Example of PCT 80 with White Cypress Pine regrowth within the study area</b></p>	
<p><b>Impact area</b></p>	<p>The proposal would disturb 0.97ha of PCT 80.</p>
<p><b>Condition</b></p>	<p>Moderate condition (canopy intact, exotic dominated understory with scattered natives).</p>
<p><b>Conservation Status</b></p>	<p>Does form part of a TEC:</p> <ul style="list-style-type: none"> <li>• Inland Grey Box Woodland in the Riverina, NSW southwestern Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions.</li> </ul>
<p><b>Fauna Habitat</b></p>	<p>The surrounding vegetation within the development footprint has an over storey stratum providing potential habitat for several fauna species. Groundcover within the development area also provides foraging and nesting resources for native fauna.</p>

#### Threatened Ecological Communities (TECs)

PCT 80 within the development footprint meets the criteria for the TEC Inland Grey Box Woodland in the Riverina, NSW South-Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (Grey Box Woodland) listed under the Biodiversity Conservation Act 2016 due to the presence of characteristic species in the overstorey. However, it does not meet the criteria for the federally listed Grey Box Woodland as the groundcover of the community lacks a diverse range of native grasses and forbs and is dominated by exotic species.

An assessment of significance under part 7.3 of the BC Act has been completed for this EEC (Appendix G - Threatened species evaluation).

#### Threatened flora

No threatened flora species were identified during the site survey. However, due to the timing of the site survey not all flora species within the study area may have been present. The occurrence of threatened flora species may not be ruled out. A search of the NSW BioNet Atlas, EPBC Protected Matters Search Tool and OEH threatened species search (by habitat and region) identified 24 threatened flora species with the potential to occur within the proposal area. A habitat evaluation was completed for all these species (Appendix G - Threatened species evaluation). Based on this assessment, no threatened flora species were considered likely to occur within the proposal area or be impacted by the proposed work.

#### Priority weeds

Of the 58 flora species identified within the study area, 32 were exotic. None of these species, are listed as a priority weed on the NSW Weedwise Website (DPI 2015) for the Riverina. Exotic flora that was identified within the proposal area are common within the region and are often found within disturbed areas.

The *Biosecurity Act 2015* dictates that all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any land managers or authorities who deal with any plant has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.



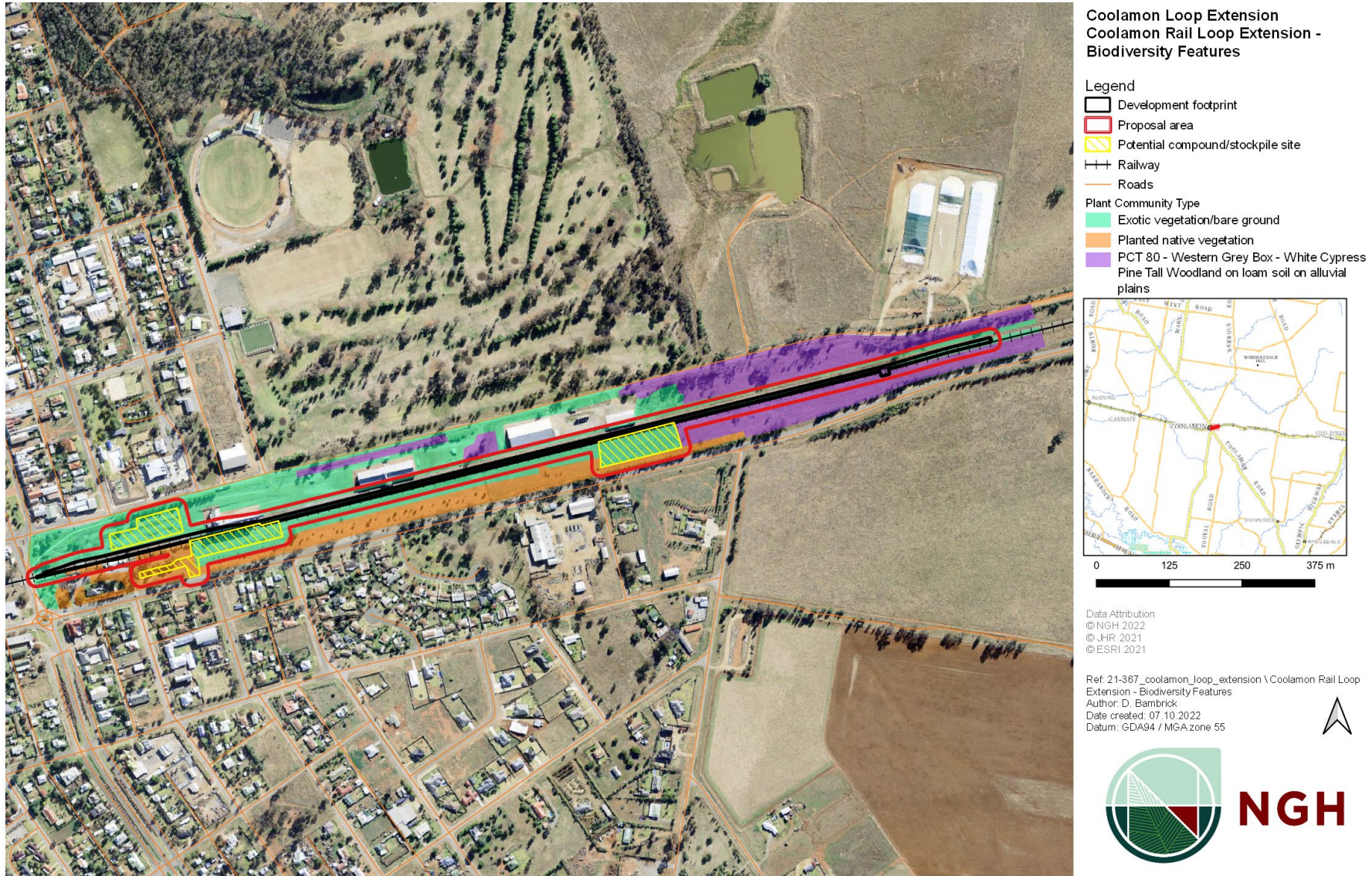



Figure 6-6 Biodiversity features


**Fauna**

During the survey 10 bird species were recorded. No threatened fauna was observed during the site survey. A species list has been provided in Appendix E.1.

Fauna habitat identified during the field survey is provided in (Table 6-4).

Table 6-4 Fauna habitat and fauna resources identified within the proposal area

Habitat features	Description
<b>Open Woodland</b>	The planted vegetation and PCT 80 within the proposal area provides abundant habitat features, including an upper storey, mid storey and groundcover stratum. This provides valuable foraging and breeding habitat for a number of native fauna.
<b>Groundcover</b>	<p>Some native grasses and forbs are scattered throughout the proposal area. These include Speargrass (<i>Austrostipa scabra</i>), Windmill Grass (<i>Chloris truncate</i>), Wallaby Grass (<i>Rytidosperma sp.</i>), Kangaroo Grass (<i>Themeda triandra</i>), Catsear (<i>Hypochaeris radicata</i>), Dianella (<i>Dianella sp.</i>) and Rock Fern (<i>Cheilanthes austrotenuifolia</i>).</p> <p>Native grasses provide resources for a number of native fauna species including native grass seed for birds and flowers for native pollinators.</p> <p>Exotic grasses and forbs are dominant within the proposal area and also provide foraging and nesting resources for native fauna.</p>
<b>Aquatic habitat</b>	<p>No waterways occur within the proposal area. A minor drainage line with a culvert does occur through the centre of the development footprint, however limited aquatic habitat is present, and the site is heavily degraded offering limited habitat for native fauna.</p>  <p>Figure 6-7 Example of drainage line within the development footprint</p>

Habitat features	Description
<b>Rocky outcrops and loose rocks</b>	There are no areas of loose rocks or rocky outcrops within the development footprint.
<b>Fallen timber</b>	<p>Fallen timber is limited within the development footprint. This may provide some shelter and foraging resources for some native fauna species, including small reptiles and ground-dwelling birds.</p>  <p>Figure 6-8 Example of fallen timber within the development footprint</p>
<b>Hollow bearing trees</b>	No hollow bearing trees (HBTs) occur within the development footprint.

**Threatened fauna**

No threatened fauna species were identified during the site survey. However due to the timing of the site survey not all fauna species within the study area may have been present. The occurrence of threatened fauna species may not be ruled out. A search of the NSW BioNet Atlas, EPBC Protected Matters Search Tool and OEH threatened species search (by habitat and region) identified threatened fauna with the potential to occur within the study area. A habitat evaluation was completed for all of these species (Appendix G - Threatened species evaluation). Based on this assessment habitat within the study area may be suitable for threatened species. However, given the scope of the works, and limited clearing that would occur, no threatened fauna species are considered likely to be impacted by the proposed work. As such, no further assessment is required.

**6.3.3 Potential impacts**

**Construction**

The development footprint is approximately 8.95ha (this includes existing infrastructure). The proposed work would temporarily disturb the groundcover of 4.2ha of exotic vegetation, 0.98ha of planted native vegetation and 0.9ha of native vegetation PCT 80.

The proposed work would require the permanent removal of 0.97ha of exotic vegetation, 0.031ha of planted native vegetation, and 0.07ha native vegetation PCT 80. Four immature Inland Grey Box (*Eucalyptus acrocarpa*) within the rail corridor would be removed.

Minor removal of exotic aquatic vegetation would occur within the minor drainage line; however, this habitat offers very limited habitat for amphibians. No threatened amphibians or fish are considered likely to occur or rely upon this habitat within the development footprint (Figure 1-1).

Construction of the proposal would have a negligible impact on native vegetation. The removal of this vegetation constitutes the loss of minor foraging habitat for native fauna. Connectivity would not be affected by the proposed works. The existing vegetation provides good soil stability, which means that revegetation activities should occur quickly after works are undertaken. It is likely that post construction, similar vegetation would recolonise the affected areas.

### Grey Box Woodland EEC

An assessment of significance was completed for the Grey Box Woodland EEC (Appendix G - Threatened species evaluation). The assessments concluded that there is unlikely to be a significant impact due to the following:

- The amount of habitat to be disturbed by the proposal is relatively small in the local context, and removal protocols aim to minimise disturbance to adjoining habitat.
- No hollow-bearing trees would be removed.
- No fragmentation or isolation of habitat would occur.
- No substantial contribution to any key threatening process would be expected.

An additional four trees inside the rail corridor would be removed. This has been taken into consideration and the assessment of significance has remained unchanged based on the following:

- The additional being cleared is very small (0.074ha),
- The area is of low quality and occurs within a highly disturbed environment next to the rail corridor.
- The trees to be removed area immature and do not form suitable foraging or breeding habitat.

### Operation

No additional impacts during operation.

### Conclusion on significance of impacts

The proposal is not likely to significantly impact threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act, 2016* or *Fisheries Management Act 1994* and therefore a *Species Impact Statement* or Biodiversity Development Assessment Report is not required.

The proposal is not likely to significantly impact threatened species, ecological communities or migratory species, within the meaning of the EPBC Act.

## 6.3.4 Safeguards and management measures

Table 6-5 Biodiversity safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Biodiversity	<p>A Flora and Fauna Management Plan will be prepared in accordance with Transport for NSW's <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects</i> (RMS, 2011) and implemented as part of the CEMP. It will include, but not be limited to:</p> <ul style="list-style-type: none"> <li>• plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas.</li> <li>• requirements set out in the Landscape Guideline (RMS, 2008).</li> <li>• pre-clearing survey requirements.</li> <li>• procedures for unexpected threatened species finds and fauna handling.</li> <li>• procedures addressing relevant matters specified in the DPI Policy and guidelines for fish habitat conservation and management (2013).</li> <li>• protocols to manage weeds and pathogens.</li> </ul>	Contractor	Detailed design / pre-construction	Section 4.8 of QA G36 Environment Protection
Biodiversity	No further removal of native vegetation outside the development footprint is to occur without further assessment.	Contractor	Construction	

Impact	Environmental safeguards	Responsibility	Timing	Reference
Biodiversity	Establish the construction vehicle parking, compound and stockpiles on cleared areas or disturbed grassland where minimal vegetation removal is required within the development footprint.	Contractor	Detailed design / pre-construction	
Biodiversity	Clearing of native vegetation should be carried out in accordance with Biodiversity Guidelines 2011 – Guide 4 (Clearing of vegetation and removal of bush rock) (RTA 2011).	Contractor	Pre-construction	
Biodiversity	Pruning of mature trees is to be in accordance with Part 5 of the Australian Standard 4373-2007 Pruning of amenity trees.	Contractor	Construction	
Biodiversity	Priority weeds are to be managed according to requirements under the Biosecurity Act, 2015 and Guide 6 (Weed Management) of the Transport for NSW Biodiversity Guidelines 2011.	Contractor	Construction	
Biodiversity	Any herbicide use will be undertaken according to Environmental Fact Sheet 18 - Herbicide application (RMS, 2013).	Contractor	Detailed design / pre-construction	
Biodiversity	Visual inspections and cleaning of vehicles and plant would ensure that mud and organic material has been removed prior to exiting onto public roads (minimising the spread of weeds and soil-borne disease).	Contractor	Detailed design / pre-construction	
Biodiversity	All coarse woody debris is to be retained on site where possible in accordance with Transport for NSW Biodiversity Guidelines – Protecting and Managing Biodiversity on RTA Projects: Guide 5: Re-use of woody debris and bush rock (RTA 2011). Any vegetation too large to be mulched will be placed as coarse woody debris (CWD) in suitable areas within the adjacent vegetation to be retained.	Contractor	Detailed design / pre-construction	
Biodiversity	An unexpected finds procedure would be implemented if a threatened flora or fauna species or ecological community that had not been identified and assessed by the REF is unexpectedly encountered during construction.	Contractor	Pre-construction / Construction	
Biodiversity	An Environmental Work Method Statement (EWMS) for Clearing and Grubbing would be prepared and approved by the project Environmental Officer prior to starting work. The EWMS must include at least the following: <ul style="list-style-type: none"> <li>○ A description of the work activity, including any plant and equipment to be used.</li> <li>○ Identification of any environmentally sensitive areas.</li> <li>○ The sequence of tasks for the activity.</li> <li>○ Identification of potential environmental risks/impacts due to the activity.</li> </ul>	Contractor	Detailed design / pre-construction	

Impact	Environmental safeguards	Responsibility	Timing	Reference
	<ul style="list-style-type: none"> <li>○ Mitigation measures to reduce the identified environmental risk, including assigned responsibilities to site personnel.</li> <li>○ A process for assessing the performance of the implemented mitigation measures (performance outcomes).</li> <li>○ A detailed site diagram showing all work areas, controls, sensitive areas, and no-go-zones.</li> <li>○ The Flood Response and Action Plan including a process for monitoring and managing wet weather events during works.</li> </ul> <p>All site personnel must sign-on to the EWMS and be aware of their responsibilities within the EWMS.</p>			

## 6.4 Climate and air quality

### 6.4.1 Existing environment

The NSW South Western Slopes Bioregion is dominated by a sub-humid climate characterised by hot summers and no dry season (OEH 2020). A temperate climate, with warm summers, occurs at higher elevations along the eastern boundary of the bioregion adjacent to the South Eastern Highlands Bioregion. Mean annual temperature increases across the bioregion from low temperatures in the south and east to higher temperatures in the north and west (OEH 2020). Rainfall is distributed across the South Western Slopes Bioregion with high (up to around 1200mm) mean annual rainfall in the east, and lower values (around 400mm) for mean annual rainfall in the west (OEH 2020).

The BOM (2021) temperature records available from the nearest climate station at Wagga Wagga AMO (station number 072150) (approximately 43.2km south-west from the study area) indicates a mean summer maximum of 31.9°C (January) and a mean winter maximum of 12.8 °C (July) (Figure 6-9 ). The mean annual rainfall is 571.4mm.

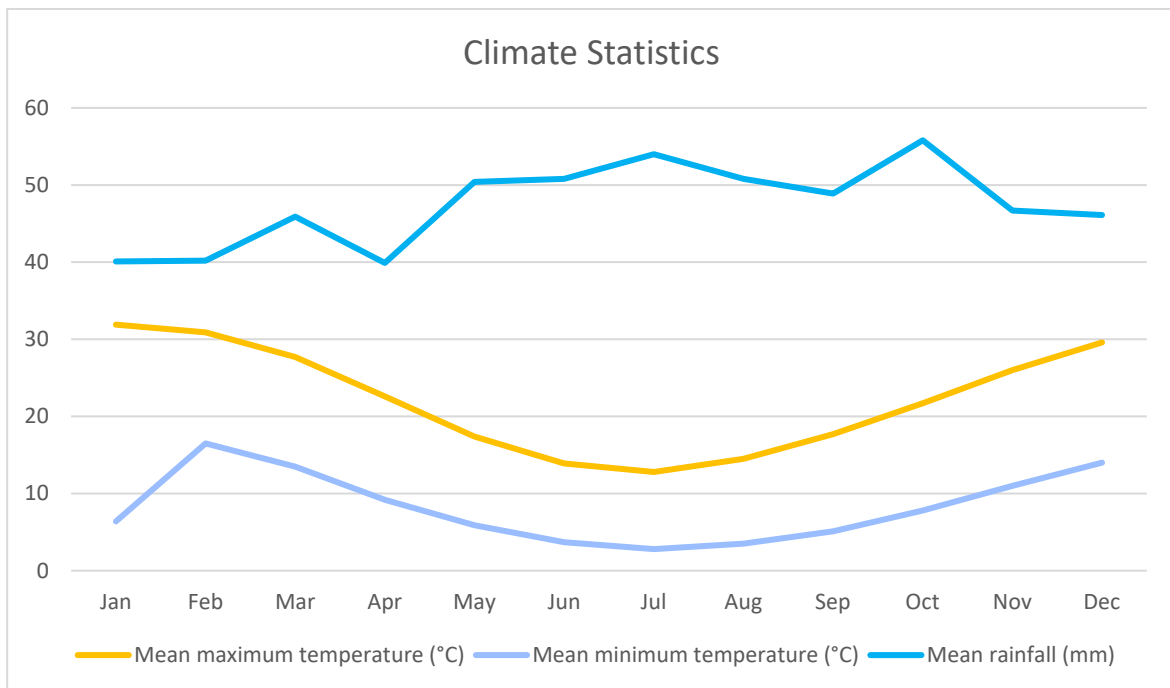


Figure 6-9 Monthly climate statistics for Wagga Wagga (BOM 2021)

Air quality in the study area is typical of the surrounding rural region. In generally air quality is high. However, raised dust during the dryer months contributes to sporadic reductions in air quality. During autumn the level of particulate matter in the air increases due to

the burning of agricultural residues and soil cultivation for cropping. In winter the burning of wood in solid fuel fires contributes to elevated levels of particulate matter in the atmosphere.

### 6.4.2 Potential impacts

The proposal would have a minimal impact on local air quality and no impact on regional air quality. During construction, there may be a small contribution to air pollution through the operation of plant and disturbance from earthworks. However, this would be short in duration and would not be such that it would cause any undue concern to local sensitive receivers.

Exhaust emissions from construction plant could similarly cause some minimal impact to air quality. Overall, any reduction in air quality would be highly localised and short in duration and would not cause undue impact on the public or on the surrounding environment. Emissions from construction plant and vehicles would be in accordance with Australian Standards.

Given the low level of dust likely to be generated from the works during construction, no significant impact on potential sensitive receivers is expected. Any local businesses that operate in the locality could have slight increase in dust which will be managed on site through implementation of mitigation measures. Potential air quality impacts can be readily managed with the implementation of appropriate safeguards and mitigation measures.

Once operational the site will continue to be managed as currently, no additional impacts are expected for air quality.

### 6.4.3 Safeguards and management measures

Table 6-6 Climate and air quality safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Climate and air quality	Works will be minimised during windy periods to minimise dust creation and ensure no dust impacts occur along public roads or at sensitive receivers.	Contractor	Pre-construction and construction	
Climate and air quality	All plant and equipment would be ensured to comply with Part 4 of the Protection of the Environment Operations (Clean Air) Regulation 2002.	Contractor	Pre-construction and construction	
Climate and air quality	Emissions would be kept within the standards and regulations under the <i>Protection of the Environment Operations Act 1997</i> .	Contractor	Pre-construction and construction	
Climate and air quality	All delivery vehicles would be covered during transportation.	Contractor	Pre-construction and construction	
Climate and air quality	Vegetation or other materials will not be burnt on site.	Contractor	Pre-construction and construction	
Climate and air quality	Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpile sites (using non-potable water where available).	Contractor	Pre-construction and construction	

## 6.5 Noise and vibration

### 6.5.1 Methodology

The construction and operational noise assessments have been prepared in accordance with the policies and guidance, administered by the Environment Protection Authority (EPA):

NSW Interim Construction Noise Guideline (ICNG) 2009.

NSW Noise Policy for Industry (NPI) NSW EPA 2017.

Rail Infrastructure Noise Guideline (RING) EPA 2013.

Specific methodologies for construction and operation are provided below.

## 6.5.2 Existing environment

The study area can be seen as lying across two different land use types. The eastern half of the site is within the Coolamon township and the eastern half extends into agricultural land. Agricultural land is primarily used for grazing and broadacre cereal cropping. The main sources of background noise would include existing rail noise, town traffic noise, especially along Canola Way, and seasonal agricultural machinery operation. There is a Graincorp grain storage facility adjacent to the rail line to the north. This facility roads are predominantly unsealed gravels and, along with grain dust during operations, would be the major contributor to dust in the immediate area. Due to the central location of the site, there are numerous receivers within close proximity to the site. There are 17 residential receivers within 100m of the site and 294 residential receivers within 500m.

## 6.5.3 Construction noise assessment

### Methodology

The NSW Interim Construction Noise Guideline 2009 (ICNG) provides guidance on the measurement and management of construction noise impacts. The guideline requires, a quantitative assessment of noise impacts when works are likely to impact an individual or sensitive land use for more than three weeks in total. Preliminary works such as clearing and grading are not expected to take longer than three weeks. Revegetation and re-establishment of the site may take longer and a noise assessment has been completed as a conservative measure.

The ICNG describes likely 'noise management levels', for residences and other sensitive receivers. For works during standard working hours, residences are considered noise affected when construction noise is 10dB(A) above the rating background level (RBL) and 'highly noise affected' when construction noise is above 75dB(A). Works outside standard working hours are seen as affecting sensitive receivers when construction noise is 5dB(A) above the RBL.

Predicted noise levels for the proposed work were calculated using the UGL CRN Rail Noise Estimator (2017); refer Appendix F.

Construction vehicles and machinery operating during the construction phase are assumed to be the most significant contributors to noise and vibration impacts.

### Background noise

Background noise levels for the study area have been described in accordance with the UGL CRN Rail Noise Estimator tool (2017). Values were chosen for residential receivers with open windows and all building types (Table 6-7).

Table 6-7 Relative background levels

	Standard work hours	OOHW Period 1	OOHW Period 2
<b>Residential</b>	45 dB(A)	40 dB(A)	35 dB(A)

Noise management levels (NMLs) were derived from the relative background levels as follows:

- Standard work hours: RBL + 10 dB(A).
- OOHW Period 1: RBL + 5 dB(A).
- OOHW Period 2: RBL + 5 dB(A).

The adopted NMLs are provided below in Table 6-8.

Table 6-8 Noise Management Levels for construction of the proposal

Standard work hours	OOHW Period 1	OOHW Period 2	Highly Noise Affected Level
<b>55 dB(A)</b>	45 dB(A)	40 dB(A)	75 dB(A)

The proposed hours of work detailed in Section 3.3.3 require work to be undertaken in all construction hour periods. The 6am to 6pm workdays require operations during the standard work hour and OOHW Period 2 work periods. The 10/4 working roster requires weekend work at least every second weekend. Weekend work aligns with the OOHW Period 1 hours. Construction hours and work periods are illustrated below in Table 6-9.



Table 6-9 Construction hours

Hour commencing	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday																								
Public Holiday																								

6.5.3.1 Potential impacts - construction

Construction

The predicted noise levels for the proposed work were calculated using UGL Rail Noise Estimator. Two different scenarios were modelled for noise impact on the surrounding receivers:

- Bulk earthworks: excavation of topsoil and placement of engineered fill material for rail formation.
- Rail works: Placement and regulation of ballast, sleepers and rails.

The distance of noise impacts were determined for 40, 50, 60 and 70 dB(A) noise levels for each scenario. Both scenarios are modelled as having all plant operating at an 80% machinery-on rate for the duration of the scenario as a conservative measure. Predicted construction equipment used for modelling scenarios are detailed as follows (Table 6-10).

Table 6-10 Predicted construction equipment for modelling

Construction equipment	LAeq SWL	No. of units
<b>Scenario 1: Bulk earthworks</b>		
Roller (vibratory)	113	1
Truck (>20 tonne)	107	1
Water truck	107	1
Grader	110	1
Vehicle (light commercial 4WD)	106	1
<b>Scenario 2: Rail works</b>		
Excavator	107	1
Truck (>20 tonne)	107	1
Sleeper/ track layer	108	1
Ballast regulator	119	1
Ballast temper	120	1
Rail welding machine	107	1

Distance-based attenuation was used to determine noise levels at highly noise affected and NML exceedance distances. The predicted noise levels for each construction scenario are provided below:

**Scenario 1: Bulk earthworks**

Table 6-11 Predicted noise level distances for bulk earthworks

Predicted external LAeq noise level (dB(A))	Approx. distance from proposal (m)	Standard hours NML exceedance	OOHW Period 1 NML exceedance	OOHW Period 2 NML exceedance
70	60	15	25	30
60	150	5	15	20
50	350	-	5	10
40	770	-	-	-

**Scenario 2: Rail works**

Table 6-12 Predicted noise level distances for rail works

Predicted external LAeq noise level (dB(A))	Approx. distance from proposal (m)	Standard hours NML exceedance	OOHW Period 1 NML exceedance	OOHW Period 2 NML exceedance
70	105	15	25	30
60	260	5	15	20
50	590	-	5	10
40	1270	-	-	-

Mitigation measures have been derived from the NML exceedance compared to the working hours provided. As distance from the site increases, mitigation measures ease. A summary table of the mitigation measures required is provided below in Table 6-13. Noise impacts under the rail works scenario are considerably greater than the bulk earthworks scenario, due to the considerable sound levels emitted by the ballast tamper and ballast regulator. With the exclusion of these plant, the distance for a 40dB(A) impact reduces to 600m. The closest residence is located approximately 50m from the railway line, this residence is expected to be highly noise affected (>75dB(A)) under the rail works scenario during OOHW Period 2.

Table 6-13 Noise impact mitigation measures

Construction hours	Receiver perception	dB(A) above RBL <sup>*</sup>	dB(A) above ANML	Additional management measures
Standard Hours Monday-Friday (7am-6pm) Saturday (8am-1pm)	Noticeable	5 to 10	0	-
	Clearly Audible	10 to 20	< 10	-
	Moderately intrusive	20 to 30	10 to 20	PN, V
	Highly intrusive	> 30	> 20	PN, V
	75dBA or greater	N/A	N/A	PN, V, SN
OOHW Period 1 Saturday (1pm-10pm) Sunday/PH (8am-6pm)	Noticeable	5 to 10	< 5	-
	Clearly Audible	10 to 20	5 to 15	PN
	Moderately intrusive	20 to 30	15 to 25	PN, V, SN, RO <sup>1</sup>
	Highly intrusive	> 30	> 25	PN, V, SN, RO, RP/DR
OOHW Period 2 Monday-Friday (10pm-7am) Saturday & Sunday/PH (10pm-8am)	Noticeable	0 to 10	< 5	PN
	Clearly Audible	10 to 20	5 to 15	PN, V
	Moderately intrusive	20 to 30	15 to 25	PN, V, SN, RO, RP/DR
	Highly intrusive	> 30	> 25	PN, V, SN, AA, RP/DR

Notes: PN = Project notification  
V = Verification monitoring  
RP = Respite Period  
SN = Specific notification, individual briefings, or phone call  
DR = Duration Reduction  
RO = Project specific respite offer  
AA = Alternative accommodation

<sup>\*</sup> SWLs used for the purpose of estimating noise impact shall be increased by 5dBA where works will include: power saws for the cutting of timber, masonry & steel; grinding of metal, concrete or masonry; rock/line drilling; bitumen milling & profiling; jack hammering, rock hammering & rock breaking; or impact piling as a correction factor for high impact noise (also known as noise with special audible characteristics).

<sup>1</sup> Respite Offers identified in Evening Periods for moderately intrusive (20 to 30dBA) work shall only apply if works are expected to continue for more than 3 consecutive evenings.

### 6.5.4 Operational noise assessment

#### Operation

Currently, operational constraints such as inhibiting infrastructure, reduce speeds and increase the time trains spend travelling along this section of rail. This contributes to increased operational noise produced along this section of rail.

The Coolamon Sidings Extension project would address the current operational constraints by upgrading the current track configuration. With the configuration change in Coolamon Yard, rolling stock would not be forced to traverse Frame E (refer to Figure 6-10) at a low speed. The following components / actions would contribute to a decrease in operational noise, as a result of the proposed configuration change:

- Noise from bogies rotating on kingpins.
- Coupler and draw gear movement.
- Compression and tension of wagons under braking and acceleration.
- Brake applications approaching points / change of direction.
- Locomotives powering up on clearance of the frame.

**Changes to operations**

There is no strategy to increase the frequency of passenger operations at this stage following the completion of the project. The shunting strategy to facilitate the crossing of the weekly passenger service and the Intermodal Service replicates what currently occurs at the yard. As such, there is no reason to anticipate an increase in operational noise.

The rolling stock used to load freight at the Emerald Grain Mainline loader and GrainCorp Coolamon silos are all registered to operate on the network. The reconfiguration of the yard will not alter the rolling stock used, therefore locomotives and wagon types used will have the same noise profile as those used today. As the frequency of services using the yard will not alter, then off-site effects of operations within the yard are not to change.

The length of trains operated would not be influenced by the length of the siding. A range of factors influence the length of trains, with the two primary factors being:

- The desired consignment or payload size (this is determined by the freight operator).
- The motive power required or available.

Other factors influencing the length of trains includes crossing location capacity between points of departure and arrival, siding capacity at the unload point and load point capability/capacity. In the case of bulk trains loading at Emerald Grain main line loader, motive power requirements and siding capacity at the Port Melbourne grain elevator are primary train length determinants. Consignment / payload size at that load point is also constrained by on-site infrastructure limitations, load rate and cycle time demands.

Accounting for normal seasonal demand fluctuations, the reconfiguration of Coolamon yard is not predicted to lead to a significant increase in traffic from the load points associated with the yard, it will simply make the operations within the yard more efficient. Main line traffic, the frequency of which is determined by a range of factors at other locations, will not be affected by the yard configuration change. The production of commodities, and market demand for those commodities, both of which are primary drivers of demand for rail freight, will not be affected by the increase in siding length at Coolamon. Currently UGL are operating under LPA requirements, that dictate train paths, type, frequency etc.

Operations within the yard, in particular run-around movements, related to loading at Emerald Grain and shunting related to loading at GrainCorp, will become more efficient and less complex. Thus, it is reasonable to state that, as a result of simplified shunting requirements, noise pollution related to shunting operations will decline. The shunting manoeuvres required to facilitate operations will decrease in sequencing duration.

**Impacts to residences**

Following the configuration change as part of the Coolamon Sidings Extension Project, the point of change of direction would move from Frame E to Frame A (see Figure 6-10). The distance between these points is approximately 1.2km.

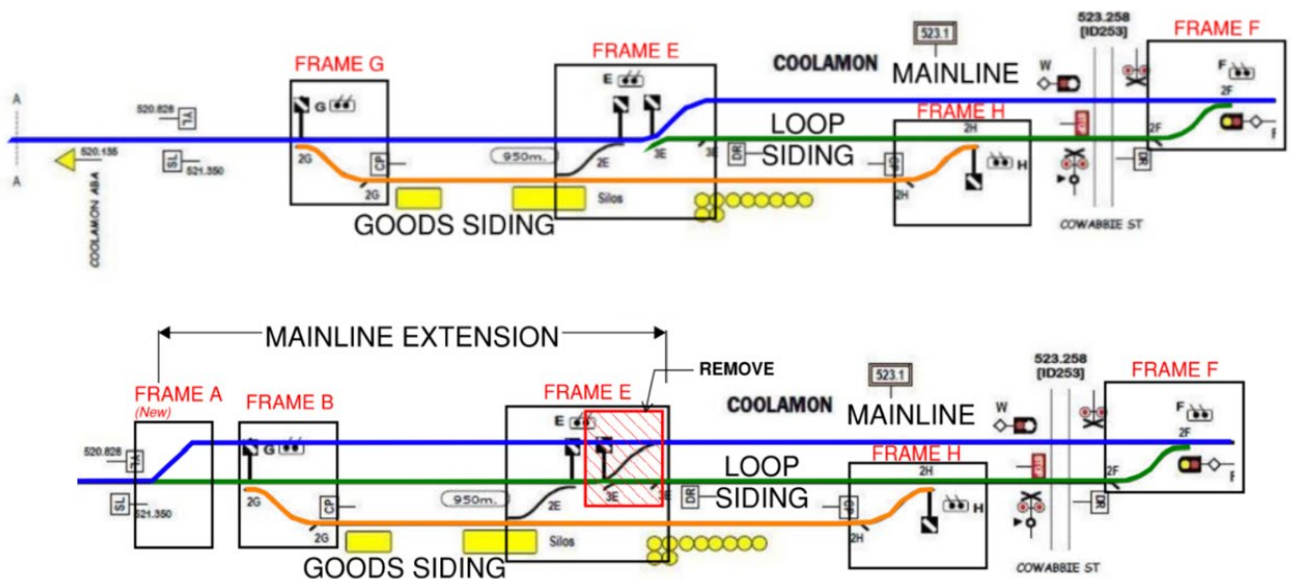


Figure 6-10 Diagram showing the point of change in direction before and after construction

As shown in Figure 6-11 below, the new track alignment increases the distance between the points shown above, and the closest residence from approximately 100 m to 260 m. As a result, the operational noise effect on the residences in the surrounding area would be reduced.



Figure 6-11 Residences within proximity to the proposal

The proposal is therefore expected to lead to a reduction in noise for surrounding residents and local receivers. However, a conservative approach has been adopted, and the expected operational noise levels for the proposal have been calculated in accordance with the JHR Operational Rail Noise Estimator tool (2017).

**Methodology**

The NSW *Rail Infrastructure Noise Guideline* (EPA, 2013) provides guidance on the measurement and management of operational noise impacts. This guideline provides noise and vibration trigger levels to allow for the assessment of rail infrastructure projects. The overarching objective of the guideline is to protect the community from the adverse effects of noise and vibration from rail infrastructure projects.

**Background noise**

Background noise levels are expected to remain consistent with those described for the construction noise assessment (refer to Table 6-7).

**Operational noise trigger levels**

Operational noise trigger levels have been provided in Table 6-8, in accordance with the Rail Infrastructure Noise Guideline (2013). Airborne noise trigger levels were adopted for the redevelopment of an existing rail line, for heavy rail within a residential land use. Noise trigger levels for heavy rail noise within residential areas is shown in Table 6-14.

Table 6-14 Noise trigger levels for heavy rail noise within residential areas

Type of development	Noise trigger levels dB(A)	
	Day (7am – 10pm)	Night (10pm – 7am)
Redevelopment of existing rail line	Development increases existing $L_{Aeq(period)}$ * rail noise levels by 2 dB or more, or existing $L_{Amax}$ rail noise levels by 3 dB or more <i>and</i> predicted rail noise levels exceed:	
	65 $L_{Aeq(15h)}$ or 85 $L_{AFmax}$	65 $L_{Aeq(9h)}$ or 85 $L_{AFmax}$

\*  $L_{Aeq(period)}$  means  $L_{Aeq(15h)}$  for the day-time period and  $L_{Aeq(9h)}$  for the night-time period

The operational noise assessment was calculated according to two scenarios.

**Scenario 1**

This scenario describes the pre-construction operational noise levels for the development. Operational noise for this scenario was calculated on the basis that one train would be able to utilise this section of rail line at any given time.

The UGL Regional Linx Standard Working Timetable (2020) (the Timetable) indicates that the largest number of trains passes through Coolamon is on a Wednesday. Therefore, results for Scenario 1 were calculated on the basis that:

- 1 train passes through Coolamon during daytime periods (7am – 10pm).
- 2 trains pass through Coolamon during night-time periods (10pm – 7am).

The assessment was conducted assuming that up to two trains may pass through Coolamon in a one-hour period. Trains travel at speeds of approximately 45 km/hr; therefore, this assessment has included operational noise calculations for the near and far lines, at speeds of 25 km/hr and 50 km/hr.

The Timetable (2020) also indicates that the longest train passing through Coolamon is approximately 1200 m long. Therefore, an operational noise assessment for wagons (assuming no defects) of up to 1200 m was included. Currently, only one 1200 m long train passes through Coolamon each week, during the daytime period (7am – 10pm).

An assessment for locomotive idling was conducted, based on the assumption that only one train would be idling at any one time. An allowance of up to 12 hrs of idling time was allocated between the hours of 7am – 10pm).

### Scenario 2

This scenario describes the post-construction operational noise levels for the development. This scenario was calculated in a similar manner to Scenario 1. However, anticipated train numbers have been doubled for Scenario 2. In addition to this, it has been assumed that up to two 1200 m long trains might pass through Coolamon each day. All other operational noise factors were assessed consistent with Scenario 1.

### Results

As can be seen in Table 6-15 below, the results of the operational rail noise assessment were all well below the accepted Noise Trigger Levels (refer to Table 6-14). As expected, the operation of the rail line, post-construction, is not expected to have an impact on nearby receivers. **No further assessment of operational noise is required.**

Table 6-15 Operational noise assessment (JHR, 2017)

Modelling Scenario	Train Type	Locomotives	Train / Wagon Length (m)	Track	Speed (km/h)	Number of Trains			Predicted external noise level at receiver, dB(A)			
						Day	Night	1 hr	LAeq(day)	LAeq(night)	LAeq(1hr)	
Scenario 1	Loco Level	1	-	Near	25	1	2	2	29.0	34.3	43.8	
		1		Near	50	1	2	2	26.8	32.1	41.6	
		1		Far	25	1	2	2	29.0	34.2	43.7	
		1		Far	50	1	2	2	26.8	32.0	41.5	
	Wagons (no defects)	-	1200	Near	25	1	2	2	25.7	28.0	37.5	
				Far	25	1	2	2	25.7	27.9	37.4	
				Near	50	1	2	2	31.0	33.2	42.7	
				Far	50	1	2	2	30.9	33.1	42.6	
	Locomotive idling	No. of trains	Distance to nearest receiver			Time spent idling (hrs)						
		1	260 m			12	0	1	38.6		39.6	
	Modelling Scenario	Train Type	Locomotives	Train Wagon Length (m)	Track	Speed (km/hr)	Number of Trains			Predicted external noise level at receiver, dB(A)		
	Scenario 2	Loco Level	2	-	Near	25	2	4	2	35.1	40.3	46.8
Loco Level		2	-	Far	50	2	4	2	35.0	40.2	46.8	
Loco Level		2	-	Near	25	2	4	2	32.9	38.1	44.6	
Loco Level		2	-	Far	50	2	4	2	32.8	38.0	44.5	
Wagons (no defects)		-	1200	Near	25	2	4	2	25.7	28.0	40.5	
				Far	25	2	4	2	25.7	27.9	40.4	
				Near	50	2	4	2	31.0	33.2	45.7	
				Far	50	2	4	2	30.9	33.1	45.7	

Modelling Scenario	Train Type	Locomotives	Train / Wagon Length (m)	Track	Speed (km/h)	Number of Trains			Predicted external noise level at receiver, dB(A)		
						Day	Night	1 hr	LAeq(day)	LAeq(night)	LAeq(1hr)
	Locomotive idling	No. of trains	Distance to nearest receiver		Time spent idling (hrs)						
		1	260 m		12	0	1	38.6		39.6	



## 6.5.5 Safeguards and management measures

Table 6-16 Noise and vibration safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Noise and vibration	<p>Mitigation measures for residential receivers include the following:</p> <ul style="list-style-type: none"> <li>○ Project Notification (PN) &amp; Verification Monitoring (V): Receive a letterbox drop (or equivalent) detailing work activity, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of five working days prior to the start of works. Noise measurements would be consistent with the procedures documented in AS1055.1-1997 Acoustics-Description and Measurement of Environmental Noise-General Procedures.</li> <li>○ <u>Specific Notification (SN)</u>: Individual briefings or phone calls.</li> <li>○ <u>Respite Period (RP), Respite offers (RO) &amp; Duration Reduction (DR)</u>: during OOHW periods for receivers with moderately intrusive impacts or greater.</li> <li>○ <u>Alternative Accommodation</u>: should be sought in extreme cases, i.e., for the closest receiver during rail works in OOHW Period 2.</li> </ul>	Contractor	Detailed design / pre-construction	Section 2.1 of QA G38 <i>Soil and Water Management</i>
Noise and vibration	Consider not conducting the processes outlined in the rail works scenario outside of standard working hours.	Contractor	Pre-construction / Construction	
Noise and vibration	Consider not operating the noisiest machinery, ballast tamper and ballast regulator, outside standard working hours.	Contractor	Pre-construction / Construction	
Noise and vibration	Where possible, avoid operating plant concurrently.	Contractor	Pre-construction / Construction	
Noise and vibration	<p>The dominant noise sources would be:</p> <ul style="list-style-type: none"> <li>○ Switched off when not required.</li> <li>○ Used only when necessary.</li> </ul>	Contractor	Pre-construction / Construction	

## 6.6 Waste minimisation and management

### 6.6.1 Policy

Waste management would occur in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (NSW). The objectives of this Act are:

- a) *To encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development.*
- b) *To ensure that resource management options are considered against a hierarchy of the following order:*
  - i. *Avoidance of unnecessary resource consumption.*

- ii. *Resource recovery (including reuse, reprocessing, recycling, and energy recovery).*
- iii. *Disposal.*
- c) *To provide for the continual reduction in waste generation.*
- d) *To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste.*
- e) *To ensure that industry shares with the community the responsibility for reducing and dealing with waste.*
- f) *To ensure the efficient funding of waste and resource management planning, programs, and service delivery.*
- g) *To achieve integrated waste and resource management planning, programs, and service delivery on a State-wide basis.*
- h) *To assist in the achievement of the objectives of the Protection of the Environment Operations Act 1997.*

## 6.6.2 Indicative waste classification

Site materials that are not reused or recycled as part of minor earthworks would be disposed of during demolition at an approved waste facility, licensed and able to accept the waste. Majority of material to be disposed of would likely be soil and fill material. The results of the waste classification process are detailed as follows:

### NSW EPA 6-step classification process

Step 1: Is the waste Special Waste?

The material is not considered to be special waste.

Step 2: Is the waste liquid waste?

The material is solid and not flowable and is not considered to be liquid waste.

Step 3: Is the waste pre-classified?

The material does not meet the definition of any of the reclassified waste materials. The closest definition would be Virgin Excavated Natural Material (VENM), however, due to the likelihood of fill material across the site, chemical assessment would be needed to confirm.

Step 4: Does the waste possess hazardous characteristics?

The material is not considered to possess hazardous characteristics.

Step 5: Waste classification using chemical assessment.

Chemical assessment has not been conducted for this site material.

Step 6: Is the waste putrescible or non-putrescible?

The material would not be considered to be non-putrescible.

## 6.6.3 Potential impacts

The construction personnel would generate domestic rubbish and raw sewage. This waste has the potential to attract wildlife, which may increase predation pressures on local native wildlife populations. These wastes may also create a loss in visual amenity, impacting those passing the site. These wastes would be directed to landfill (domestic rubbish) or the municipal reticulated sewage system (raw sewage).

Inappropriate disposal of demolition wastes can impact the visual amenity and cause pollution of waterways and soil contamination. The proposed works are likely to generate construction waste, including fuels, oils, and lubricants. Inappropriate storage and disposal of these wastes may contaminate the land and affect its productivity.

If site material is to be disposed offsite and not re-used during the minor earthworks, then chemical assessment is required against the criteria for CT1 – General solid Waste, outlined in the guideline.

During construction, with the implementation of the recommended mitigation measures below, there is unlikely to be a significant impact relating to waste.

Once operational the site will continue to be managed as currently, no additional impacts are expected for waste.

## 6.6.4 Safeguards and management measures

Table 6-17 Waste minimisation and management safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Waste minimization and management	<p>Waste would be managed in accordance with the Construction Environmental Management Plan (CEMP).</p> <p>Resource management hierarchy principles are to be followed:</p> <ul style="list-style-type: none"> <li>○ Avoid unnecessary resource consumption as a priority.</li> <li>○ Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery).</li> <li>○ Disposal is undertaken as a last resort (in accordance with the <i>Waste Avoidance &amp; Resource Recovery Act 2001</i>).</li> </ul> <p>All waste generated by the proposed work to be classified in accordance with the <i>NSW Waste Classification Guidelines Part 1: Classifying Wastes</i> (DECCW 2008).</p> <p>Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.</p> <p>Once the works have been completed, all waste material is to be removed from site and disposed of at a licenced facility. Waste is not to be buried on site.</p>	Contractor	Pre-construction and construction	

## 6.7 Traffic and access

### 6.7.1 Existing environment

Access to the proposal area would be via a network of sealed public roads. Major access roads near the area will be used as transport routes, and include:

- Canola Way.
- Wade Street.
- Cowabbie Street.
- Coolamon Road.
- Ardlethan Road.
- Mann Street.

### 6.7.2 Potential impacts

#### Construction

Existing access to the proposal area is via several points off Wade Street. During construction, the proposal would require deliveries of construction equipment, materials and machinery via the entrance points off Wade Road. This would result in additional heavy and light vehicle movements along Wade Road within the vicinity of the proposal area.

With the implementation of the Traffic Management Plan in the mitigation measures below, no significant impact on traffic and access is expected during construction.

### Operation

No noticeable impacts would occur to traffic volumes on the local roads or access following the completion of the work and during operation.

### 6.7.3 Safeguards and management measures

Table 6-18 Traffic and access safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Traffic and access	<p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the <i>Transport Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Transport for NSW, 2008). The TMP will include:</p> <ul style="list-style-type: none"> <li>• confirmation of haulage routes</li> <li>• measures to maintain access to local roads and properties.</li> <li>• site-specific traffic control measures (including signage) to manage and regulate traffic movement.</li> <li>• measures to maintain pedestrian and cyclist access.</li> <li>• requirements and methods to consult and inform the local community of impacts on the local road network.</li> <li>• access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads.</li> <li>• a response plan for any construction traffic incident</li> <li>• consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic.</li> <li>• monitoring, review and amendment mechanisms.</li> </ul>	Contractor	Pre-construction Construction	Section 4.8 of QA G36 <i>Environment Protection</i>
Traffic and access	All complaints are to be recorded on a Complaints Register and attended to promptly.	Contractor	Pre-construction / Construction	

## 6.8 Aboriginal cultural heritage

### 6.8.1 Stage 1 PACHCI

This Stage 1 assessment, prepared by NGH, follows the Actions outlined in the Transport for NSW's Procedure for Aboriginal Cultural Heritage consultation and investigation (PACHCI) to enable TfNSW (formerly RMS) to identify each step taken and ensure compliance with the *NSW National Parks and Wildlife Act* (1974). The project assessment actions follow a logical sequence of questions, the answer to each question determines the need for the next step in the process. The process also complies with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010) (Due Diligence Code).

## 6.8.2 Action 1: Routine or Minor Works

The aim of Action 1 of the PACHCI Stage 1 assessment is to undertake a desktop risk assessment to determine whether a TfNSW project would potentially impact on Aboriginal cultural heritage and require further assessment or investigation.

Ground disturbance includes digging, grading, bulldozing, scraping, drilling, building of a structure or removal of vegetation. Any activity that does not involve the disturbance of the ground surface is unlikely to impact Aboriginal objects or places.

TfNSW proposes to build an extension of the Coolamon Sidings rail loop. The Proposal area is shown in Figure 1-1.

Key features of the proposal would include:

- New compacted earthen rail formation and capping
- Realignment of longitudinal drainage and installation of scour protection
- Extension of the siding capacity to 1530m
- Construction of new track infrastructure. This would involve placing ballast, installation of sleepers, track laying and adjustment.
- Rehabilitation and realignment of the existing mainline; this would include sleeper and track replacement and the addition of new rail ballast.
- Other ancillary works such as installation or relocation of rail furniture and signage and the formation of drainage within the rail corridor
- Initiating protection of heritage item (Crane) as per the recommendation of Statement of Heritage Impact (SOHI).
- Minor vegetation clearing of 0.074ha including the removal of four trees within the rail corridor.
- Site rehabilitation/revegetation activities.

A material and plant laydown area would be required for the proposed work. The site would be established on one of the existing cleared areas within the Proposal area (Figure 1-1). The site would be used to store material, machinery, and park vehicles.

As the proposed works are within the existing rail corridor boundaries, the ground disturbance works that have been proposed would only be undertaken within the already disturbed landscape that exists within the rail corridor.

The PACHCI guidelines define “routine and minor” works to be, by their nature, unlikely to have a significant impact on the environment. Although these works will be undertaken within a disturbed landscape the level of ground disturbance required by these works as assessed by NGH in PACHCI Stage 1 assessment do not qualify as routine and minor works.

Further assessment is required (Action 2) to determine whether the project may harm Aboriginal cultural heritage.

## 6.8.3 Action 2: Register Searches

A search of relevant heritage registers for Aboriginal sites and places provides an indication of the presence of previously recorded sites. A register search is not conclusive, however, as it requires that an area has been inspected and sites are provided to the relevant body to add to the register. However, as a starting point, the search will indicate whether any sites are known within or adjacent to the investigation area. A search of the Native Title database did not identify any claims of native title within the Proposal area. The Aboriginal Heritage Information Management System (AHIMS) is maintained by Heritage NSW, part of the NSW Department of Premier and Cabinet, and provides a database of previously recorded Aboriginal heritage sites. A search provides basic information about any sites previously identified within a search area. The results of the search are able to be relied upon for 12 months for the purposes of a due diligence level assessment.

An extensive search of the of the AHIMS database, over an area approximately 5km x 5km centred on the proposal site, was completed on 2 March 2023. The detailed search results are provided in Appendix D. No registered AHIMS sites occur within the Proposal area. A breakdown of the site types identified in the AHIMS search is provided in Table 6-19 below, and Table 6-20 provides the details of AHIMS sites registered within 2km of the Proposal area; these sites are shown in Figure 6-12. There are no registered Aboriginal places in proximity of the Proposal area.

Table 6-19 Site types from the extensive AHIMS search of the Proposal area

Site Type	Number
Modified Tree (carved or scarred)	8
Artefact	4
Total	12

Table 6-20 Sites within 2km of the Proposal area

Site Number	Site Name	Site Type	Distance to Project (m)	Site Status on AHIMS
50-4-0020	Coolamon Golf Course	Modified Tree (Carved or scarred)	~230m N	Valid
50-4-0086	Coolamon Museum Collection	Artefact	~290m NW	Valid
50-4-0065	Garth Collection	Artefact	~340m NW	Valid
50-4-0023	Coolamon Gov Dam TSR 1	Modified Tree (Carved or scarred)	~400m NE	Valid

The results of desktop search revealed that the proposed works are not likely to impact any known Aboriginal places or objects. The AHIMS search identified a low concentration of known Aboriginal objects in the surrounding landscape, with known sites consisting of both stone artefacts and culturally modified trees.



**Coolamon Loop Extension  
AHIMS Extensive Search Results**

**Legend**

- Proposal Site
- Development footprint
- Potential compound/stockpile site
- Railway
- Roads
- AHIMS Registered Sites
- ▲ Artefact
- ▲ Modified Tree (Carved or Scarred)



Data Attribution  
© NGH 2023  
© JHR 2021  
© ESRI 2021

Ref: 21-367\_coolamon\_loop\_extension\_20230209 \AHIMS  
Extensive Search Results  
Author: bronwyn.p  
Date created: 03.03.2023  
Datum: GDA94 / MGA zone 55



**NGH**

Figure 6-12 AHIMS Register search results

#### 6.8.4 Action 3: Consult with Aboriginal cultural heritage advisor and regional environment staff

This Stage 1 PACHCI has been completed by NGH Senior Heritage Consultant Bronwyn Partell.

#### 6.8.5 Action 4: Assess the potential harm to Aboriginal objects and places

*In determining whether the project is likely to impact Aboriginal cultural heritage, the regional Aboriginal cultural heritage advisor and regional environmental staff must consider:*

- *Whether the project would affect known Aboriginal objects or places shown by the AHIMS search, and any additional searches.*
- *Whether high or low concentrations of known Aboriginal objects or places occur within the surrounding landscape as identified by the AHIMS search, and any additional searches.*
- *Whether the project is in a location where Aboriginal objects and places are likely to be located. (See natural landscape features below).*
- *Whether natural landforms likely to have significant Aboriginal cultural values are present.*
- *The extent of known disturbance to the study area.*
- *Observations from a site visit, if undertaken.*
- *Whether a sandstone outcrop or exposure is present on any land.*

*Natural landscape features that Aboriginal objects are likely to occur on land that is not 'disturbed' and is:*

- *Within 200m of waters.*
- *Located within a sand dune system.*
- *Located on a ridge top, ridge line or headland.*
- *Located within 200m below or above a cliff face.*
- *Within 20m of, or in a cave, rock shelter or a cave mouth.*
- *Remnant, mature stands of vegetation.*

The proposed works would not affect any known Aboriginal objects or places as outlined in Action 2, where the AHIMS register search identified a low concentration of Aboriginal objects and/or places within the surrounding landscape. There are no undisturbed natural landscape features on which Aboriginal objects are likely to occur within 200m of the Proposal area, and the proposed works would occur on land previously disturbed by construction of the GrainCorp facilities and the rail line. There are no identified sandstone outcroppings or exposures on any satellite imagery or geological mapping, however no site visit was undertaken as a part of this assessment, which has relied purely on available desktop information.

#### 6.8.6 Potential impacts

##### **Construction**

The proposed works would occur within the rail corridor where previous disturbance has already occurred for the construction and ongoing maintenance of the GrainCorp facilities and the rail corridor.

It was concluded in SoHI that the proposed works can proceed with caution. However, further assessment would be required if the development is to move away from the existing rail corridor and areas that have been disturbed by rail works. Both factors are listed as mitigation measures below.

Stop works must be implemented if potential objects of Aboriginal origin are identified during works.

##### **Operation**

No Impact to Aboriginal cultural heritage during operation.



## 6.8.7 Safeguards and management measures

Table 6-21 Aboriginal heritage safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Aboriginal heritage	The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Transport, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place. Work will only re-commence once the requirements of that Procedure have been satisfied.	Contractor	Construction	Section 4.9 of QA G36 <i>Environment Protection</i>

## 6.9 Non-Aboriginal heritage

### 6.9.1 Methodology

Heritage register searches were undertaken to identify any non-Aboriginal items or places in proximity to the proposal area, with a focus on the proposal area and its immediate surrounding landscape. The following resources were used as part of this assessment:

- The NSW State Heritage Inventory (SHI), this includes items on the State Heritage Register and items listed by state agencies and local Government, to identify any items currently listed within or adjacent to the proposal site.
- The Australian Heritage Database, this includes items on the National and Commonwealth Heritage Lists and the local heritage listings under the LEP, to identify any items that are currently listed within or adjacent to the proposal site.

A copy of these search results is provided in Appendix D and detailed below.

#### Australian Heritage Database search

A search of the Australian Heritage database was undertaken on 13 October 2022. One place is registered on the Register of the National Estate (RNE) a non-statutory list within the Coolamon LGA. No items listed under the RNE (Non-statutory archive) are located within or adjacent the proposal area.

#### State Heritage Register search

Natural, cultural and built heritage is protected in NSW under the *Heritage Act 1977*. Administration of the Act is managed by Heritage NSW, Community Engagement Group of the NSW Department of Premier and Cabinet. The Act constitutes the State Heritage Register (SHR), on which all items considered to be of State heritage significance are listed. In addition to the SHR, under Section 170 of the Heritage Act, State agencies and authorities in NSW are required to keep a register of heritage places for which they are responsible (these may be of local or State-level significance).

Items listed on the SHR or within an agency's s.170 register can be found on the NSW State Heritage Inventory (SHI).

Under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), local councils are required to maintain a list of locally significant heritage items within Schedule 5 of their Local Environmental Plan (LEP). Items listed in LEPs are also held in the SHI.

A search of the SHI was undertaken on 11 October 2022. The search returned 90 items listed by Local Government and State Agencies. No items of State significance (listed on the SHR) are present within or in proximity to the proposal area.

Two local heritage items, listed within Schedule 5 of the Coolamon LEP are located within the development footprint (Figure 6-13); a Crane (I43) and the Railway Station Group – Platform and Station (I41). The Cowabbie Street Heritage Conservation Area also intersects the development footprint.

Additionally, several items listed under the Coolamon LEP are located less than 100m from the development footprint Figure 6-13.

- Railway Station Group – Stationmasters Residence (I42).
- Coolamon Post Office (I44).
- Coolamon Hotel (I56).
- St Andrew’s Anglican Parish – Church and Hall (I49).
- St Andrew’s Anglican Parish – Residence (I48).
- Former Hospital (I52).
- St Michael’s Catholic Precinct – Presbytery (I54).
- St Michael’s Catholic Precinct – Convent (I55).

A Statement of Heritage Impact (SoHI) was prepared by John Holland Rail in 2021 including specialist heritage advice on the railway crane ‘Derrick’ (Appendix I – see Appendix 2).

A new Statement of Heritage Impact (SoHI) was prepared by Niche Environment and Heritage (2022) (Appendix I), which refers to the above SoHI in 2021; focuses on the current works proposed (Railway Station Group – Platform and Station listing).

Further advice was then requested by UGL from Stantec regarding the recommendations to remove or leave in-situ the railway crane ‘Derrick’ (Appendix I).

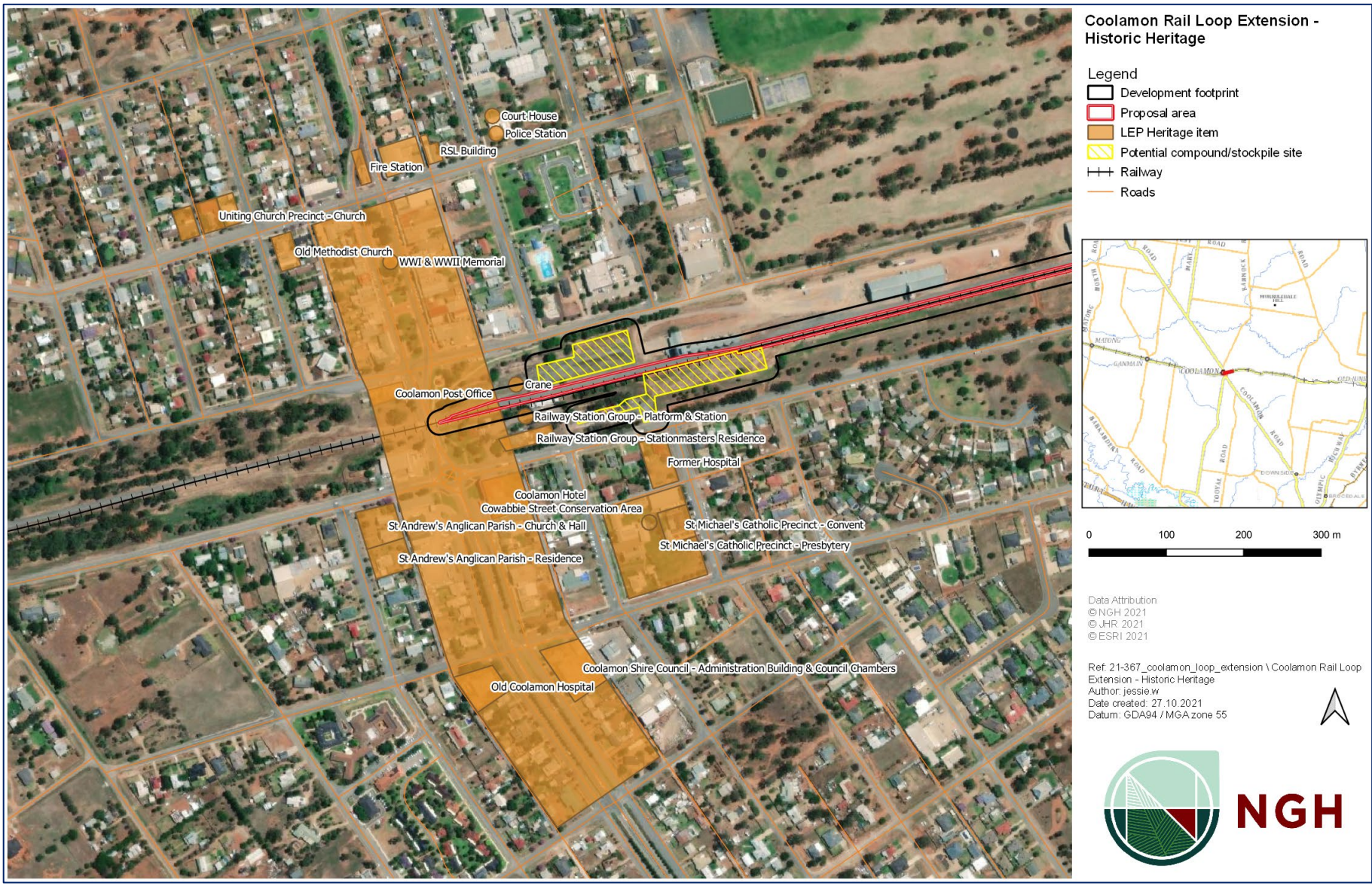


Figure 6-13 Location of historic heritage sites.

## 6.9.2 Potential impacts

The assessment of the potential historic (non-Aboriginal) heritage impact of the proposed Coolamon Rail Loop Extension proposal has identified material impact to a locally listed, redundant goods crane located within the curtilage of the locally listed Railway Station Group – Platform and Station, both of which are listed on Schedule 5 of the Coolamon LEP:

- a Crane (I43,) and
- the Railway Station Group – Platform and Station (I41).

Neither the Crane (I43) nor the Railway Station Group – Platform and Station (I41) are listed on the as items of NSW state heritage under the *Heritage Act 1977*.

A Statement of Heritage Impact (SoHI) assessment was prepared by John Holland Rail (2021) to assess the potential impact upon the crane (refer to Appendix 2 of Appendix I). The SoHI concluded that:

*The works will see the alteration of the existing crane base to allow the minimum track centres to be achieved and the structure to be protected from potential train impacts; there is no excavation or foundation works required. The location of the proposed structures, within the operating yard, is such that there will be no opportunity for close up viewing of the base of the crane from the public domain and it will not impact structural integrity of the crane or base. Therefore, the overall impact will be minor.*

The Cowabbie Street Heritage Conservation Area listed on the Coolamon DCP (2015) also intersects the development footprint. Additionally, several items listed under the Coolamon LEP are located less than 100m from the development footprint (refer Figure 6-13):

- Railway Station Group – Stationmasters Residence I42.
- Coolamon Post Office (I44).
- Coolamon Hotel (I56).
- St Andrew’s Anglican Parish – Church and Hall (I49).
- St Andrew’s Anglican Parish – Residence (I48).
- Former Hospital (I52).
- St Michael’s Catholic Precinct – Presbytery (I54).
- St Michael’s Catholic Precinct – Convent (I55).

Since the proposed works are to widen the railway tracks only and would materially impact upon the crane only, it has been assessed that no further assessment of heritage impact would be required for heritage items located outside of the proposal area.

It was recommended, however, that a statement of heritage impact be completed to assess the potential impact of the proposed works upon the Railway Station Group – Platform and Station listing.

A new SoHI has been prepared by Niche Environment and Heritage (2022) (attached as Appendix I) and concluded that it would be preferable to leave the crane in place and modify the base to maintain the structural integrity of the Derrick (Heritage Crane), which would retain and respect its heritage significance as long as the works are undertaken as per the report recommendations and by an appropriately experienced person.

With the implementation of the proposed mitigation measures below, any impacts on non-Aboriginal heritage would be appropriately mitigated.

## 6.9.3 Safeguards and management measures

Table 6-22 Non-Aboriginal heritage safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Non-Aboriginal heritage	A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific drafting guidance on measures and controls to be	Contractor	[Detailed design / Pre-construction]	Section 4.9 of QA G36 <i>Environment Protection</i>

Impact	Environmental safeguards	Responsibility	Timing	Reference
	implemented to avoid and mitigate impacts to non-Aboriginal heritage.			
Crane structure	A detailed photographic recording of the crane will be undertaken before and at the commencement of works and at completion.	Contractor/UGL	Pre-construction	
Crane structure	Careful removal of the existing bricks to allow for salvage and cleaned for reinstatement/reconstruction of the front of the crane 'in the exactly matching bond and coursing' to the remainder of the base.	Contractor	Construction	Appendix I (Noel Thomson 2021)
Crane structure	If any damage occurs to the heritage item, works must cease and specific heritage advice sought prior to works recommencing.	Contractor	Construction	Appendix I
Crane structure	If the crane becomes unstable due to the proposed works, then a further heritage assessment will need to be undertaken. This may identify additional approval or notification requirements.	Contractor	Construction	Appendix I
Non-Aboriginal heritage	<ul style="list-style-type: none"> <li>The Standard Management Procedure - Unexpected Heritage Items (Transport for NSW, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered.</li> <li>Work will only recommence once the requirements of that Procedure have been satisfied.</li> </ul>	Contractor	[Detailed design / Pre-construction]	Section 4.9 of QA G36 <i>Environment Protection</i>
Non-Aboriginal Heritage	<p>Recommend consideration be given to:</p> <ul style="list-style-type: none"> <li>Production of a Conservation Management Plan (CMP) including a programme of inspection and maintenance be instituted whereby the ongoing structural integrity of the Station Precinct, including the</li> </ul>	UGL	Operation	Appendix I

Impact	Environmental safeguards	Responsibility	Timing	Reference
	<p>crane, is checked and any degradation of woodwork, brickwork or metal is identified and rectified. A suggested initial yearly visual inspection programme and a more rigorous overall inspection at five yearly intervals is recommended. On-going experience may dictate a more or less frequent regime.</p> <ul style="list-style-type: none"> <li>• Production and installation of interpretive signage outlining the history and significance of the entire of the Coolamon Railway Precinct including the crane structure.</li> </ul>			

## 6.10 Visual amenity

### 6.10.1 Methodology

A qualitative assessment of the visual amenity of the site was undertaken by NGH. This included noting visual aspects during the site visit, taking photographs of the site and noting views of the site from sensitive receivers.

### 6.10.2 Existing environment

The dominant visual characteristic of the region consists of agricultural land used for cropping and grazing. Within the proposal area, the dominant visual features include the local road network, the rail corridor, and a mix of agricultural, industrial and residential land uses. There are 17 residential receivers within 100m of the site and 294 residential receivers within 500m.

### 6.10.3 Potential impacts

Minor changes to the immediate visual amenity of the proposal area would occur during construction only. Construction of the proposal would disturb groundcover, involve minor excavation works, and the placement of stockpiles areas.

The operation of the proposal would involve very few features that would affect the landscape visually. The new rail siding would be low to the ground and therefore not readily visible. In addition, they would be located adjacent to the existing mainline. Minor vegetation clearing including the removal of four trees within the rail corridor are likely to have negligible impact. No views are likely to be impeded as a result of the proposal. Overall, the proposal is expected to have a negligible impact on the visual amenity of Coolamon.

### 6.10.4 Safeguards and management measures

No additional safeguards are considered necessary.

## 6.11 Socio-economic impacts

### 6.11.1 Existing environment

Coolamon is a small rural township located in the Riverina. Wagga Wagga is located about 40km south-east of the proposal area. The railway is the mainline between Junee and Hay, transporting freight and passengers. The area is predominantly agricultural rural properties surrounding the proposal.

### 6.11.2 Potential impacts

The proposal has the potential to impact local residents and businesses (Specially the ones operating on the platform) during construction as a result of the following:

- Air Quality (refer to Section 6.4 for assessment).
- Noise (refer to Section 6.5 for assessment).
- Traffic (refer to Section 6.7 for assessment).

These impacts would be temporary and minor during the construction period. It is unlikely that the proposal would have a negative impact on surrounding business operations. The proposed work would generate employment and economic activity with an increase in demand for local goods and services.

The project would improve freight movements for grain. Longer trains would be accommodated by the loop extension without fouling/impacting the crossing or mainline. Longer trains and faster loading results in a reduction of freight prices for grain transport on the rail. Any reduction in grain freight prices would improve the profitability of grain production for farms serviced by the Griffith Junee rail line. Additional grain freight movement on the rail reduce truck grain movements improving safety and congestion on the road network.

### 6.11.3 Safeguards and management measures

No additional safeguards are considered necessary.

## 6.12 Cumulative impacts

### 6.12.1 Existing environment

Cumulative impacts are incremental environmental impacts caused by the combination of past, present, and reasonably foreseeable future actions. Cumulative impacts accumulate over time, from one or more sources. While impacts may be insignificant in isolation, significant impacts may occur when individual effects are considered in combination.

The assessment of cumulative impacts focused on the interaction of the proposed activity with other projects in the vicinity of the proposed activity, and where construction and/or operational timeframes are likely to be concurrent.

A review of the NSW Department of Planning and Environment's (DP&E) Major Project Register conducted on 13 October 2022 found no projects were identified within the LGA, with the proposed Ardlethan Waste Facility having been withdrawn.

### 6.12.2 Potential impacts

There are no known other major projects nearby the proposal, and no known other projects in the vicinity of the works. If other works are undertaken concurrently with the proposal, the cumulative impact is considered to be minimal given the small scale of the proposed activity.

### 6.12.3 Safeguards and management measures

No additional safeguards are considered necessary.

## 7. Environmental management

### 7.1 Environmental management plans (or system)

Safeguards and management measures have been identified in the REF in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these safeguards and management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe the safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by the Transport for NSW Environment and Sustainability Officer, Southwest region, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements. [The CEMP would be developed in accordance with the specifications set out in the QA Specification G36 - Environmental Protection (Management System), QA Specification G38 - Soil and Water Management (Soil and Water Plan), QA Specification G40 - Clearing and Grubbing, QA Specification G10 - Traffic Management.



## 7.2 Summary of safeguards and management measures

Environmental safeguards and management measures outlined in this REF will be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures are summarised in Table 7-1.

Table 7-1 Summary of safeguards and management measures

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
GEN1	General - minimise environmental impacts during construction	<p>A CEMP will be prepared and submitted for review and endorsement of the Transport for NSW Senior Manager Environment and Sustainability prior to commencement of the activity. As a minimum, the CEMP will address the following:</p> <ul style="list-style-type: none"> <li>any requirements associated with statutory approvals</li> <li>details of how the project will implement the identified safeguards outlined in the REF</li> <li>issue-specific environmental management plans</li> <li>roles and responsibilities</li> <li>communication requirements</li> <li>induction and training requirements</li> <li>procedures for monitoring and evaluating environmental performance, and for corrective action</li> <li>reporting requirements and record-keeping</li> <li>procedures for emergency and incident management</li> <li>procedures for audit and review.</li> </ul> <p>The endorsed CEMP will be implemented during the undertaking of the activity.</p>	Contractor / Transport for NSW project manager	Pre-construction / detailed design	
TG&S1	Topography, Geology and soils	All works will occur within the development footprint as outlined in Figure 1-1. Any works that are to occur outside this proposal site will require further assessment and additional approval.	Contractor	Pre-construction and construction	
TG&S2	Topography, Geology and soils	Development of a site-specific sediment and erosion control plan, in accordance with the Blue Book (Landcom 2004), should be considered prior to the works commencing.	Contractor	Pre-construction	
TG&S3	Topography, Geology and soils	Installation of erosion and sediment controls prior to commencement of construction.	Contractor	Pre-construction	
TG&S4	Topography, Geology and soils	Maintenance of erosion and sediment controls throughout the duration of the works and until the site is stable.	Contractor	Pre-construction and construction	

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
TG&S5	Topography, Geology and soils	Works will not be undertaken in forecast heavy rain or flooding events.	Contractor	Pre-construction and construction	
TG&S6	Topography, Geology and soils	Delineation of works areas, including access and stockpile areas, and fencing of 'no go' zones to stop unnecessary disturbance outside the works footprint.	Contractor	Pre-construction	
TG&S7	Topography, Geology and soils	Placement of compound site as well as potential pollutants (such as soil and hazardous materials) will be located away from drainage lines (more than 40m where practical) on relatively flat ground and preferably already cleared of vegetation.	Contractor	Pre-construction	
TG&S8	Topography, Geology and soils	Separation of topsoil and subsoil during any stockpiling activities. Topsoil shall be reused to assist stabilisation of disturbed areas.	Contractor	Pre-construction and construction	
TG&S9	Topography, Geology and soils	If contaminated areas are encountered or created during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions have been implemented.	Contractor	Pre-construction and construction	
TG&S10	Topography, Geology and soils	An Emergency Spill Management Plan will be developed for the project and will contain measures to avoid spillages of hydrocarbons onto any ground surfaces or into any waterways. The plan will include, but not limited to: <ul style="list-style-type: none"> <li>o No storage of hydrocarbons on the site to reduce risk of flooding impacts.</li> <li>o Impervious bunded areas for refuelling, away from waterways and drainage lines.</li> <li>o Spill kits kept onsite and, on all machinery,</li> <li>o Training of staff in the response, notification, spill kit location and management of hydrocarbon spills.</li> </ul>	Contractor	Pre-construction and construction	
TG&S11	Topography, Geology and soils	Progressive stabilisation of disturbed areas is recommended to include: <ul style="list-style-type: none"> <li>o Respreading topsoil and mulch (thinly layered) to assist natural revegetation.</li> <li>o Maintenance of sediment and erosion controls until soil surfaces are deemed suitable.</li> </ul> <p>Consideration of seeding and supplementary planting based on success of previous actions.</p>	Contractor	Post-construction	

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
TG&S12	Topography, Geology and soils	<p>Waste classification is required for all soil and soil impacted material that will require offsite disposal, including:</p> <ul style="list-style-type: none"> <li>○ Assessment of material for waste classification prepared by a suitably qualified environmental consultant and comply with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009).</li> </ul> <p>Building and demolition waste can be disposed offsite as pre-classified waste in accordance with NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2009). All building and demolition waste that is stockpiled with soil material will be required to be divided and classified separately.</p>	Contractor	Pre-construction Construction	
TG&S13	Topography, Geology and soils	An unexpected finds protocol will be developed and implemented, in the event that Asbestos Containing Material (ACM) is discovered onsite.	Contractor	Pre-construction Construction	
HG&F1	Hydrology, groundwater and flooding	<ul style="list-style-type: none"> <li>● A flood contingency plan will be prepared to identify any potential flood threats and the evacuation procedure for dispersible materials, hazardous materials and equipment containing hazardous or dispersible materials. The flood contingency plan will include: <ul style="list-style-type: none"> <li>○ Detail who will be responsible for monitoring flood threat and how this will be done. It is expected that flood warning information will be sourced from the BoM website.</li> <li>○ Regular consultation of the BoM website for weather forecasts and flood warnings.</li> </ul> </li> </ul> <p>A process for removing equipment and materials off site and out of flood risk areas quickly.</p>	Contractor	Pre-construction and construction	
BIO1	Biodiversity	<p>A Flora and Fauna Management Plan will be prepared in accordance with Transport for NSW's <i>Biodiversity Guidelines: Protecting and Managing Biodiversity on Projects</i> (RMS, 2011) and implemented as part of the CEMP. It will include, but not be limited to:</p> <ul style="list-style-type: none"> <li>● plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features and revegetation areas</li> <li>● requirements set out in the Landscape Guideline (RMS, 2008)</li> <li>● pre-clearing survey requirements</li> <li>● procedures for unexpected threatened species finds and fauna handling</li> <li>● procedures addressing relevant matters specified in the DPI Policy and guidelines for fish habitat conservation and management (2013)</li> </ul>	Contractor	Detailed design / pre-construction	Section 4.8 of QA G36 Environment Protection

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		protocols to manage weeds and pathogens			
BIO2	Biodiversity	No further removal of native vegetation outside the development footprint is to occur without further assessment.	Contractor	Construction	
BIO3	Biodiversity	Establish the construction vehicle parking, compound and stockpiles on cleared areas or disturbed grassland where minimal vegetation removal is required within the development footprint.	Contractor	Detailed design / pre-construction	
BIO4	Biodiversity	Clearing of native vegetation should be carried out in accordance with Biodiversity Guidelines 2011 – Guide 4 (Clearing of vegetation and removal of bushrock) (RTA 2011).	Contractor	Pre-construction	
BIO5	Biodiversity	Pruning of mature trees is to be in accordance with Part 5 of the Australian Standard 4373-2007 Pruning of amenity trees.	Contractor	Construction	
BIO6	Biodiversity	Priority weeds are to be managed according to requirements under the Biosecurity Act, 2015 and Guide 6 (Weed Management) of the Transport for NSW Biodiversity Guidelines 2011.	Contractor	Construction	
BIO7	Biodiversity	Any herbicide use will be undertaken according to Environmental Fact Sheet 18 - Herbicide application (RMS, 2013).	Contractor	Detailed design / pre-construction	
BIO8	Biodiversity	Visual inspections and cleaning of vehicles and plant would ensure that mud and organic material has been removed prior to exiting onto public roads (minimising the spread of weeds and soil-borne disease).	Contractor	Detailed design / pre-construction	
BIO9	Biodiversity	All coarse woody debris is to be retained on site where possible in accordance with Transport for NSW Biodiversity Guidelines – Protecting and Managing Biodiversity on RTA Projects: Guide 5: Re-use of woody debris and bush rock (RTA 2011). Any vegetation too large to be mulched will be placed as coarse woody debris (CWD) in suitable areas within the adjacent vegetation to be retained.	Contractor	Detailed design / pre-construction	
BIO10	Biodiversity	An unexpected finds procedure would be implemented if a threatened flora or fauna species or ecological community that had not been identified and assessed by the REF is unexpectedly encountered during construction.	Contractor	Pre-construction / Construction	
BIO11	Biodiversity	An Environmental Work Method Statement (EWMS) for Clearing and Grubbing would be prepared and approved by the project Environmental Officer prior to starting work. The EWMS must include at least the following:	Contractor	Detailed design / pre-construction	

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>○ A description of the work activity, including any plant and equipment to be used.</li> <li>○ Identification of any environmentally sensitive areas.</li> <li>○ The sequence of tasks for the activity.</li> <li>○ Identification of potential environmental risks/impacts due to the activity.</li> <li>○ Mitigation measures to reduce the identified environmental risk, including assigned responsibilities to site personnel.</li> <li>○ A process for assessing the performance of the implemented mitigation measures (performance outcomes).</li> <li>○ A detailed site diagram showing all work areas, controls, sensitive areas, and no-go-zones</li> <li>○ The Flood Response and Action Plan including a process for monitoring and managing wet weather events during works.</li> </ul> <p>All site personnel must sign-on to the EWMS and be aware of their responsibilities within the EWMS.</p>			
C&AQ1	Climate and air quality	Works will be minimised during windy periods to minimise dust creation and ensure no dust impacts occur along public roads or at sensitive receivers.	Contractor	Pre-construction and construction	
C&AQ2	Climate and air quality	All plant and equipment would be ensured to comply with Part 4 of the Protection of the Environment Operations (Clean Air) Regulation 2002.	Contractor	Pre-construction and construction	
C&AQ3	Climate and air quality	Emissions would be kept within the standards and regulations under the Protection of the Environment Operations Act 1997.	Contractor	Pre-construction and construction	
C&AQ4	Climate and air quality	All delivery vehicles would be covered during transportation.	Contractor	Pre-construction and construction	
C&AQ5	Climate and air quality	Vegetation or other materials will not be burnt on site.	Contractor	Pre-construction and construction	
C&AQ6	Climate and air quality	Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpile sites (using non-potable water where available).	Contractor	Pre-construction and construction	
N&V1	Noise and vibration	Mitigation measures for residential receivers include the following:	Contractor	Detailed design / pre-construction	Section 2.1 of QA G38 Soil

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>○ Project Notification (PN) &amp; Verification Monitoring (V): Receive a letterbox drop (or equivalent) detailing work activity, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of five working days prior to the start of works. Noise measurements would be consistent with the procedures documented in AS1055.1-1997 Acoustics-Description and Measurement of Environmental Noise-General Procedures.</li> <li>○ <u>Specific Notification (SN)</u>: Individual briefings or phone calls.</li> <li>○ <u>Respite Period (RP), Respite offers (RO) &amp; Duration Reduction (DR)</u>: during OOHW periods for receivers with moderately intrusive impacts or greater.</li> </ul> <p><u>Alternative Accommodation</u>: should be sought in extreme cases, i.e., for the closest receiver during rail works in OOHW Period 2.</p>			<i>and Water Management</i>
N&V2	Noise and vibration	Consider not conducting the processes outlined in the rail works scenario outside of standard working hours.	Contractor	Pre-construction / Construction	
N&V3	Noise and vibration	Consider not operating the noisiest machinery, ballast tamper and ballast regulator, outside standard working hours.	Contractor	Pre-construction / Construction	
N&V4	Noise and vibration	Where possible, avoid operating plant concurrently.	Contractor	Pre-construction / Construction	
N&V5	Noise and vibration	<p>The dominant noise sources would be:</p> <ul style="list-style-type: none"> <li>○ Switched off when not required.</li> </ul> <p>Used only when necessary.</p>	Contractor	Pre-construction / Construction	
WM&M1	Waste minimization and management	<ul style="list-style-type: none"> <li>● Waste would be managed in accordance with the Construction Environmental Management Plan (CEMP).</li> <li>● Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> <li>○ Avoid unnecessary resource consumption as a priority.</li> <li>○ Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery).</li> <li>○ Disposal is undertaken as a last resort (in accordance with the Waste Avoidance &amp; Resource Recovery Act 2001).</li> </ul> </li> <li>● All waste generated by the proposed work to be classified in accordance with the NSW Waste Classification Guidelines Part 1: Classifying Wastes (DECCW 2008).</li> </ul>	Contractor	Pre-construction and construction	

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		<ul style="list-style-type: none"> <li>Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.</li> <li>Once the works have been completed, all waste material is to be removed from site and disposed of at a licenced facility. Waste is not to be buried on site.</li> </ul>			
T&A1	Traffic and access	<p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Transport <i>Traffic Control at Work Sites Manual</i> (RTA, 2010) and <i>QA Specification G10 Control of Traffic</i> (Transport for NSW, 2008). The TMP will include:</p> <ul style="list-style-type: none"> <li>confirmation of haulage routes</li> <li>measures to maintain access to local roads and properties</li> <li>site-specific traffic control measures (including signage) to manage and regulate traffic movement</li> <li>measures to maintain pedestrian and cyclist access</li> <li>requirements and methods to consult and inform the local community of impacts on the local road network</li> <li>access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads.</li> <li>a response plan for any construction traffic incident</li> <li>consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic</li> </ul> <p>monitoring, review and amendment mechanisms.</p>	Contractor	Pre-construction Construction	Section 4.8 of QA G36 <i>Environment Protection</i>
T&A2	Traffic and access	All complaints are to be recorded on a Complaints Register and attended to promptly.	Contractor	Pre-construction / Construction	
AH2	Aboriginal heritage	<p>The <i>Standard Management Procedure - Unexpected Heritage Items</i> (Transport, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction. This applies where Transport does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.</p> <p>Work will only re-commence once the requirements of that Procedure have been satisfied.</p>	Contractor	Construction	Section 4.9 of QA G36 <i>Environment Protection</i>
NAH1	Non-Aboriginal heritage	A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific drafting guidance on	Contractor	[Detailed design / Pre-construction]	Section 4.9 of QA G36

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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		measures and controls to be implemented to avoid and mitigate impacts to non-Aboriginal heritage.			<i>Environment Protection</i>
NAH2	Non-Aboriginal heritage	<ul style="list-style-type: none"> <li>The Standard Management Procedure - Unexpected Heritage Items (Transport for NSW, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of non-Aboriginal origin are encountered.</li> </ul> <p>Work will only re-commence once the requirements of that Procedure have been satisfied.</p>	Contractor	[Detailed design / Pre-construction]	Section 4.9 of QA G36 <i>Environment Protection</i>
NAH3	Non-Aboriginal Heritage	<p>Following actions should be undertaken prior to the commencement of the works:</p> <ul style="list-style-type: none"> <li>Inspection of the structure by the structural engineer responsible for the design of the works, including determination of the brickwork thickness/profile of the southern brick wall.</li> </ul> <p>Preparation of structural details by the structural engineer for the removal of existing brickwork, construction of new brickwork and any modifications to the existing concrete slab.</p>	Contractor	Pre-construction	
NAH4	Crane structure	A detailed photographic recording of the crane will be undertaken before and at the commencement of works and at completion.	Contractor/UGL	Pre-construction	
NAH5	Crane structure	Careful removal of the existing bricks to allow for salvage and cleaned for reinstatement/reconstruction of the front of the crane 'in the exactly matching bond and coursing' to the remainder of the base.	Contractor	Construction	Appendix I (Noel Thomson 2021)
NAH6	Crane structure	If any damage occurs to the heritage item, works must cease and specific heritage advice sought prior to works recommencing.	Contractor	Construction	Appendix I
NAH7	Crane structure	If the crane becomes unstable due to the proposed works, then a further heritage assessment will need to be undertaken. This may identify additional approval or notification requirements.	Contractor	Construction	Appendix I
NAH8	Non-Aboriginal Heritage	<p>Recommend consideration be given to:</p> <ul style="list-style-type: none"> <li>Production of a Conservation Management Plan (CMP) including a programme of inspection and maintenance be instituted whereby the ongoing structural integrity of the Station Precinct, including the crane, is checked and any degradation of woodwork, brickwork or metal is identified and rectified. A suggested initial yearly visual inspection programme and a more rigorous overall inspection at five yearly intervals is recommended. On-going experience may dictate a more or less frequent regime.</li> </ul>	UGL	Operation	Appendix I



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No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Production and installation of interpretive signage outlining the history and significance of the entire of the Coolamon Railway Precinct including the crane structure.			

### 7.3 Licensing and approvals

Table 7-2 Summary of licensing and approvals required

Instrument	Requirement	Timing
<i>Protection of the Environment Operations Act 1997 (s43)</i>	N/A	
<i>Heritage Act 1977 (s60)</i>	N/A	
<i>Heritage Act 1977 (s57)</i>	N/A	
<i>Heritage Act 1977 (s139)</i>	N/A	
<i>Heritage Act 1977 (s139(4))</i>	N/A	

UGL's EPL would apply to the proposal including notifications to residents for construction hours.

## 8. Conclusion

This chapter provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposal is also considered in the context of the objectives of the EP&A Act, including the principles of ecologically sustainable development as defined in Section 193 of the Environmental Planning and Assessment Regulation 2021.

### 8.1 Justification

The proposed Coolamon rail loop extension is subject to assessment under Part 5 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. This has included consideration of conservation agreements and plans of management under the NPW Act, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

No significant impact on state or federally listed threatened biota is considered likely. A Species Impact Statement is not required. No Referral to the federal Environment minister is considered necessary.

All predicted environmental impacts can be avoided, mitigated and/or managed such that the proposal would not lead to significant impacts on the environment. Temporary and minor noise and traffic impacts are likely to arise during construction as a result of the proposal. Impacts on the two identified heritage items have been assessed and appropriate mitigation measures recommended. The identified safeguards and management measures for potential environmental impacts would be rigorously implemented by the proponent to ensure that the impacts associated with the proposal do not have a significant impact on the environment and biodiversity within the study area.

### 8.2 Objects of the EP&A Act

Table 8-1 Objects of the Environmental Planning and Assessment Act 1979

Instrument	Requirement
1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The proposal would improve efficiency of the rail line by providing a longer rail passing bay to reduce wait times for trains
1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	Ecologically sustainable development is specifically addressed in Section 8.2.1.
1.3(c) To promote the orderly and economic use and development of land.	This proposal would enhance the capacity of rail line by reducing waiting times to pass the line, improving efficiency of the rail line.
1.3(d) To promote the delivery and maintenance of affordable housing.	Not relevant to the project.
1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	Measures would be implemented to protect and conserve the environment and native animals and plants. The potential impacts on vegetation, threatened species population and ecological communities are discussed in section 6.3.
1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	Potential impacts to heritage are addressed in Section 6.8 and 6.9. Measures would be implemented to sustainably manage known and unknown heritage resources.

Instrument	Requirement
1.3(g) To promote good design and amenity of the built environment.	The proposal design considers all relevant design and construction standards as well as users and adjoining landowner amenity
1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Not relevant to the proposal
1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Not relevant to the proposal.
1.3(j) To provide increased opportunity for community participation in environmental planning and assessment.	Not relevant to the proposal.

## 8.2.1 Ecologically sustainable development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the project.

ESD requires the effective integration of economic and environmental considerations in decision-making processes. The four main principles supporting the achievement of ESD are discussed below.

### The precautionary principle

The precautionary principle deals with reconciling scientific uncertainty about environmental impacts with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

This principle was considered during route options development (refer to Chapter 2). The precautionary principle has guided the assessment of environmental impacts for this REF and the development of mitigation measures.

The following are examples statements only:

- Issues that may cause serious or irreversible environmental damage as a result of the proposed project and where there is scientific uncertainty as to the nature of the damage have been identified.
- The best-available technical information, environmental standards and measures have been used to minimise environmental risks.
- Preferred route alignment that minimises vegetation clearance, with particular consideration of sensitive areas, was selected.
- Preferred route alignment to avoid or minimise potential damage to known items or areas of cultural significance was selected.
- Route alignment that minimises potential impacts on existing residential properties and other existing land uses, while also taking into consideration potential impacts on proposed future land use, was selected.
- Conservative ‘worst case’ scenarios were considered while assessing environmental impact.
- Specialist studies were incorporated to gain a detailed understanding of the existing environment.

### Intergenerational equity

Social equity is concerned with the distribution of economic, social and environmental costs and benefits. Intergenerational equity introduces a temporal element with a focus on minimising the distribution of costs to future generations.

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. The proposed works would not impact on natural or cultural features to a level that would compromise the health, diversity or productivity of the environment to a level that would impact on future generations.

#### **Conservation of biological diversity and ecological integrity**

The assessment has identified that the works would not impact significantly on the biological diversity and ecological integrity of the locality. Furthermore, safeguards have been developed that would assist in protecting aquatic habitats.

#### **Improved valuation, pricing and incentive mechanisms**

The principle of internalising environmental costs into decision making requires consideration of all environmental resources that may be affected by the carrying out of a project, including air, water, land and living things.

This relates to giving monetary value to environmental resources. These factors ensure that the development would conform to the principles of ecologically sustainable development.

## **8.3 Conclusion**

The proposed Rail Loop Extension at Coolamon is subject to assessment under Division 5.1 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration (where relevant) of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, impacts on threatened species and ecological communities and their habitats, and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the EPBC Act.

A number of potential environmental impacts from the proposal have been avoided or reduced during the concept design development and options assessment. The proposal, as described in the REF, best meets the project objectives but would still result in some impacts on Non-Aboriginal Heritage; safeguards and management measures as detailed in this REF would ameliorate or minimise these expected impacts. The proposal would also increase capacity of the rail line. On balance, the proposal is considered justified and the following conclusions are made.

#### **Significance of impact under NSW legislation**


The proposal would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared nor approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required. The proposal is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

#### **Significance of impact under Australian legislation**


The proposal is not likely to have a significant impact on matters of national environmental significance nor the environment of Commonwealth land within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). A referral to the Australian Department of Climate Change, Energy, the Environment and Water is not required.

## 9. Certification

This review of environmental factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Name: Fiona McKay  
Position: Principal Environmental Consultant, CEnvP-IA (IA11076), REAP (R80021)  
Company name: NGH Pty Ltd  
Date: 15 March 2023  
Signature: 

I certify that I have reviewed and endorsed the contents of this REF and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Section 170 of the EP&A Regulation, and the information is neither false nor misleading. I accept it on behalf of Transport for NSW.

Name: Simon Bingham   
Position: Senior Program Manager  
Transport region/program: Regional Strategic Contracts | Network and Assets Regional and Outer Metropolitan  
Date: 13/06/2023

# 10. EP&A Regulation publication requirement

Table 10-1 EP&A Regulation publication requirement

Requirement	Yes/No
Does this REF need to be published under section 171(4) of the EP&A Regulation?	No

# 11. References

- Australian Soil Resource Centre (ASRIS) (2013). National Soil Grids <http://www.asris.csiro.au/mapping/viewer.htm> [accessed September 2021].
- Bureau of Meteorology (BOM) (2020). Climate Data Online <http://www.bom.gov.au/climate/data/index.shtml> [accessed October 2021].
- BOM (2020). Groundwater Dependent Ecosystems Atlas <http://www.bom.gov.au/water/groundwater/gde/map.shtml> [accessed October 2021].
- Cropper, S C (1993). Management of Endangered Plants. CSIRO, Melbourne.
- DECCW 2010, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.
- Department of the Environment and Energy (DEE) (2020). Australian Heritage Database. <http://www.environment.gov.au/cgi-bin/ahdb/search.pl> [accessed October 2021].
- Department of Environment and Energy (2020). Protected Matters Search Tool <https://www.environment.gov.au/epbc/protected-matters-search-tool> [accessed October 2021].
- Department of Primary Industries (DPI) (2021). NSW Weedwise <https://weeds.dpi.nsw.gov.au/> [accessed October 2021].
- Department of Primary Industries (DPI) (2018). New South Wales Weed Control Handbook. <https://www.dpi.nsw.gov.au/biosecurity/weeds/weed-control/management-guides/noxious-enviro-weed-control> [accessed October 2021].
- DPIE (1998). Acid Sulfate Soil Manual. <https://www.environment.nsw.gov.au/resources/epa/Acid-Sulfate-Manual-1998.pdf> [accessed March 2023].
- Environment Protection Authority (EPA) (2020). Contaminated Land Record <http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx> [accessed September 2021].
- Environment Protection Authority (EPA) (2017). *Noise Policy for Industry*. Sydney.
- Environment Climate Change and Water (2015). *NSW Road Noise Policy*. Sydney: Department of Environment, Climate Change and Water NSW.
- EPA (2013). *NSW Rail Infrastructure Guideline*. Sydney: Environmental Protection Authority.
- Department of Environment and Climate Change (2009). *Interim Construction Noise Guideline*. Sydney: Department of Environment and Climate Change <http://www.environment.nsw.gov.au/resources/noise/09265cng.pdf> [accessed September 2021].
- Office of Environment and Heritage (OEH), (2020a), Threatened Species Profile Search. <https://www.environment.nsw.gov.au/threatenedSpeciesApp/> [accessed September 2021].
- OEH (2020b). BioNet: Atlas of NSW Wildlife [http://www.environment.nsw.gov.au/atlaspublicapp/UI\\_Modules/ATLAS\\_/AtlasSearch.aspx](http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx) [accessed September 2021].
- JHR (2017). Operational rail noise assessment (V.14). John Holland Rail.
- Nancarrow, J (2002). *The Ecological Health of the Yass River: A study of the Physical and Biological Integrity of the Yass River: Murrumbidgee River Basin, New South Wales*. NSW Department of Land and Water Conservation, DLWC Queanbeyan, NSW. ISBN:0734753241.
- NSW Geology Plus (2020), *Geological Survey of NSW* [https://api.tiles.mapbox.com/v4/tybion.a0n6d2t9/page.html?access\\_token=pk.eyJ1IjoidHliaW91ulwiYSI6IkJPWkFIRGMifQ.X8c8fyJg11BDWz3KcOQBw#12/-34.8238/148.9581](https://api.tiles.mapbox.com/v4/tybion.a0n6d2t9/page.html?access_token=pk.eyJ1IjoidHliaW91ulwiYSI6IkJPWkFIRGMifQ.X8c8fyJg11BDWz3KcOQBw#12/-34.8238/148.9581) [accessed September 2021].
- NSW Government (2020a), *Major Projects* <https://www.planningportal.nsw.gov.au/major-projects> [accessed October 2021].
- NSW Government (2020b). Search for NSW heritage <https://www.heritage.nsw.gov.au/search-for-heritage/search-for-nsw-heritage/> [accessed October 2021].



Roads and Maritime (2013). *Guideline for the Management of Contamination*. Sydney: Transport Roads and Maritime Services.

Roads and Maritime (2015). *Noise Criteria Guideline*. Sydney: Transport Roads and Maritime Services.

Roads and Maritime (2015). *Noise Mitigation Guideline*. Sydney: Transport Roads and Maritime Services.

## Terms and acronyms used in this REF

### Drafting guidance:

Provide a list of the technical terms and acronyms used in the REF and their definitions. The terms must be consistent with *EIAG Abbreviations and glossary of terms (EIA-F04)*. The below are examples only and should be included only if relevant.

Table 11-1 Terms and acronyms used in this REF

Term / Acronym	Description
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
CEMP	Construction environmental management plan
EIA	Environmental impact assessment
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i> . Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> . Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
FM Act	<i>Fisheries Management Act 1994 (NSW)</i>
Heritage Act	<i>Heritage Act 1977 (NSW)</i>
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LoS	Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers
MNES	Matters of national environmental significance under the <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
OEH	Office of Environment and Heritage within the Department of Planning and Environment.
PEA Act	<i>Protection of the Environment Administration Act 1991</i> .
RMS	NSW Roads and Maritime Services, now Transport for NSW
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
SEPP (Biodiversity and Conservation)	State Environmental Planning Policy (Biodiversity and Conservation) 2021
SEPP (Planning Systems)	State Environmental Planning Policy (Planning Systems) 2021

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Term / Acronym	Description
SEPP (Precincts – Central River City)	State Environmental Planning Policy (Precincts – Central River City) 2021
SEPP (Precincts – Eastern Harbour City)	State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021
SEPP (Precincts – Regional)	State Environmental Planning Policy (Precincts – Regional) 2021
SEPP (Resilience and Hazards)	State Environmental Planning Policy (Resilience and Hazards) 2021
SEPP (Transport and Infrastructure)	State Environmental Planning Policy (Transport and Infrastructure) 2021
Transport	Transport for NSW



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