TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

18.1 INTRODUCTION

Waratah has undertaken a preliminary hazard and risk assessment for the proposed rail development. The preliminary risk assessment is consistent with Australian Standard/New Zealand Standard ISO 31000:2009: Risk Management – Principles and Guidelines.

This chapter examines the safety, health and risk issues associated with the development and operation of the rail and associated infrastructure by:

- outlining legislative requirements for the Project;
- identifying dangerous goods and hazardous substances likely to be used for the Project;
- preparing a preliminary risk assessment for the construction and operation of the Project;
- outlining the controls to be implemented for the Project to protect the safety and health of employees and the public; and
- detailing emergency plans and emergency response capabilities.

This preliminary risk assessment does not consider the decommissioning phase of the Project as it is envisaged that the rail will continue to be used for the foreseeable future.

18.1.1 LEGISLATIVE FRAMEWORK AND PLANNING

Various Acts are relevant in terms of managing risk associated with the development and operation of the rail and its associated infrastructure. Table 1 details the applicable Acts and the regulatory obligations associated with each particular Act. An explanation regarding how the Waratah Coal will meet its legislative obligations is also included.

A range of Australian Standards, Codes of Practice and Guidelines which is also relevant to the protection of the health and safety of site works. These include:

- Australian Standard AS1692-1989: Tanks for flammable and combustible liquids. This standard specifies the design and construction requirements for tanks used for the purpose of storing flammable and combustible liquids;
- Australian Standard AS1940-2004: The storage and handling of flammable and combustible liquids. This standard sets out the requirements and recommendations necessary for the safe storage and handling of flammable and combustible liquids and includes minimum acceptable safety requirements for storage facilities, operating procedures, emergency planning and fire protection;
- Australian Standard AS2187-1988: Explosives – Storage, transport and use. This standard establishes the acceptable requirements for storage, transport and use of explosives and detonators to ensure security and safety;
- Australian Standard AS2958-1995: Earth-moving machinery – Safety. This standard prescribes specific requirements for brake systems on self-propelled rubber-tyred vehicles. The objective of the standard describes relative design, manufactures, suppliers, employers and users of earth-moving machinery in minimizing the associated risks to the health and safety of persons required to work with or near earth-moving equipment;
- Australian Standard AS1170.4:2007: Structural design actions - Earthquake actions in Australia. This standard prescribes procedures to designers of earthquake actions and general detailing utilization requirements within the design phase of structures deemed to be subjected to earthquakes;
- Australian Standard AS4024: Safety of machinery. This standard outlines safety requirements for machinery and plant equipment and is typically associated with the design of machinery, rather than the applied use of the machinery;
- Australian / New Zealand Standard AS/NZS ISO31000:2009: Risk Management – Principles and Guidelines. This standard identifies the elements of risk management processes including risk assessment, risk analysis, evaluation and controls / treatment, review and system modification;
- Australian / New Zealand Standard AS/NZS4801 – 2001: Occupational Health and Safety Management Systems – specification with guidance for use. This standard specifies the requirements for an occupational safety and health management system to enable a proponent to formulate a policy and objectives that take into account legislative requirements and information about hazards or risks. The standard applies to hazards and risks over which the proponent exercises control over;

- Australian / New Zealand Standard AS/NZS1170.2:2002: Structural design actions - Wind actions. This standard prescribes technical data and provides procedures in as dynamic responses to wind actions and associated independent design requirements specified for a structure. Essentially, this standard describes procedures to designers of structures subject to varying wind actions; and
- The Australia New Zealand Food Standards Code 2005. This code identifies the standards for food in Australia including processing for particular class of food hygiene.
- Australian / New Zealand Standard AS/NZS1768:2007: Lighting protection. This standard prescribes to designers during planning phase's authoritative guidance on the principles and practices of lightening protection for various ranges of structures and systems. Recommendations in this Standard will reduce the probability of damage to a calculated acceptable level. Guidance is given on methods of enhancing the level of protection against lightening damage, if required.

Table 1. Legislative framework

APPLICABLE ACT	LEGISLATIVE OBLIGATION	COMPLIANCE STRATEGY
Dangerous Goods Safety Management Act 2001	This Act relates to the safe management, storage and handling of hazardous materials, particularly dangerous goods and combustible liquids.	The development and operation of the rail will be undertaken in compliance with the obligations of this Act.
Workplace Health and Safety Act 1999	The Act establishes the obligations to prevent a person's death, injury or illness being cause by a workplace, by a relevant workplace area, by work activities, or by plant or substances for use at a workplace.	The development and operation of the rail will be undertaken in compliance with the obligations of this Act.
Transport Infrastructure Act 1994	The Act is operated in conjunction with the *Transport Planning and Coordination Act 1994* and the *Transport Operations (Road Use Management) Act 1995*. The Act aims to provide a regime for the effective integrated planning and efficient management of a system of transport infrastructure.	It is likely the Project will require approvals under the TI Act pertaining to transportation of oversized loads of plant, equipment and materials. These approvals will be obtained on an as-needs basis during the course of the Project's future design and construction phases when the necessary design and construction information required for the permit applications is available.
Transport Planning and Coordination Act 1994	The objectives of the Act are to improve the economic, trade and regional development performance of Queensland, and the quality of life of Queenslanders, by achieving overall transport effectiveness and efficiency through strategic planning and management of transport resources.	Any activities associated with the development of the rail that may impact on a public passenger service, active transport system or works on a local government road may require approval under this Act.
Fire and Rescue Service Act 1990	This Act and the Fire and Rescue Service Regulation 2001 requires the operator to establish effective relationships with the Queensland Fire and Rescue Service to provide for the prevention of and response to fires and certain other incidents endangering persons, property or the environment and/or for related purposes or activities.	Emergency response procedures will be developed in consultation with the Emergency Services and other related Government agencies.

Below are other direct sources of legislation which holds relevance to the Project including Commonwealth Standards, Codes of Practice and Guidelines:

- National Standard for Construction Work [NOHSC: 1016 (2005)];
- National Standard for Manual Tasks (2007);
- National Standard for Occupational Noise [NOHSC: 1007 (2000)];
- National Standard for Plant [NOHSC: 1010 (1994)];
- Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC: 1003 (1995)];
- Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition;
- Australian Code for the Transport of Explosives by Road and Rail, 3rd Edition;
- National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)];
- National Code Of Practice for Induction for Construction Work, May 2007;
- National Code of Practice for the Prevention of Falls in General Construction, April 2008;
- The National Code of Practice for the Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work (2007);
- National Code of Practice for the Prevention of Occupational Overuse Syndrome [NOHSC:2013(1994)];
- Mobile Crane Code of Practice 2006;
- Plant Code of Practice 2005;
- Risk Management Code of Practice 2007;
- Traffic Management for Construction or Maintenance Work Code of Practice 2008;
- API RP 752, Management of hazards associated with location of process plant buildings; and
- API RP 753, Management of hazards associated with location of process plant portable buildings.

18.1.2 DANGEROUS GOODS AND HAZARDOUS SUBSTANCES

The construction and operation of the rail and supporting infrastructure involves the storage and handling of dangerous goods and hazardous substances. A number of these products are regulated by the Australian Code for the Transport of Dangerous Goods by Road and Rail. In addition to these materials, a variety of hazardous substances will be managed in accordance with National Occupational Health and Safety Council Guidelines. A list of the likely dangerous goods and other chemicals is shown at Table 2.

The maximum storage amount of each of the products likely to be stored at the project site during construction and operation is also included.

A Material Safety Data Sheet (MSDS) register will be established on site prior to the commencement of construction. MSDS information will be retained onsite and will be available to all site personnel.

From time to time, other dangerous goods may be required as part of constructing and / or operating the rail infrastructure. In the event this occurs, existing Standard Operating Procedures (SOPs) will be reviewed to ensure safety processes and storage and handling procedures are adequate to ensure conformance with AS1940.

18.2 RISK ASSESSMENT METHOD

Waratah has undertaken a preliminary risk assessment for each component of the Project in order to meet its obligations to identify and manage potential impacts to safety and health associated with the Project. In assessing the potential safety and health risks associated with this Project, Waratah followed the guidance provided in AS/NZS ISO31000.

The assessment outlines the implications for, and the impact on, the surrounding land uses. The risk assessment incorporates:

- establishing the context of each of the Projects core components;
- consideration of potential hazards (minor and major associated with each of the core components);
- the likely frequency of the potential hazard occurring;
- consideration of the cumulative risk to safety and health;
- the temporal extent of identified hazards;
- the effects and rate of usage of the hazardous substances to be used, stored, processed or produced by the Project; and
- the type of infrastructure and plant and equipment to be used during the construction and operational phases of the Project.

Table 2. Likely dangerous goods and hazardous substances used during the construction and operation of the rail and associated infrastructure

CHEMICAL NAME	DG CLASS	RAW CONC. (WT%)	UN NUMBER	PACKAGING GROUP	USE	INDICATIVE MAXIMUM STORAGE VOLUME
Diesel Fuel	3 (Class C1)[1]	N/A	1202	III	Fuel for vehicles and mobile equipment	3 x 2,000 m^3 (fuel tanks) i.e. 6,000,000 L
Lubrication oils	3 (Class C2)[2]	N/A	N/A	N/A	Hydraulic oils to lubricate plant and equipment	1,000 L
Ammonium nitrate / fuel oil (ANFO)	1.1D	N/A	0082	N/A	Explosives for blasting	100 t
Oxygen	2.2	>98%	1072	N/A	Welding	200 m^3
Acetylene	2.1	>98%	1001	N/A	Welding	200 m^3
Caustic soda (sodium hydroxide)	8	50	1823	II	Degreasing agent	500 kg
Modified alkyd resin, Aliphatic hydrocarbon, Xylene, aromatic hydrocarbon	3	10 - <30	1263	II	ITW Polymers and fluids, Galmet Spray Paint	50 L
Hydrochloric acid	8	25-35%	1789	II	Cleaning and stripping steel	2 x 1,000 L
Phosphoric acid	8	41	1805	III	Treatment of rust	1,000 L
Solvents and thinners	3	99.5	1090	II	Degreasing agent	1,000 L
Sulphuric acid	8	15-51%	2796	II	Batteries	500 L

[1] – **Class C1** – a combustible liquid that has a flashpoint of 150°C or less

[2] – **Class C2** - a combustible liquid that has a flashpoint that exceeds 150°C

Potential incident scenarios from the Project were identified through consideration of:

- the activities assumed to be carried out and facilities likely to be present during the construction and operation phases of the Project (i.e. construction and operation of the railway line , maintenance and refueling works within the rolling stock yard, dangerous goods use and handling); and
- the range of potentially hazardous incidents that might be associated with each of the activities / facilities identified at the Project site.

After identifying the range of hazards likely to cause an incident at the Project site, the following matters were considered for each hazard:

- design controls and mitigation measures identified for each hazard, including prevention and response measures;
- the consequences of each of the hazardous incidents if they were to occur, including direct impacts of incidents and the potential for propagation and secondary incidents;
- the probability of events occurring and leading to the hazardous incident;

- the probability of each hazardous incident occurring taking into consideration the proposed controls; and
- the extent to which hazard risk profiles are reduced as a consequence of implementing control and mitigation measures (residual risk)

18.2.1 ADOPTED DEFINITIONS

The following definitions have been adopted for the assessment of risks and hazards:

- a **Hazard** is something with the potential to cause harm. This can include hazardous substances, plant and equipment, work processes or other aspects of the environment;
- the **Likelihood** is the chance or probability of an event occurring;
- the **Consequence** refers to how much harm the hazard could do, how many people it could affect and whether the harm would be short or long term;
- the **Risk** is the **likelihood** that a harmful **consequence** might result when exposed to the **hazard**;
- "**Major Accident Event** (MAE)", means a sudden occurrence (including in particular a major emission, loss of containment, fire, explosion or release of energy) leading to serious danger or serious harm to persons, property, both the built or natural environment, whether immediate or delayed; and
- **Critical** is defined as "Performance" that has the potential to result in:
  - a fatality;
  - serious environmental effects;
  - ongoing significant social issues;
  - significant adverse attention from media, non-government organization;
  - loss of licence;
  - loss of a customer;
  - loss of corporate image; and
  - loss of production or revenue.

This definition covers people, plant and equipment, production, quality as well as systems and procedures.

18.2.2 RISK ANALYSIS CRITERIA

The risk assessment used for the assessment is based on the model contained in AS/NZS ISO31000. This Standard establishes a method for identifying risk profiles through combining the Likelihood of a hazard occurring with the Consequences of a hazard or impact occurring, in terms of its effect on the safety and health of personnel.

The highest risk incidents are judged to have the highest priority for consideration of additional risk reduction options. Conversely, low risk profiles are typically controlled through standard operating procedures and controls and maintained through ongoing monitoring as part of the continuous improvement cycle.

Likelihood is a qualitative estimate of the frequency at which the issue or hazard may occur. Based on definitions shown in **Table 3** an agreed estimate of the likelihood of occurrence was assigned to each identified hazardous incident. The contribution of the preventative and protective features were taken into account when assessing the likelihood of occurrence and potential consequence from each hazardous incident.

The assessment established the potential level of consequence to safety and health of the public in accordance with the definitions shown in **Table 4**. Where a hazardous incident may have multiple outcomes, each outcome was assessed individually.

The risk matrix shown in **Table 5** was adopted for the assessment. The colour shading refers to the qualitative bands of risk level.

18.3 RISK ASSESSMENT

The preliminary risk assessment tables for construction and operational phase are structure to show the results of the raw risk profile and the residual risk profile. The tables present the results in the following order:

- the hazard that may impact on safety and health;
- the Consequence (C), Likelihood (L) and Risk (R) that may impact on safety and health;
- the strategy or strategies established to address the risk; and
- the Consequence (C), Likelihood (L) and Risk (R) that may impact on safety and health after the mitigation measures are in place.

Table 3. Likelihood of occurrence ratings

PROBABILITY RANKING	DESCRIPTOR	DESCRIPTION
A	Almost certain	Has happened within the last year
B	Probably will occur	Has happened in the last 1 to 5 years
C	Might occur	Has happened in the last 5 to 10 years
D	Could occur	Has happened in the last 10 to 30 years
E	Exceptional event	Has not happened in industry but theoretically could happen

Table 4. Consequence ratings for safety, health and environmental losses

CONSEQUENCE RANKING	DESCRIPTOR	SAFETY AND HEALTH
1	Catastrophic	Multiple fatalities, significant irreversible effects to >50 people
2	Major	Single fatality, severe irreversible disability
3	Moderate	Moderate irreversible disability or impairment (Classified injury)
4	Minor	Reversible disability requiring hospitalization (Medical treatment case)
5	Insignificant	No medical treatment (First aid case)

Table 5. Risk assessment matrix insert table

	DEFINITIONS	CONSEQUENCE				
		Insignificant 5	Minor 4	Moderate 3	Major 2	Catastrophic 1
LIKELIHOOD	Almost certain A	Moderate A5	High A4	Extreme A3	Extreme A2	Extreme A1
	Probably will occur B	Moderate B5	High B4	High B3	Extreme B2	Extreme B1
	Might occur C	Low C5	Moderate C4	High C3	Extreme C2	Extreme C1
	Could occur D	Low D5	Low D4	Moderate D3	High D2	Extreme D1
	Exceptional event E	Low E5	Low E4	Moderate E3	High E2	High E1

When reporting the results of the risk assessment, the residual risk is generally discussed. In some cases the raw and residual risks are discussed and these typically are for scenarios that are assessed as high or extreme residual risks.

18.3.1 CONSTRUCTION AND OPERATIONAL HAZARDS

Hazards associated with the construction and operation of the rail system would generally be considered similar to those of the existing operating rail facilities in Queensland. Typical hazards expected include:

- fuel spills – the storage and handling of fuel and oils that may result in spills and leaks;
- transport – the use of heavy vehicles, pedestrians and marine craft both on and offsite;
- heavy machinery – the use of heavy machinery that may result in injury to workers and damage to equipment;
- hazardous materials / substances / chemicals – the storage, handling and may result in spills and leaks;
- adverse weather – undertake activities in adverse weather conditions such as cyclones, storms, winds or heat that may result in equipment damage or injury;
- working at heights – injury associated with falls from heights and material falling from height;
- confined space entry, excavation and trenching – injuries associated with working in confined spaces;
- slips, trips and falls – through every day construction activities;
- · dust exposure – exposure to long term dust (that may contain hazardous materials) resulting in injury or making the work place hazardous;
- excessive noise exposure - impacts to hearing from prolonged noise exposure;
- blasting and vibration – that may lead to injury to personnel or serious damage to equipment; and
- electrical work – electrocution, injury and fires which may damage or cause injures to personnel and equipment.

The lead construction contractor will implement a Safety Health Management System (SHMS) that is consistent with the principals required by Waratah Coal and fully complies with legislative obligations. A site specific construction safety and health management plan, work instructions, and permits to work will be completed prior to construction works commencing.

The risk assessment outcomes for the construction and operational phases of the project are shown in Table 6 and Table 7, respectively.

Table 6. Risk assessment outcome – construction activities

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Dust emissions from vehicle operations	5	D	L	• water sprays on unsealed roads; • restricting vehicle speeds on unsealed haul roads to reduce dust generation and keep vehicles to well-defined roads; • minimise haul distances between construction sites to spoil stockpiles; • treat or cover stockpiled material to prevent wind erosion; • regularly clean machinery and vehicle tyres to prevent wheel entrained dust emissions; • cover loads where possible; • route roads away from sensitive receptors wherever practical; • minimise topsoil and vegetation removal, and revegetate disturbed areas as soon as possible; • compaction of temporary haulage and access roads as needed; • physical and chemical stabilisation measures along railway embankment to prevent erosion induced dust emissions (rip-rap, rock armour, etc); • ongoing visual monitoring of dust on a daily basis, with ramping down of activities in the instance of high dust emissions; and • enclosed cabins to minimise operator exposure.	5	D	L
Traffic incidents – onsite movement of vehicles and mobile equipment	3	C	H	• licenced and competent operators; • site safety induction; • speed restrictions; • fatigue management strategies; • in-vehicle communications; • minimising congestion on roads if suitable alternatives exist; • regular maintenance and safety checks of company vehicles; • supply contracts for the rail to stipulate safety measures; and • roll-over protective structures fitted to equipment.	4	E	L
Traffic incident – offsite movement of vehicles and mobile equipment	3	C	H	• licenced and competent operators; • traffic management plan; • safety induction for staff; • speed restrictions;	4	E	L

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Traffic incident – offsite movement of vehicles and mobile equipment (continued)				• in-vehicle communications; • fatigue management strategies; • community engagement and consultation; • coordinating heavy-vehicle movements to within standard operating hours (not at night) and along designated haul routes through townships; • minimising congestion on roads if suitable alternatives exist; • regular maintenance and safety checks of company vehicles; • public notifications; and • ongoing liaison with authorities such as DTMR, regional councils and emergency services (i.e. Police, Fire, Ambulance) where relevant.			
Construction activities – non specific	2	D	H	• site safety induction; • site safety management system incorporating risk assessments, SOPs, JSAs and JHAs; • licenced and competent operators; • appropriate Personal Protective Equipment (PPE) provided to all on site personal; • ongoing maintenance of equipment; • industry standard work controls including for operating at height, in confined spaces, for hot works, safe lifting and manual handling procedures, safe working around excavations and trenches; and • preferred contractor selection procedures.	3	D	M
Blasting and explosive handling	1	E	H	• SOPs, JSAs and JAHs; • explosive materials handled and used in accordance with AS2187.2; • detonators shall be handled in accordance with the *Explosives Act 1999*; • explosive materials will only be handled by licenced personnel; • site specific blasting procedures implemented; • high security for the storage of explosives on-site; • selection of the appropriate explosive for the type of job and conditions; and • ignition sources strictly controlled.	4	E	L

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Leaks of oils, fuel, chemicals from vehicles during construction activities	5	B	M	• regular vehicle maintenance; • storage and handling of hazardous materials in accordance with AS1940; • refueling and material handling in areas set-up with spill containment devices and spill recovery kits; and • service vehicles and equipment offsite at authorised repair workshops where practicable.	5	C	L
Chemical release other than from vehicles	4	C	M	• storage and handling of hazardous materials in accordance with AS1940; • spill containment and recovery kits located on site; • site drainage system designed to contain spills on site; • on site Hazardous Operations (HAZOP) reviews undertaken routinely; • ongoing training to site personnel on hazard material storage and handling, and spill response; • MSDS available at all on-site hazardous material storages; • appropriate PPE available on site for all staff involved with handling, storage or use of hazardous materials; and • preventative maintenance program implemented as part of SOPs.	5	C	L
Excessive noise – construction activities	5	C	L	• equipment designed to Australian Standards and in accordance with Environmental Protection (Noise) Policy 2008; • appropriate PPE provided to all on site personal; • attenuation devices such as silencers, baffles etc included into the design where possible; • relocation of affected homesteads in the vicinity of the rail; • purchasing or using equipment with the lowest practical noise emission levels; • maintaining equipment tools in as close as optimum condition; and • construction of noise attenuation infrastructure around homesteads and construction sites where appropriate.	5	D	L

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Bushfire	4	D	L	• site specific Bushfire Management Plan established prior to the commencement of construction; • emergency response procedures imbedded into SHMS; • fire protection infrastructure imbedded into site design and progressively installed during construction; and • ongoing consultation with authorities and surrounding landholders regarding fuel load management.	4	E	L
Contact with electrified wires or machinery	2	C	E	• implementation of a Control of Energy (isolations) procedure; • site SHMS incorporating risk assessments, SOPs, JSAs and JHA; and • use of appropriately qualified site personnel.	4	E	L
Failure of Emergency Response System	3	C	H	• compliance with Emergency Response System (EMR) by all on-site staff; • back-up systems for all operational areas built into the design process; and • scheduled, ongoing Emergency Response System (ERS) training to all employees.	4	E	L
Noxious Weed Contamination	3	C	H	• appropriate inspection and clean down practices for vehicles entering corridor; • quarry or fill material acquired offsite to be free of pest weeds; • design to avoid construction within riparian areas where practical; and • revegetation of riparian areas to prevent transport of exposed weed species.	4	D	L

Table 7. Risk assessment outcome – operational activities

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Dust emissions from vehicle operations	5	D	L	• restricting vehicle speeds on unsealed roads to reduce dust generation and keep vehicles to well-defined roads; • regularly clean machinery and vehicle tyres to prevent wheel entrained dust emissions; • cover loads where possible; • route roads away from sensitive receptors wherever practical; • water sprays of loaded coal wagons if necessary; • minimise topsoil and vegetation removal, and revegetate disturbed areas as soon as possible; and • enclosed cabins to minimise operator exposure.	5	D	L
Traffic incidents – onsite movement of vehicles and mobile equipment	3	C	H	• licenced and competent operators; • site safety induction; • speed restrictions; • fatigue management strategies; • in-vehicle communications; • regular maintenance and safety checks of company vehicles; • supply contracts for the rail to stipulate safety measures; and • roll-over protective structures fitted to equipment.	4	E	L
Traffic incident – offsite movement of vehicles and mobile equipment	4	C	M	• licenced and competent operators; • traffic management plan; • safety induction for staff; • speed restrictions; • in-vehicle communications; • fatigue management strategies; • community engagement and consultation; • public notifications; and • ongoing liaison with authorities.	4	E	L

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Leaks of oils, fuel, chemicals from vehicles during operations	4	C	M	• regular vehicle maintenance; • storage and handling of hazardous materials in accordance with AS1940; • refueling and material handling in areas set-up with spill containment devices and spill recovery kits; and • service vehicles offsite at authorized repair workshops where practicable.	4	D	L
Chemical release other than from vehicles	4	C	M	• storage and handling of hazardous materials in accordance with AS1940; • service equipment offsite at authorized repair workshops where practicable; • spill containment and recovery kits located on site; • site drainage system designed to contain spills on site; • on site HAZOP reviews undertaken routinely; • ongoing training to site personnel on hazard material storage and handling, and spill response; • MSDS available at all on-site hazardous material storages; • appropriate PPE available on site for all staff involved with handling, storage or use of hazardous materials; and • preventative maintenance program implemented as part of SOPs.	4	D	L
Excessive noise – operational activities	5	C	L	• equipment designed to Australian Standards and in accordance with Environmental Protection (Noise) Policy 2008; • appropriate PPE provided to all on site personal; • silencers, baffles etc included into the design where possible; • enclosing noisy equipment such as wagon / loco depots within an enclosed rolling stock provisioning shed; and • construction of noise attenuation infrastructure around homesteads.	5	C	L

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Bushfire	4	C	M	• site specific Bushfire Management Plan (BMP) in place; • emergency response procedures imbedded into SHMS; • trained fire safety officers onsite at all times, and additional support on call during high fire risk periods; • fire protection infrastructure imbedded into site design; and • ongoing consultation with authorities and surrounding landholders regarding fuel load management.	4	D	L
Contact with electrified wires or machinery	2	C	E	• implementation of a Control of Energy (isolations) procedure; • use of appropriately qualified site personnel; and • ongoing preventative maintenance program as part of SOPs.	4	E	L
Failure of Emergency Response System	3	C	H	• compliance with Emergency Response System by all on-site staff; • back-up systems for all operational areas built into the design process; • ongoing Emergency Response System training to all employees; and • establishment of emergency response procedures with local / regional authorities, surrounding landholders and nearby mining operations.	4	C	M
Operational activities – non specific routine works	3	C	H	• site safety induction; • site SHMS; • appropriate PPE provided to all on site personal; • ongoing maintenance of equipment; • industry standard work controls including for operating at height, in confined spaces, for hot works, safe operating at height controls, safe lifting and manual handling procedures, safe working around excavations and trenches; and • preferred contractor selection procedures.	4	C	M

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Collision (livestock)	3	C	H	• fencing to be erected along entire railway corridor prior to commencement of construction and all access/entry points to be controlled with locked gates; and • provide stock underpasses with suitable fauna passages to facilitate a safe passage underneath railway.	3	E	M
Collision (pedestrians, vehicles at level crossings)	2	D	H	• fencing to be erected along entire railway corridor prior to commencement of construction and all access/entry points to be controlled with locked gates; • well defined public crossings incorporating safety control devices such as signs, signaling, gates; • divert farm tracks to designated level crossings along route; • conduct safety risk assessment for level crossings; • grade separated crossings over major infrastructure crossings; and • consultation with landowners and education of children on rail safety.	2	D	H
Train Derailment	2	C	E	• use of appropriately qualified and experienced operators of heavy haul trains; • locomotives fitted with Electronically Controlled Pneumatic (ECP) air brakes to lower the risk of coupling braking and train derailment; • safe operating procedures for negating steep downhill gradients; • daily inspection and regular maintenance of rolling stock on arrival / departure; • establishment of a centralized traffic control centre that allows train dispatchers to monitor and control train movements, condition and occupancy in real time; • possibility of a hot box temperature detection system installed along the main line to detect when axle bearings may overheat and cause derailment;	2	D	H

HAZARD	SAFETY AND HEALTH RAW RISK			MITIGATION MEASURES	SAFETY AND HEALTH RESIDUAL RISK		
	C	L	R		C	L	R
Train Derailment (continued)				• barriers, signage and signaling works added at all crossings; • derailment detectors installed ahead of passing loops and main bridges to automatically stop trains operating in both directions in the event of a derailment; and • external signaling and communication infrastructure along the railway installed with systems that protect equipment from lightning and other natural phenomena (flood, fire, etc).			
Noxious Weed Contamination	4	C	M	• control of weeds through regular corridor vegetation maintenance; • appropriate inspection and clean down practices for vehicles entering corridor; and • Waratah Coal to reach agreement with landowners and relevant agencies on weed management prior to operation.	4	D	L

18.4 PRELIMINARY HAZARD ANALYSIS

A preliminary risk assessment was undertaken to model and review potential hazards associated with the rail infrastructure and potential risks to safety and health of its workforce and individuals that may interact with the Project. The process allows for a consistent method to be applied to the overall project components to compare potential safety and health risks against statutory requirements and workforce / stakeholder expectations.

This preliminary risk assessment provides a preliminary assessment of the risks associated with the construction and operation of the rail infrastructure. A further detailed risk assessment will be conducted as part of completing the detailed design phase of the Project to ensure where possible risk mitigation is embedded into the design features.

Waratah propose to adopt industry standard measures to assess and develop risk mitigation strategies and these will include the implementation of a Project wide safety and health management system, ongoing reviews assessing the constructability of the rail infrastructure, the development of SOPs and the completion of a HAZOP assessment.

18.5 RISK CONTROLS

18.5.1 SAFETY AND HEALTH MANAGEMENT SYSTEMS

Waratah will prepare and implement a SHMS that integrates risk management elements and practices to ensure the safety of workers and contractors. The SHMS will be an auditable and documented system. The system will form part of the overall site management system and includes specific operating procedures that incorporate organisational structures, planning activities, responsibilities, site practices, procedures, processes and identifies resources required for the development, implementation, review and maintenance of the safety and health policy. A brief description of the SHMS elements is shown in Figure 1.

The objectives of Waratah's SHMS are to protect the safety and health of all site workers, contractors and visitors, and to ensure compliance with all relevant legislation. The onsite SHMS will be integrated with the Environmental Management System as many controls established to protect safety and health are also established to minimise risk to the receiving environment.

The SHMS will be audited by an external party on an annual basis, as required by AS/NZS4801:2001. The SHMS will be a "live" document and will undergo regular review to ensure currency is maintained through the operation of the rail. The ongoing review process will include the compilation and assessment of data relating to safety and health issues, such as reported near misses, accident reports and general sickness data.

18.5.2 SAFETY CONTROLS

Hazards that pose a potential safety risk to staff, contractors and visitors to the site have been identified and assessed in accordance with the risk assessment procedures described in Section 18.2. The risk assessment is considered to be a preliminary risk assessment, with a more detailed risk assessment proposed through the latter stages of detailed design. Descriptions of identified controls are provided in the following sections.

18.5.2.1 Equipment Operations

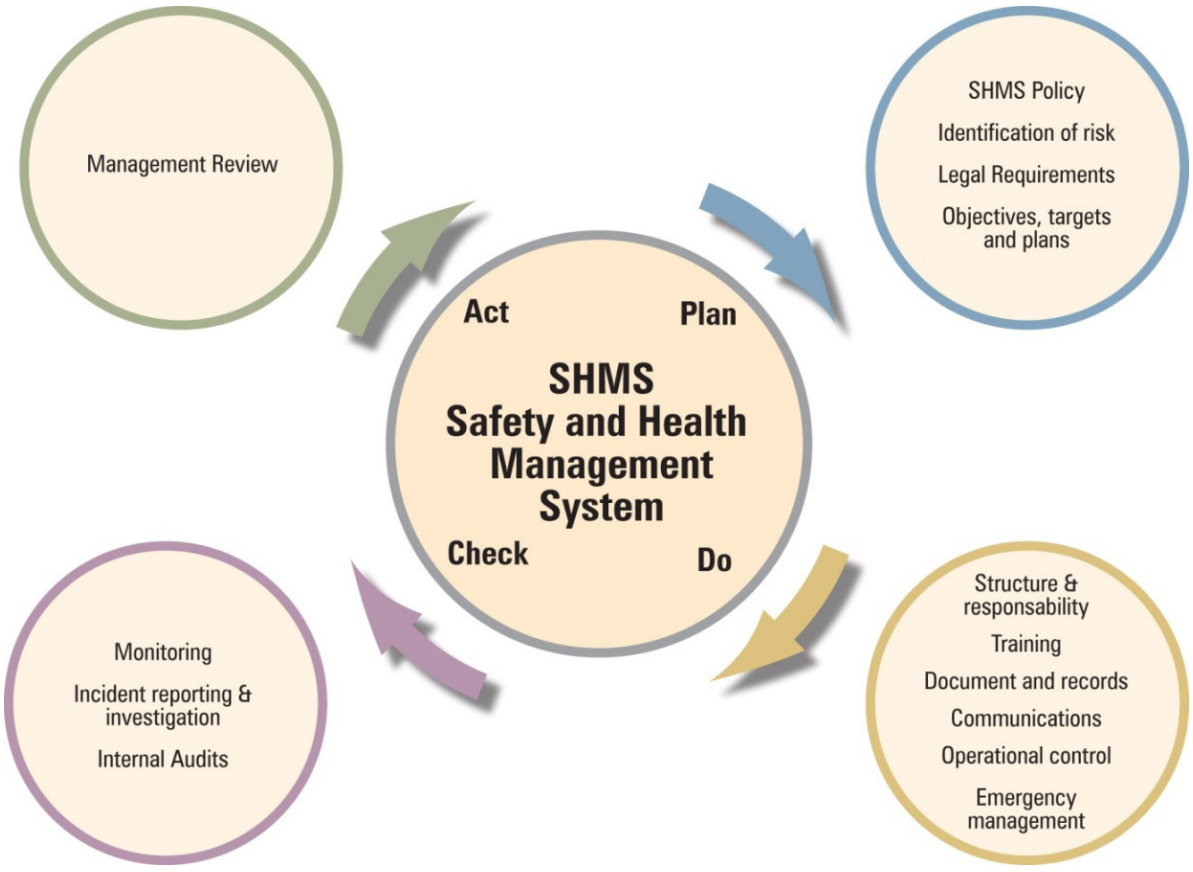
Vehicles and equipment that will be used as part of the construction and operation of the rail infrastructure will be maintained and serviced on a regular basis. The use and maintenance of equipment and vehicles will only be undertaken by fully trained and competent personnel and will be undertaken in accordance with prescribed manufacturer's specifications. Detailed maintenance schedules and records will be retained onsite through the life of the operations.

18.5.2.2 Traffic Incidents - Offsite

The primary access to the rail maintenance yard will be via a new road off the Bruce Highway located approximately 30 km to the west of the Bowen township. Access points to the rail line service roads during construction and operations are still to be determined. The overall assessment of transport and traffic impacts associated with the construction and operation of the rail infrastructure is provided in Volume 3, Chapter 13.

It is expected that there will be a significant increase to the amount of new traffic associated with the construction of the rail and associated infrastructure, albeit from a very low base. Notwithstanding, no road in the local area is expected to carry more than 3,000 vpd, inclusive of background traffic growth and direct construction traffic. As such, it is expected that a similar level of service will be maintained on all roads in the vicinity of the rail corridor during the construction and operational phases.

Figure 1. Safety and Health Management System Elements



Typically, intersections providing for fewer than 100 vehicles per hour in total can be suitably serviced with basic left and right turn facilities (i.e. no auxiliary lanes). As such, the existing intersection capacities and configurations along the full length of the rail corridor will be suitable to cater for the proposed development traffic. The exception is the Bruce Highway, where key intersections between the site and traffic sources (accommodation, quarries) will be assessed to determine if upgrades to intersection configurations are required.

To further minimise the risk of offsite incidents the following grade separations (by bridge structure) are proposed for the rail line:

- Bruce Highway; and
- Gregory Developmental Road.

Typically, the rail line will be constructed over the existing infrastructure transport corridors in these locations. However, should the topography and alignment be suitable, new bridges may be built for the existing infrastructure, particularly in the case of the Gregory Development Road. These options will be subject to further investigation at site specific locations and detailed discussions with the relevant Government bodies and Regional Councils during the final design stage of the Project.

In order to reduce the risk associated with traffic incidents through towns on route and nearby residences, travel to site will be conducted in accordance with transport legislation requirements and enforced via a TMP. Traffic speed limits shall be complied with, while heavy vehicle movements to and from site will generally operate outside peak operating hours, on designated heavy haul routes that minimise congestion and impacts to residential communities, and outside of hours when school buses are in operation.

18.5.2.3 Traffic Incidents - Onsite

A variety of vehicles and heavy earth moving equipment including haul trucks, loaders, scrapers, graders, rollers, water trucks, dump trucks, cranes and four-wheel drives, are likely to operate within the rail corridor easement during construction. Due to the size of these vehicles, accidents may result in serious injury or incident. Vehicles likely to be used during operations include four-wheel drives and various earth moving equipment associated with the maintenance of the rail easement.

Waratah will provide a safety induction to all employees and contractors prior to operating any vehicles associated with the construction and operation of the rail infrastructure. Any worker or contractor operating a vehicle on site will be required to have the appropriate level of training and licenses. All vehicles will be fitted with radios for two-way communication and appropriate speed control signs and other various traffic signage, together with prescribed driving procedures will be used on site to minimise the risk of an accident occurring. In addition Waratah will prepare specific TMPs that address light and heavy vehicle operations, road design, road maintenance, traffic rules and movements and parking.

To ensure a suitable level of visibility, the watering of roads and access areas will be undertaken regularly to reduce dust generation. Construction traffic will occur 24 hours per day, with a significant amount of night driving likely to occur in some areas and as such adequate additional night lighting will be incorporated into the design of the haul roads and access tracks.

18.5.2.4 Blasting and Explosives Handling

Waratah will undertake blasting activities during the construction of the rail infrastructure. The requirements of the *Explosive Act 1999* and AS 2187.2:2006 will be adhered to in order to minimise the risk of an incident associated with the use, storage and / or handling of explosives. Potential risks associated with blasting include dust generation, excessive noise and vibration, and impacts associated with flyrock strike and air-blast. These risks can result in injury to workers and contractors if appropriate mitigation measures are not implemented. These measures include the development of specific SOPs, the use of licenced operators to design and undertake blasts, the use of appropriate warning signs and devices and appropriate controls to restrict access to risk areas during blasting activities.

In regard to explosive material handling and storage, a specialist explosives company will provide the materials associated with blasting operations. All personnel involved in the handling and storage of explosives will be licensed and trained in all aspects of the transport, handling, mixing and use of explosive materials. All materials will be securely stored at the onsite bulk explosives storage facility that will be designed to conform to AS 2187.1:1998.

Licensed transport operators will be used to transport dangerous goods to the Project site. Where appropriate standards exist for the transport of hazardous materials (i.e. AS 1678.5.1.002:1998), only those operators that conform to the applicable standard will be used.

18.5.2.5 Exposure to High Voltage

During the construction phase, power will be generated through a series of onsite generators. During operations power will be supplied through a 66 kV overhead line to the rail maintenance yard. In both phases potentially lethal levels of voltage and amperage will be distributed across the site. All onsite power transmission sources will be designed by appropriately qualified electrical engineers and will follow current industry standards and design certification requirements.

Prior to commencing work on site all workers and contractors will be required to undergo a site safety induction. This induction will include specific components in relation to dealing with high and low voltage systems. Specific SOPs will be developed to address the safety risks associated with operating in the vicinity of high voltage circuits.

Given the dire consequences associated with the risks from exposure to high voltage circuits the management of risk requires ongoing specific and specialized controls through the construction and operation of the infrastructure.

18.5.2.6 Interaction with Operating Machinery

During construction and operation activities, site personnel may be at risk of interacting with operating high energy machinery including bulk earth moving equipment, cranes for structure works and rolling stock which may result in serious injury. Prior to commencing work on the site, a detailed site induction will be provided for all staff which will include discussion about the risks of personnel injury associated with interacting with high energy equipment. In addition, Waratah will develop detailed SOPs that include procedures for operating in areas of high energy machinery.

18.5.2.7 Working at Height

Working at height will be required during construction and operation of the rail infrastructure. For such activities, Waratah will develop safe operating procedures to control associated risks. Prior to undertaking any works on site, all staff will be required to undertake a site safety induction and posses the necessary industry competencies and training to undertake at height works. Appropriate elevated work platforms and fall arrest equipment (i.e. securing harnesses) will be provided, with staff fully trained in their use. In addition, appropriate PPE to mitigate the risks from falling objects (i.e. hard hats and eye protection) will be mandatory for working at heights.

18.5.2.8 Fuel Storage and Handling

Prior to the commencement of construction activities, Waratah will apply for a permit to store flammable and combustible liquids at various location associated with the rail infrastructure. Diesel will be used on site to refuel site vehicles (locomotives), as well as to provide a backup power for signaling, communications and lighting at passing stations and infrastructure crossings. It is proposed that diesel fuel will be stored in bulk storage tanks and appropriately designed storage facilities in accordance with extent legislative and design requirements. Temporary fuel storages will be established along the rail corridor during the construction phase. Key risk mitigation controls will include:

- adherence to AS1940-2004 and AS1692-1989 in relation to the design of tanks and storage facilities, including fire suppression systems;
- design of appropriate infrastructure protection, bunding and spill capture infrastructure at hazardous materials facilities;
- development of an excess and egress plan for tankers entering and leaving the site and specific facilities where hazardous materials are stored;
- training to all personnel involved in the storage, handling and use of fuels and other hazardous materials;
- training to all personnel in relation to emergency response procedures;
- routine inspection and maintenance programs to ensure the structural integrity of infrastructure and equipment;
- strict control of ignition sources; and
- safety inductions and SOPs regarding the use, storage and handling of fuels and other hazardous materials.

18.5.2.9 Bushfire

A BMP will be prepared that provides a strategic approach to the management of bushfires in the rail corridor and maintenance areas. This document will provide plans and processes based on contemporary "best-practice" for managing fires in tropical Savannah systems that best mitigate wild fire risks. The BMP will be focused on preservation of life and infrastructure in a context that adheres to ecological needs wherever possible. Moreover the BMP will include strategies that minimise the risk of fire leaving the rail corridor (such as the regular control of vegetation within the corridor easement).

To further mitigate the risks to workers, infrastructure will have bushfire protection embedded into the design process (such as spark arrestors on locomotives). The maintenance of the fire protection equipment will be carried out as part of routine site management. It is therefore expected that the bushfire risk along the railway will largely be managed through routine maintenance, albeit with review and revision of the procedures if the projected changes occur.

18.5.2.10 Flooding

To minimise the risk of flood hazards to structures and personnel, rail infrastructure will be designed with flood immunity to the 100 ARI peak design flood event. This will allow the ongoing operation of the railway and rolling stock provisioning yard during the 1 in 100 year flood event. Suitably sized drainage conduits and storage systems will be selected based on required capacities determined from future flood modelling. This may also include measures for flood proofing infrastructure to prevent the ingress of floodwaters (levees, drainage structures).

Standard flood hazardous management procedures will be implemented based on dangerous flood depths and velocities. These will include procedures for dealing with flood warnings, flood awareness, flood readiness and suitable evacuation measures. Ongoing flood management during operation of the railway will include regular inspections and maintenance works of flood control infrastructure in line with industry standards, guidelines and principles.

18.5.2.11 Security

The railway corridor will be fully enclosed with appropriate fencing to restrict unauthorised access of persons and stock. Access to the maintenance yard will be via a continuously manned gatehouse as the principal entry point, augmented with an internal access security system. Secondary external access points will be locked at all times and will only be used by authorised personnel.

Access to rail infrastructure by visitors will be permissible under a strictly controlled system with defined SOPs. The system will incorporate procedures to ensure visitors are fully authorised to access the site, have satisfactorily completed site inductions and are registered into the site safety management system. The site security system will be routinely reviewed to ensure procedures remain current and continue to achieve security objectives.

It is not possible to fully secure the railway easement to prevent unauthorised access, particularly at night when there is limited opportunity for passive surveillance. Access to the rail corridor and provisioning yard will be controlled where possible by the use of appropriate fencing, lighting and surveillance cameras, together with regular inspections along the corridor as part of routine maintenance. During construction all compounds and work areas will be temporary fenced to limit public access.

18.5.3 HEALTH CONTROLS

Hazards that pose a potential health risk to staff, contractors and visitors to the site have been identified and assessed in accordance with the risk assessment procedures described in Section 18.2. The risk assessment is considered to be a preliminary risk assessment, with a more detailed risk assessment proposed through the latter stages of detailed design. Descriptions of identified controls are provided in the following sections.

18.5.3.1 Air Quality

The overall assessment of potential air quality issues associated with the construction and operation of the rail system is provided in Volume 3, Chapter 10. Dust impacts to townships are unlikely to be substantial due to the separation distance to major residential locations.

Waratah will implement a range of measures to minimise the risk of exposure by employees and contractors to dust, particulates, gases and vapours in the workplace in order to avoid potential for adverse health effects. The primary mechanism for minimising potential adverse effects to the workforce is to include engineering design controls for all major infrastructure

that have the potential to generate large volumes of particulates, vapours and / or gasses. In addition to design controls, a control program will be established by Waratah Coal that includes addressing the potential sources (i.e. operating machinery, clearing vegetation), controlling potential pathways (i.e. covering stockpiles, watering roads, progressive revegetation) and providing appropriate training and PPE to minimise potential exposure risks.

Dust and particulate monitoring will be undertaken at various locations along the rail corridor and will be incorporated into the EMP. Where exceedances to safety and health standards are identified, a review step will be established and process modifications will be implemented.

18.5.3.2 Odour

The construction and operation of the rail is not expected to generate odours that will be detrimental to personnel onsite or offsite.

The waste management policy that will be adopted for the overall project is that waste products will be taken offsite by licenced contractors to licenced facilities for disposal. There will be facilities set aside at various locations along the rail corridor during construction and at the maintenance yards during construction and operations for waste transfer. These sites will be set away from areas of where personnel will be concentrated and will be protected from prevailing winds. Given these design controls it is not expected that odours from the onsite waste transfer facilities will be detrimental to personnel onsite or offsite.

18.5.3.3 Chemicals

A wide range of chemicals will be used during the construction and operation of the rail and associated infrastructure (refer Table 2). Prior to the commencement of construction, Waratah will prepare SOPs for the storage, containment, disposal and spill response for all potentially hazardous materials that will be used on site. These SOPs will be integrated into the site safety management system. Where standards exist for the storage and containment of hazardous materials i.e. AS 1940:2004: The storage and handling of combustible and flammable liquids, handling and storage procedures will be compliant with relevant legislation and Australian Standards. In particular all hazardous material storages will be designed with appropriate containment bunding and interceptor infrastructure to minimise the potential for risks. Furthermore, all personnel involved in the storage and handling of hazardous materials will be provided with the necessary training to ensure industry competencies are met.

18.5.3.4 Pests

The project is not expected to result in an increase in the abundance or distribution of pests during the construction or operational phase. A PMP will be prepared as part of the construction and operational EMPs. The underlying principal will be that pests will be managed on site, and procedures will be implemented to prevent the increase in abundance and spread of pests.

18.5.3.5 Food Hygiene

Waratah will construct temporary workers camps at various locations along the rail corridor to accommodate the construction workforce. At this stage it is expected that there will be three 150 - 200 person camps servicing the rail corridor. All of the temporary camps will be operated by specialised service providers, experience in the operation of workers camps in central Queensland. Waratah will stipulate that the preferred contractors will be required to operate the workers camp in accordance with relevant food and hygiene legislation, including the *Food Production (Safety) Act 2000* and the *Food Act 1981*. Adherence to the Australia New Zealand Food Standards Code 2005 will also be mandatory.

18.5.3.6 Waste Management

Prior to the commencement of construction activities, Waratah will prepare a WMP as a sub element to the project EMP. The WMP will identify the onsite waste management procedures required to comply with extant environmental protection legislation.

The potential impacts and mitigation measures for waste are discussed in Volume 3, Chapter 12. Typical mitigation measures that will be applied at the site include the purpose design of waste management and transfer areas located away from areas where personnel are concentrated, a hierarchical approach to waste management will be implemented on site, solid wastes will be removed from site via licenced contractors, waste water will be treated onsite and either reused/recycled, or collected and taken away by licenced contractors. All disposal trucks are to be covered and have their wheels cleaned before departing the work sites to ensure that no waste residue is deposited on public roads. Local

truck routes will be chosen that are environmentally acceptable and minimise disruptions to the residents along the route.

The construction of the rail and associated infrastructure will ultimately increase the volume and diversity of the waste from the project area compared to the existing land use. While the waste produced during the construction works will be of short duration (in comparison to the operational phase of the project), waste will continue to be produced predominately from servicing of rolling stock within the rail maintenance yard.

Despite an overall increase in waste compared to baseline conditions, the cumulative impacts of the waste are considered to be minor due to the implementation of best practice protocols and a responsible waste management approach, ensuring the potential for harm to human health is minimal, and where possible, avoided completely.

A contractor's construction EMP will be developed and implemented during construction to contain and limit risks to safety and health from accidental release of waste materials, such as oil spillages. It is expected that this construction EMP will be consistent with the waste requirements of the EMP contained in **Volume 1, Chapter 8**.

18.5.3.7 Noise – Offsite

Noise and vibration assessments (see **Volume 3, Chapter 11**) indicate that occupational safety and health levels for noise will be exceeded beyond the rail at a number of homesteads. Waratah will work with each landholder to establish suitable mitigation measures to minimise the impacts from excessive noise. These measures could include relocation of the homestead outside of noise exceedance levels, acquisition of the property from the owners, noise attenuation modifications and infrastructure. Noise emissions associated with blasting rock, pile driving, etc are less amenable to noise silencing techniques. In these cases management of noise will include scheduling of activities at times of the day when noise from these sources is likely to be less disruptive.

18.5.3.8 Noise – Onsite

Through the SHMS, Waratah will implement a range of measures to minimise the risk of exposure by employees and contractors to elevated operational noise levels in the workplace in order to avoid potential for adverse health effects. Where possible, equipment that will be used onsite will comply with AS 2436. In situations where this is not possible, design controls will be utilised to mitigate operational noise to the extent possible to minimise the risk of hearing injury. Additional measures that will be implemented include the identification and assessment of potential occupational noise hazards and the development of noise control programs to reduce operational noise to appropriate levels. Where operational noise exceeds $LA_{eq,8h}$ 85dB(A) further measures such as the use of hearing protection devices would be implemented.

18.6 EMERGENCY PLANNING AND RESPONSE

18.6.1 EMERGENCY PLANNING

An ERP will be developed and implemented for the rail as part of the HSMS prior to the commencement of construction activities. The system will be modified as the site transitions through to full scale operations. The ERP will include specific procedures aimed at identifying and minimising risks in an emergency response situation provide for regular testing and review of emergency response procedures and prescribe the requirement for routine auditing to ensure the consistency and effectiveness of the system.

Site safety inductions will include specific discussion in relation to emergency response procedures for the Project.

Designated first aid facilities and equipment will be established at the rail maintenance yard and at various locations along the rail corridor prior to the commencement of construction. Facilities will remain at the rail maintenance yard throughout the life of the Project. Appropriately trained personnel will be onsite at all times to provide first aid and to implement emergency response procedures when required. First aid response and provision will be included in the site induction training that will be provided to all site personnel.

Several fully trained firefighting units will be on call during the construction of the rail line. These units will consist of appropriately trained personnel from the rail workforce and will have access to fully maintained and functional firefighting equipment (i.e. water tankers, light units fitted with quick spray units, appropriate

communications, appropriate PPE). During operations all rail maintenance staff will undergo constant fire protection and fighting refresher training and all firefighting facilities and equipment will be installed, serviced, maintained and inspected by a certified agency.

All hazardous materials storages, fuel storages areas, administration buildings, workshops, industrial facilities and accommodation facilities will have a dedicated fire alarm, suppression and firefighting systems. First aid and firefighting equipment (hand held extinguishers and fire hoses) will be located at strategic points within each facility and building. Firefighting equipment and exit locations will be appropriately signed and all work areas will be within the required distance to reach emergency exits. Train locomotives will also be fitted with firefighting and first aid facilities in line with current heavy haul industry practices.

Waratah will liaise with local state emergency services including, Queensland Ambulance Service, Queensland Fire and Rescue Service and Queensland Police Service, to plan emergency response procedures.

18.6.2 EMERGENCY RESPONSE PLAN

Prior to commencement of construction activities, Waratah will prepare an ERP. The purpose of the ERP is to define the processes for emergency response for incidents occurring along the rail corridor or rolling stock yard. It will be used as a guide for the Emergency Response Team Leader, Emergency Response Team Members and all site personnel. The ERP will form a critical component of the SHMS. Separate SOPs will be prepared for the safe day to day operation of the rail system.

The following structure outlines the typical format that will be adopted for the ERP. This structure should be considered as a guide for the purpose of the EIS only. The final ERP structure will be dependent on the final development and structure of the site overall site HSMS and noting that this system will be developed in full, closer to the commencement of construction activities. Notwithstanding the document style identifies the key factors of an ERP, namely the statement of purpose of the ERP, the development of defined procedures to implement in emergency situations, identification of key roles and the identification of responsibilities each of those roles fulfill in an emergency situation, training requirements for all personnel and the processes for testing the ERP.

- Introduction:
  - Purpose; and
  - Scope.
- Procedure:
  - Notification of an Emergency;
  - Identifying Emergency;
  - Personnel First on Scene;
  - Emergency Response Team; and
  - Emergency Management Team.
- Roles and Responsibilities:
- Specific Incident Procedures;
- Training;
- Emergency response training and Exercise mandatory rules;
- Emergency Vehicles and Equipment;
- Emergency Siren Testing;
- References:

  Appendix A – Evacuation Procedure;

  Appendix B – Personal injury Procedure;

  Appendix C – Fire or Explosion Procedure;

  Appendix D – Tyre Fire/Explosion Procedure;

  Appendix E – Vehicle Accident Procedure;

  Appendix F – Flooding Procedure;

  Appendix G – Hazardous Substances Spill or Release Procedure;

  Appendix H – Bomb or Arson Threat Procedure;

  Appendix I – Bomb or Arson Threat Checklist;

  Appendix J – Emergency Reporting Form;

  Appendix K – Structure Collapse;

  Appendix L – Act of Sabotage; and

  Appendix M – External Directory.

18.7 CONCLUSION

Overall, the risks assessed are considered to be common to rail activities and are subject to legislative obligations and controls measures which are provided by way of Commonwealth and State legislation.

No preliminary risk assessment has been undertaken for the decommissioning phase of the Project as the rail is expected to remain operational. It is assumed that new technologies and innovations are too be expected throughout the rail's operational life and as such will alter current baseline risk assessment results which have been currently undertaken.

Results of the preliminary risk assessment for the rail identified that the baseline health and safety risk profile varied from low' to extreme. Once mitigation measures and design treatments are applied to the assessed hazards the residual risks are either ranked as being low or moderate.

The exception being the high risk ranking associated with the potential for collisions of trains and collisions at level crossings. Notwithstanding the risk treatments proposed, the historical data suggests that there will always be an inherent level of high risk associated with level crossings.

No extreme or high ranking risks were detected outside the rail's boundary; however, offsite hazards associated with vehicle movements were ranked high. Applied control measures and design treatments downgraded the associated risk to moderate.

18.8 COMMITMENTS

To minimise the potential risk to the health and safety of onsite and offsite personnel as a result of construction and operational activities associated with the rail alignment, Waratah will commit to:

- construct the infrastructure under a formal SHMS in accordance with the requirements of all relevant legislation;
- undertake the operations of the rail under a formal SHMS in accordance with all relevant legislative requirements;
- monitor and implement amendments to the SHMS where necessary and frequently ensuring its applicability and currency to be maintained throughout the life of the Project; and
- frequently liaise with internal and external stakeholders with respects to safeguarding and improving the SHMS.