# CHAPTER 24

# Hazards

**ALBURY TO ILLABO** ENVIRONMENTAL IMPACT STATEMENT

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# 24. Hazards

## 24.1 Summary

Potential hazards during construction would be temporary and associated with the use of low volumes of dangerous goods and hazardous substances, handling of contaminated soil and hazardous wastes, risk of structural damage and bushfire risks. Emergency and incident response plans and procedures would be developed and implemented, including flood and bushfire risk.

The hazards associated with the proposal site would generally remain the same during continued operation of the rail corridor. Potential operational impacts would be managed by undertaking the design with an appropriate emphasis on safety according to relevant design standards and requirements.

## 24.2 Approach

This chapter is an assessment of the potential hazards associated with the Albury to Illabo (A2I) section of the Inland Rail program (the proposal).

### 24.2.1 Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements (SEARs) related to hazard and risk, and where in the environmental impact statement (EIS) these requirements have been addressed, are detailed in Appendix A: Secretary's Environmental Assessment Requirements.

### 24.2.2 Relevant legislation, policies and guidelines

The assessment of hazards and risk included consideration of the following relevant legislation, policies and guidelines:

- *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (Department of Planning, 2011) ('the Hazardous and Offensive Development guideline'), which relates to *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP)
- *Dangerous Goods (Road and Rail Transport) Act 2008* (NSW) and Dangerous Goods (Road and Rail Transport) Regulation 2014
- *Australian Code for the Transport of Dangerous Goods by Road & Rail* (National Transport Commission, 2020) ('the Australian Dangerous Goods Code')
- *Planning for bush fire protection* (NSW Rural Fire Service, 2019), and bushfire prone land mapping developed and published by the relevant local councils
- Relevant bush fire risk management plans, including:
  - *Hume Zone Bush Fire Risk Management Plan* (Hume Zone Bush Fire Management Committee, 2016)
  - *Riverina Bush Fire Risk Management Plan* (Riverina Bush Fire Management Committee, 2015).

### 24.2.3 Methodology

#### Key tasks

A desktop assessment was completed to assess potential impacts to health and safety from construction and operation of the proposal. The key tasks included:

- reviewing the legislative and policy context
- reviewing construction and operational activities with the potential to cause health and safety impacts
- considering the potential impacts associated with hazardous materials, as defined by the guidelines to the Resilience and Hazards SEPP developed under the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act)
- reviewing bushfire prone land maps and bushfire risk management plans
- identifying potential risks to public safety, the surrounding community or the environment, using the ARTC *Risk Management Procedure* (RSK-PR-001)
- providing mitigation measures for implementation during construction and operation.

The assessment does not provide a detailed account of potential health and safety risks to onsite workers for the proposal. Potential risks to onsite workers are regulated by workplace health and safety legislation (including the *Work Health and Safety Act 2011* (NSW)) and are not relevant to approval of the proposal. Site management would be the responsibility of the construction contractor, who would be required (under the *Work Health and Safety Act 2011*) to manage the site in accordance with relevant regulatory requirements.

### 24.2.4 Key risks

An environmental risk assessment was undertaken for the proposal (refer Appendix E: Environmental risk assessment). Hazards and risks with an assessed level of medium or above, identified by the environmental risk assessment, included:

- onsite handling and transport of contaminated soil and hazardous wastes (including asbestos)
- potential impacts to utilities
- potential incidents associated with transport and storage of hazardous substances and dangerous goods during construction
- potential risks to construction by bushfire, or bushfire risks due to construction activity in bushfire-prone areas
- impacts to emergency access due to access restrictions
- increased rail accidents caused by increased rail movements (including road–rail interfaces)
- potential risks of bushfire to the operation of the proposal.

## 24.3 Existing environment

The existing hazard profile of the proposal site is primarily associated with the operation of the rail corridor, which includes the transport of freight and passengers. Maintenance activities occur regularly within the operational rail corridor.

Sensitive receivers such as residential and commercial properties, and educational and medical facilities are located adjacent, and in close proximity, to the rail corridor in several locations including, Albury, Wagga and smaller towns.

### 24.3.1 Bushfire-prone land

Bushfire-prone lands are identified areas that can support a bushfire or are likely to be subject to a bushfire. Bushfire-prone land maps have been prepared by Rural Fire Services NSW. Table 24-1 shows the proximity of enhancement sites to bushfire-prone land (NSW Rural Fire Service, 2021). Several areas associated with the proposal are identified in the *Hume Zone Bush Fire Risk Management Plan* (Hume Zone Bush Fire Management Committee, 2016) and the *Riverina Bush Fire Risk Management Plan* (Riverina Bush Fire Management Committee, 2015) as being subject to bushfire planning measures.

Table 24-1 Proximity of enhancement sites to bushfire-prone land

| Precinct | Enhancement site | Indicative proximity to bushfire prone land |
|---|---|---|
| Albury | Murray River bridge | 1.0 km |
| | Albury Station pedestrian bridge | 600 m |
| | Albury Yard clearances | 400 m |
| | Riverina Highway bridge | 400 m |
| | Billy Hughes bridge | Within the proposal site |
| | Table Top Yard clearances | 1.0 km |
| Greater Hume–Lockhart | Culcairn pedestrian bridge | 260 m |
| | Culcairn Yard clearances | 400 m |
| | Henty Yard clearances | Within the proposal site |
| | Yerong Creek Yard clearances | 450 m |
| | The Rock Yard clearances | Within the proposal site |

| Precinct | Enhancement site | Indicative proximity to bushfire prone land |
|---|---|---|
| Wagga Wagga | Uranquinty Yard clearances | Within the proposal site |
| | Pearson Street bridge | 1.5 km |
| | Cassidy Parade pedestrian bridge | 800 m |
| | Edmondson Street bridge | 600 m |
| | Wagga Wagga Station pedestrian bridge | 400 m |
| | Wagga Wagga Yard clearances | 250 m |
| | Bomen Yard clearances | 3.5 km |
| Junee | Harefield Yard clearances | 1.0 km |
| | Kemp Street bridge | 900 m |
| | Junee Station pedestrian bridge | 800 m |
| | Junee Yard clearances | 1.0 km |
| | Olympic Highway underbridge | 1.5 km |
| | Junee to Illabo clearances | 2.8 km |

### 24.3.2 Flood-prone land

Several areas with the study area are identified as flood prone as described and addressed in Chapter 18: Hydrology, flooding and water quality.

### 24.3.3 Hazardous materials

As parts of the rail corridor have been operating since the late 1800s, there is potential for hazardous construction materials that are no longer in use, such as asbestos and lead-based paint, to be present within the proposal site. For example, lead-based paint is present on the Murray River bridge. Further detail is provided in Chapter 20: Soils and contamination.

### 24.3.4 Utilities

Overhead and underground utilities, including gas mains, water and wastewater mains and electricity cabling, intersect the proposal site at multiple locations. No petroleum pipelines intersect or are adjacent to the proposal site.

## 24.4 Impact assessment—construction

Potential hazards during construction would be temporary and associated with:

- the onsite storage, use and transport of dangerous goods and hazardous substances
- the onsite handling and transport of contaminated soil and hazardous wastes
- impacts to utilities
- structural damage risks
- bushfire risks.

These hazards are described further in the following sections.

### 24.4.1 Onsite storage, use and transport of dangerous goods and hazardous substances

Dangerous goods are substances or objects that pose acute risks to people, property and the environment due to their chemical or physical characteristics, while hazardous substances are chemicals or materials that can pose a significant risk to health and safety if not managed correctly.

Dangerous goods are classified according to their physical or chemical effects, such as fire, explosion, corrosion and poisoning, affecting property, the environment or people. Dangerous goods are substances that, because of their physical, chemical (physicochemical) or acute toxicity properties, present a risk to people, property or the environment. Types of substances classified as dangerous goods include explosives, flammable liquids and gases, corrosives, and chemically reactive or acutely (highly) toxic substances. Dangerous goods are defined by the Australian Dangerous Goods Code and regulated in NSW by the *Dangerous Goods (Road and Rail Transport) Act 2008* (NSW) and Dangerous Goods (Road and Rail Transport) Regulation 2014. Many dangerous goods are also classed as hazardous substances.

Hazardous materials are those that meet the classification criteria specified by the Work Health and Safety Regulation 2017 and the Globally Harmonised System of Classification and Labelling of Chemicals (an internationally agreed system of chemical classification). The thresholds in Hazardous and Offensive Development guideline represent the maximum quantities of hazardous materials that can be stored or transported without causing a significant offsite risk. Although the Resilience and Hazards SEPP is not applicable to State Significant Infrastructure (SSI) projects, the guidelines have been applied to inventories of dangerous goods likely to be stored at enhancement sites, to assess the potential risk of the proposal to the environment and to public safety.

An indicative list of the types of dangerous goods and potentially hazardous materials anticipated to be used, stored and transported during construction is provided in Table 24-2, along with the relevant storage and transport thresholds established under the guidelines.

**TABLE 24-2INDICATIVE LIST OF HAZARDOUS MATERIALS POTENTIALLY REQUIRED DURING CONSTRUCTION AND APPLICABLE STORAGE/TRANSPORT THRESHOLDS**

| | | | | Hazardous and Offensive Development guideline thresholds | | |
|---|---|---|---|---|---|---|
| **Material** | **Australian Dangerous Goods Code Class** | **Storage locations** | **Storage method** | Storage volume | Minimum storage distance from sensitive receivers | Transport (weekly) |
| Diesel | C1[1] | All sites | 2,000 litre (L) storage tanks | Greater than 5 tonnes (t), if stored with other Class 3 flammable liquids | 5 m | Not applicable if not transported with Class 3 dangerous goods |
| Petrol | 3 PG II | All sites | 20 L hazardous chemical cans within a bunded tray | Greater than 5t | 5 m | 45 |
| Lubricating and hydraulic oils and greases | C2 | All sites | 20 L hazardous chemical cans within a bunded tray | N/A | N/A | Not applicable if not transported with Class 3 dangerous goods |
| Industrial grade oxygen | 2.2 | Murray River bridge, Albury Station pedestrian bridge, Uranquinty Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Olympic Highway underbridge | 115 L cylinders within gas storage cages and/or secured on vehicles | N/A | N/A | Not subject to guideline transport thresholds |
| Acetylene | 2.1 | Murray River bridge, Albury Station pedestrian bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Uranquinty Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Junee Yard clearances, Olympic Highway underbridge | 115 L cylinders within gas storage cages and/or secured on vehicles | Greater than 0.1 t | 15 m | |
| Cement | N/A | N/A | Not stored at enhancement sites | N/A | N/A | Not subject to guideline transport thresholds |

| Material | Australian Dangerous Goods Code Class | Storage locations | Storage method | Hazardous and Offensive Development guideline thresholds | | |
|---|---|---|---|---|---|---|
| | | | | Storage volume | Minimum storage distance from sensitive receivers | Transport (weekly) |
| Premix concrete | N/A | Albury Station pedestrian bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Junee Yard clearances | Not stored at enhancement sites | N/A | N/A | Not subject to guideline transport thresholds |
| Concrete curing compounds | N/A | Albury Station pedestrian bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Junee Yard clearances | 205 hazardous chemical drums | N/A | N/A | Not subject to guideline transport thresholds |
| Epoxy glue | 3 PG III | Albury Station pedestrian bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Junee Yard clearances | 20 L hazardous chemical buckets | Greater than 5 t | 5 m | |
| Disinfectant | 8 PG III | All sites | 1 L containers | Greater than 50 t | N/A | |
| Membrane preservative | 8 PG III | Albury Station pedestrian bridge, Albury Yard clearances, Riverina Highway bridge, Billy Hughes Bridge, Table Top Yard clearances, Culcairn pedestrian bridge, Culcairn Yard clearances, Henty Yard clearances, Yerong Creek Yard clearances, The Rock Yard clearances, Pearson Street bridge, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Wagga Wagga Station pedestrian bridge, Wagga Wagga Yard clearances, Bomen Yard clearances, Harefield Yard clearances, Kemp Street bridge, Junee Station pedestrian bridge, Junee Yard clearances, Junee to Illabo clearances | 20 L hazardous chemical containers | Greater than 50 t | N/A | |

| Material | Australian Dangerous Goods Code Class | Storage locations | Storage method | Hazardous and Offensive Development guideline thresholds | | |
|---|---|---|---|---|---|---|
| | | | | Storage volume | Minimum storage distance from sensitive receivers | Transport (weekly) |
| De-bonding agents | N/A | Albury Station pedestrian bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Cassidy Parade pedestrian bridge, Edmondson Street bridge, Kemp Street bridge, Junee Yard clearances | 20 L hazardous chemical containers | N/A | N/A | Not applicable |
| Paint | 3 PG II | Murray River bridge, Albury Yard clearances, Table Top Yard clearances, The Rock Yard clearances, Uranquinty Yard clearances, Junee Yard clearances | 20 L hazardous chemical containers | Greater than 5 t | 5 m | |

1. Class 1 and Class 3 flammable liquid quantities must be considered together as the total potential fuel load

Typically, low volumes of potentially hazardous materials would be stored onsite. The volume required to be stored onsite would largely depend on the anticipated rates of consumption, with deliveries of dangerous goods coordinated to match consumption rates. This could be about one delivery per day, if needed, to minimise volumes stored onsite to reduce the potential for the Hazardous and Offensive Development guideline storage thresholds being exceeded.

Enhancement sites would be planned so that hazardous materials are stored appropriately and at a suitable distance from sensitive receivers, in accordance with the thresholds established under Hazardous and Offensive Development guideline s. If minimum buffers cannot be maintained, either due to space constraints, the close proximity of sensitive receivers, or a requirement to store volumes of hazardous materials in excess of storage thresholds, a risk management strategy would be developed on a case-by-case basis.

Environmental hazards associated with the onsite storage, use and transport of chemicals, fuels and materials would be managed through standard mitigation measures to be developed as part of the construction environmental management documentation. These measures would include the storage and management of all dangerous goods and hazardous substances in accordance with the *Work Health and Safety Act 2011* (NSW), the Work Health and Safety Regulation 2017, the *Dangerous Goods (Road and Rail Transport) Act 2008* (NSW), the Dangerous Goods (Road and Rail Transport) Regulation 2014, the *Managing Risks of Hazardous Chemicals in the Workplace Code of Practice* (Safe Work Australia, 2021) and the Hazardous and Offensive Development guideline (Department of Planning, 2011).

### 24.4.2 Onsite handling and transport of contaminated soil and hazardous wastes

In addition to the materials listed in Table 24-2, the proposal may require the handling and transport of contaminated soil, hazardous waste, lead-based paint and asbestos waste. Workers and nearby receivers may be exposed to these materials during construction of the proposal, if handled inappropriately.

The handling and transport of contaminated soils, hazardous waste and asbestos waste would be adequately managed by the measures identified in the following chapters:

- Chapter 20: Soils and contamination
- Chapter 23: Waste and resource management.

### 24.4.3 Impacts to utilities

As outlined in Chapter 8: Construction of the proposal, a number of utilities would need to be adjusted, relocated and/or protected to enable construction of the proposal.

Damage, rupture and/or failure to shut down, isolate or otherwise appropriately manage underground utilities during construction activities has the potential to result in the following environmental hazards:

- release of untreated sewage and/or gas from a sewer main
- release of natural gas from a gas main
- release of large electrical currents through the ground surface from an underground electricity cable (known as earth potential rise)
- release of high-pressure gas products from gas pipelines.

Key utilities that would present a potential hazard or risk, where located close to construction, include:

- high and low voltage power lines (both aboveground and underground) located throughout the proposal site
- water mains and pipelines
- sewer mains and pipelines
- overhead and buried telecommunication lines
- buried high pressure gas pipelines.

The potential risk associated with utility related hazards would be minimised by carrying out utility checks (such as dial-before-you-dig searches and non-destructive digging) and consulting with the relevant utility providers. Construction methodologies for works near high-pressure gas pipelines would be developed to comply with relevant standards, in consultation with utility providers, to minimise environmental hazards.

A program of ongoing consultation has been established and implemented to further assess requirements for utilities as outlined in Chapter 8: Construction of the proposal and Appendix D: Utilities management framework.

### 24.4.4 Structural damage risks

Chapter 15: Noise and vibration considers potential structural impacts from vibration and includes measures to address these potential impacts. Detailed assessment of the buildings predicted to be above the cosmetic damage screening criteria would be carried out prior to construction. Attended vibration monitoring would be carried out during construction to ensure vibration levels remain below appropriate limits for the structure.

### 24.4.5 Bushfire risks

In accordance with *Planning for Bushfire Protection* (RFS, 2019), bushfire-prone land has been considered to be a distance of 140 m from each enhancement site in all directions. A majority of the enhancement sites are located at least 250 m from the nearest bushfire-prone land, including the associated buffer zones. Only four enhancement sites are partially located on bushfire-prone land, including Billy Hughes bridge, Henty Yard clearances, The Rock Yard clearances and Uranquinty Yard clearances. These sites would have an increased risk of being impacted by bushfire. A small amount of vegetation would be removed during construction of the proposal, as described in Chapter 16: Biodiversity, which would have a negligible impact on bushfire-prone land and the associated risk profile.

During construction, there is a of risk of fire ignition. Potential ignition sources relevant to the proposal's construction include discarded cigarettes and waste (such as glass bottles) and the generation of sparks through hot works such as welding or the excavator bucket making contact with rock or the rail track. Fuel leaks and spills from plant and machinery, and the storage of flammable goods during construction, could also provide a fuel source for bushfires if ignited.

### 24.4.6 Emergency vehicle access

The proposal would result in temporary impacts to the road network at various locations (including detours) and would result in an increase in vehicle movements along the local road network. This could cause delays and/or access restrictions to emergency vehicle movements on the local road network; however, in most instances, the impacts on the road network and access would not be significant and any delays would likely be minor. Any impacts or temporary closures to roads or level crossings would be managed through the implementation of a traffic and transport management sub-plan. This would consider emergency vehicle access and movements.

Ongoing liaison with local councils, Transport for NSW and emergency services would be undertaken as part of the detailed design, to identify additional measures to mitigate any potential impacts to emergency vehicle movements due to construction traffic.

## 24.5 Impact assessment—operation

The hazards associated with the proposal site would generally remain the same during continued operation of the rail corridor. As the location of the rail corridor would be the same and the alignment of the track would change marginally, the number of receivers in close proximity to the rail corridor would not change. The frequency and size of freight trains travelling within the proposal site would increase, which would result in an increase in the hazard profile.

Potential operational hazards and risks associated with the rail corridor include train accidents (including derailment, collision or impact), level crossing collisions, spills from train and equipment (such as oil and cleaning chemicals) and accidents involving hazardous cargo. These potential impacts would be managed by undertaking the design with an appropriate emphasis on safety according to relevant design standards and requirements.

The transport of hazardous materials and dangerous goods would be the responsibility of the freight operator/s and would be undertaken in accordance with relevant standards and regulatory requirements (including the *Australian Dangerous Goods Code* (National Transport Commission, 2020) and ARTC's standard operating procedures.

Maintenance works within the rail corridor would continue to be undertaken in accordance with ARTC's standard operating procedures, which would reduce the potential for impacts to the health and safety of workers and visitors. Bushfire risks at enhancement sites during operation of the proposal would be minimised through continued application of bushfire management practices in accordance with the *Hume Zone Bush Fire Risk Management Plan* (Hume Zone Bush Fire Management Committee, 2016), the *Riverina Bush Fire Risk Management Plan* (Riverina Bush Fire Management Committee, 2015).

## 24.6 Mitigation and management

### 24.6.1 Approach to mitigation and management

Hazards would be managed in accordance with the environmental management approach, as detailed in Chapter 27: Approach to mitigation and management and Appendix H: Construction environmental management plan of the EIS. This management would include requirements for the development and implementation of emergency and incident response plans and procedures, including flood and bush fire risk.

### 24.6.2 Mitigation measures

Specific mitigation measures that would be implemented to address potential hazards are listed in Table 24-3.

**TABLE 24-3 MITIGATION MEASURES—HAZARDS**

| Stage | Ref | Impact/issue | Mitigation measure |
|---|---|---|---|
| Detailed design / pre-construction | H1 | Impacts on underground utilities | Dial-before-you-dig searches and non-destructive digging will be carried out to identify the presence of underground utilities prior to commencing construction. |
| Construction | H2 | Bushfire risks | Adequate access and egress for fire-fighting vehicles and staff will be provided at all enhancement sites during construction.<br><br>Protocols for the management of bushfire risk will be implemented during construction in accordance with *Planning for Bushfire Protection* (RFS, 2019), *Hume Zone Bush Fire Risk Management Plan* (Hume Zone Bush Fire Management Committee, 2016) and *Riverina Bush Fire Risk Management Plan* (Riverina Bush Fire Management Committee, 2015).<br><br>Requirements for first-response capabilities, including fire extinguishers, water carts and hoses will be assessed and provided at enhancement sites during construction, where needed. |
| Construction | H3 | Dangerous goods and hazardous materials | Dangerous goods and hazardous materials will be stored in accordance with supplier's instructions and relevant legislation, Australian Standards, and applicable guidelines; and may include bulk storage tanks, chemical storage cabinets/containers or impervious bunds. |

### Effectiveness of mitigation measures

The implementation of the mitigation measures, and supporting environmental management procedures, would avoid or control known hazards to public safety and the environment to the greatest extent possible. These controls align with the requirements of legislation, guidelines and standards, and are known to be effective. Where hazards cannot be eliminated, controls would be reviewed in accordance with ARTC procedures to ensure that they remain effective over time and additional controls implemented if required. In the event of an incident, emergency response and notification procedures would be implemented in accordance with ARTC procedures and the relevant regulatory requirements.

## 24.6.3 Interactions between mitigation measures

Mitigation measures in other chapters that are relevant to the management of potential hazards include:

- Chapter 9: Transport and traffic, specifically details measures to address road safety and access during construction and operation
- Chapter 15: Noise and vibration, specifically details measures that address construction vibration impacts and building condition surveys, respectively
- Chapter 18: Hydrology, flooding and water quality, specifically details emergency response measures addressing flood risks
- Chapter 20: Soil and contamination, specifically details measures addressing pre-construction surveys for identification of asbestos and lead-based paint, and handling of chemicals, fuels or other hazardous substances
- Chapter 23: Waste and resource management, specifically details measures that address the identification and disposal of hazardous materials.

Together, these measures would minimise the potential hazards associated with construction and operation of the proposal.

## 24.6.4 Residual risk

Residual impacts are impacts of the proposal that may remain after implementation of the mitigation and management measures detailed in Sections 24.6.1 and 24.6.2. These are summarised in Table 24-4. The proposal would result in some unavoidable residual risks.

Further information on the approach to the environmental risk assessment, including descriptions of criteria and risk ratings, is in Appendix E: Environmental risk assessment.

**TABLE 24-4 RESIDUAL RISK MANAGEMENT—HAZARDS**

| Stage | Potential impact | Pre-mitigated Rating | Mitigation measures* | Residual risk rating | Residual risk management[1] |
|---|---|---|---|---|---|
| Construction | Potential risks to construction by bushfire, or bushfire risks due to construction activity in bushfire prone areas | Medium | H2, CEMP | Low | N/A |
| Construction | Onsite handling, management and transport of contaminated soil and hazardous wastes (including asbestos) | High | H3, SC6, SC7, SC8, SC9 | Medium | The onsite handling, management and transport of this material would be carried out in accordance the controls, monitoring and auditing provisions of the Construction Environmental Management Plan (CEMP) (including the contamination and hazardous materials sub-plan, and the Waste Management Sub-plan) and relevant regulatory requirements. |
| Construction | Impacts to emergency services due to road network delays or access restrictions caused by temporary changes to the road network | High | TT3 | Low | N/A |

| Stage | Potential impact | Pre-mitigated Rating | Mitigation measures* | Residual risk rating | Residual risk management[1] |
|---|---|---|---|---|---|
| Construction | Potential incidents associated with transport and storage of hazardous substances and dangerous goods during construction | Medium | H3 | Low | N/A |
| Construction | Potential impacts to utilities causing significant disruption to services | High | LP5, H1, Utilities Management Framework | Medium | ARTC would continue to liaise with asset owners to minimise impacts on other infrastructure, including utilities. |
| Operation | Increased rail accidents caused by increased rail movements (including road-rail interfaces) | Medium | N/A | Medium | Potential impacts would be managed by undertaking the design with an appropriate emphasis on safety according to relevant design standards and requirements. |
| Operation | Potential risks of bushfire to the operation of the proposal | Medium | Existing ARTC EMS | Medium | ARTC would be responsible for continued management of vegetation within the rail corridor. |

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

* refer to Table 24-3