18. Hazard and risk

This section describes the potential hazards and risks that may be associated with the proposed rail infrastructure.

18.1 QR emergency procedures

18.1.1 QR emergency preparedness, response and recovery system standard

This document sets out the standard for preparedness, response and recovery of emergencies including natural disasters. The standard requires QR to:

- Define responsibilities of QR staff in emergency situations
- Establish emergency plans for each business group
- Hold desk top emergency exercises and simulated emergency events
- Set up crisis control teams
- Establish a crisis centre
- Define the relationship with State Disaster Plans

18.1.2 QR Emergency Response Plans

QR has Emergency Response Plans which generally cover the following types of emergencies:

- Fire
- Explosion
- Gas leak or imminent explosion
- Structural collapse
- Natural disaster
- Bomb or arson threat
- Act of sabotage
- Accident, serious bodily injury or illness
- Chemical or dangerous goods spill
- Electrocution

In the event that the emergency exceeds the capacity to be dealt with on site then Emergency Services are called in.

Existing emergency procedures are to be amended to incorporate the Project. Site-specific emergency procedures may also be developed for the Aldoga Rail Yard.

18.1.3 QR Rail Emergency Response Plan

The purpose of this plan is to identify the arrangements for response to emergency situations affecting rail traffic on the QR network in Queensland. The plan is supported by a set of procedures for foreseeable rail based emergencies. The procedures are organised into sections:

- Rail emergency response procedures:
  - Sets out the general requirements, roles, responsibilities and arrangements to affect emergency response for rail traffic. Supporting modules contain response procedures for specific emergency situations occurring on the rail network. Some of the emergency situations covered are: level crossing emergency; person hit by train; derailment; collision; fires; track obstructions; dangerous goods emergency; and environmental emergency.
- Train crew response procedure:
  - Contains response procedures for QR train crew in emergency situations.

- Onsite management:
  - Sets out general requirements, roles, responsibilities and arrangements for onsite management at emergency sites affecting rail traffic.

18.2 Hazardous substances

The hazardous goods that will potentially be stored at the Aldoga Rail Yard are listed in Table 18.1.

Table 18.1 Inventory of Hazardous Substances - Rollingstock Maintenance Facility

Supplier/ Product Name	Chemical Name	Concentration in Raw Material Chemicals	Concentration in Operation Storage Tank	UN No.	Packaging Group	Shipping Name	Likely Maximum Inventory (L)
B.P. Regular Unleaded 91 Petrol	Petroleum hydrocarbons Benzene	90-100% 0-5%	100%	1203	II	Motor Spirit	400
BP Low Sulphur Diesel	Petroleum distillate, kerosene, petroleum condensates. Hydrogen sulphide	99-100% 0-1%	100%	1268	III	Petroleum Distillates	3,500,000
ITW Polymers & Fluids, Galmet Spray Paint	Modified alkyd resin, Aliphatic hydrocarbon, Xylene, Aromatic hydrocarbon	10-<30% 10-<30% 10-<30% <10%	100%	1263	II	Paint	10
Applied Chemicals, Molub Alloy 369 Dry Film Lubricant	Isopropyl alcohol	60-100%	100%	1993	II	Flammable liquids, N.O.S. – (contains isopropyl alcohol)	60
KCB Sales Methylated Spirits 95%.	Ethanol	95-100%	100%	1170	II	Ethanol	200
Turco WO2	Phosphoric acid	41%	100%	1805	III	Phosphoric acid	1000

The management of hazardous substances at QR facilities, including the proposed Aldoga Rail Yard will be conducted in accordance with relevant QR standards. The standards require:

- Risk assessment prior to the introduction of new hazardous substances to QR
- A register of hazardous substances to be kept at each workplace
- Training in the safe use and storage of hazardous substances
- Controls when spray painting hazardous substances
- Monitoring when risk due to use of a hazardous substance has been identified
- Controlling of exposure to hazardous substances to reduce the exposure level to less than the exposure standard
- Health surveillance of workers exposed to hazardous substances
- A list of banned substances

Current QR emergency plans for the management of hazardous situations are described in Section 18.1. The current QR emergency plans will be amended to incorporate the Aldoga Rail Yard.

QR intends to store hazardous goods in various quantities at the Aldoga Rail Yard. Diesel and unleaded petrol will be stored in bunded above ground tanks. The bunds will conform to AS1940 and will be designed to hold 110% of the volume of the largest tank in each bund.

18.3 Risk assessment process

A risk assessment was completed during the planning stage of the Project in accordance with the standard QR risk management format. This assessment identified hazards, causes, and likelihood/consequence of risk and provided mitigation measures to reduce the risk of occurrence.

QR's Risk Management Standard was used to undertake the risk assessment for the Project. This standard is consistent with AS4360:1999. A matrix was developed to assess the qualitative risk to the environment from potential impacts (refer Table 18.2). Risk levels included:

- Extreme – Intolerable environmental risk with significant and urgent actions required to reduce the risk
- High and Moderate – Implement EMP actions necessary to reduce risk to As Low As Reasonably Practicable (ALARP)
- Low – Monitor and manage risk to extent necessary

Table 18.2 Risk evaluation matrix

		Consequence					
		1	2	3	4	5	6
Likelihood	6	7	8	9	10	11	12
	5	6	7	8	9	10	11
	4	5	6	7	8	9	10
	3	4	5	6	7	8	9
	2	3	4	5	6	7	8
	1	2	3	4	5	6	7

Table notes:
11-12 = Extreme risk
8-10 = High risk
5-7 = Moderate risk
2-4 = Low risk

The results of the risk assessment completed during the planning phase are shown in Tables 18.5 and 18.6. The existing treatments outline in Table 18.5 and 18.6 refer to treatments which are already in place, standard industry practice or identified during the preparation of this EIS. The Action Plan (Proposed treatment) are proposed measures which need to be quantified post-EIS process through the detailed design construction and operational phases.

An Integrated Risk Management Plan covering the whole life of the Project, including construction, operation and decommissioning will be developed during the detailed design phase.

Table 18.3 Risk assessment (construction)

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Fuel/oil/ chemical storage	Construction requirement	Contamination of land/water and risk of injury to people	CEMP AS 1940	1	5	**Moderate**	**6**	Contractor to develop a construction safety management plan and emergency procedures which area to be reviewed and approved by QR before implementation. Obtain appropriate ERAs (ERA 7 and 11) and operate in accordance with conditions EDR	1	5	**Moderate**	**6**
Accommodation, services and social infrastructure in Gladstone/ Calliope may not be adequate (insufficient for workforce)	Multiple large-scale projects in area Increased workforce for construction Lack of housing in local area	Inadequate construction resources Insufficient houses Construction cost increases Increased rent/property prices in town Increased traffic flows	Social Impact Assessment Accommodation strategy Hold discussions with GRC	6	4	**High**	**10**	Use of construction accommodation village developed by others/establish a QR accommodation village Buses from construction accommodation village to rail yard	3	3	**Moderate**	**6**
Fire risks	Equipment operation Sparks Forest/grass fires (uncontrolled)	Environmental damage Visual amenity Damage to flora and fauna Loss of property and livestock	CEMP QR standard fire management procedures	4	3	**Moderate**	**7**	House keeping Fire breaks Fire-fighting equipment Ongoing maintenance Contractor to develop a construction safety management plan to be reviewed and approved by QR before implementation	3	3	**Moderate**	**6**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Loss or disturbance to flora/fauna	Construction activities removing or disturbing habitat	Unplanned reduction in habitat Reduction in the number of flora and fauna species	CEMP Flora/Fauna management procedures Works in accordance with the *Guideline for Activities in a watercourse, lake or spring* Education and training	4	2	**Moderate**	**6**	Where necessary vegetation clearing approvals and damage mitigation permit Use of a qualified fauna spotter/catcher when required Localised management during construction	3	2	**Moderate**	**5**
Flood damage	Inadequate protection works during construction	Sustained damage to vegetation, creeks, adjoining properties, etc Loss/damage to temporary and permanent works	CEMP Construction method statements	4	3	**Moderate**	**7**	Maintaining appropriate temporary drainage and other protection works during construction – covered through standard contract conditions, work specifications and best practice guidelines/manuals. Contractor to develop a construction safety management plan to be reviewed and approved by QR before implementation Engineering study to determine level of protection EDR	3	2	**Moderate**	**5**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
River bank erosion - Calliope River	Natural river processes Inadequate protection works during construction	Loss/damage to infrastructure Loss/damage to riverine habitat	Monitoring and design Compliance with engineering design standards Employment of construction method statement Works in accordance with the *Guideline for Activities in a watercourse, lake or spring*	4	2	**Moderate**	**6**	Design/engineering study to innovative design Obtain appropriate ERA (ERA 19) and operate in accordance with conditions EDR	3	2	**Moderate**	**5**
Traffic management – Light and Heavy Vehicle traffic (construction)	Increased traffic due to construction vehicles	Dust production Damage to vehicles Pollution Noise Speed Spillage of material	CEMP Water carts Sweepers Covered loads, wheel washers, rumble grid Speed zones	6	3	**High**	**9**	Provide bus transport from construction camp to reduce the number of vehicles CTMP	5	2	**Moderate**	**7**
Construction noise and vibration	Construction equipment/vehicles Pile driving	Nuisance noise and vibration Disturbance to fauna	Noise suppression on equipment CEMP Timing of works	5	3	**High**	**8**	Minimise disturbance where possible and develop alternate mitigation strategies to minimise impact on nearby community In-advance notification of potentially affected landowners Source engineering controls where practical Obtain appropriate ERAs (ERA 19 and 20) and operate in accordance with conditions	5	2	**Moderate**	**7**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Hydrocarbon and chemical spills	Hydraulic hoses burst Refuelling Material selection - biodegradability Construction and site operational activities	Land/surface/ ground water contamination Negative community relations Cost of cleanup Reduced public amenity	Bunding Spill kits Storage away from drainage Training and education Small volumes of hydrocarbons CEMP Compliance with Australian Standards	4	3	**Moderate**	**7**	Obtain appropriate ERA (ERA 11) and operate in accordance with conditions Contractor to develop a construction safety and environmental management plan to be reviewed and approved by QR before implementation	4	2	**Moderate**	**6**
Sediment erosion	Poor construction practices/ planning Non compliance with operating procedures Flood water ingress to site	Water quality Erosion Reduced treatment efficiency of onsite storm water Product contamination Non compliance with licence conditions Negative publicity	CEMP Site drainage network Soil Handling and Management Plan	4	3	**Moderate**	**7**	Regular maintenance (eg silt traps)	3	2	**Moderate**	**5**
Unapproved clearing during construction	Lack of awareness of or existence of procedures Poor construction documentation Inadequate environmental controls on the contractor	Breach of vegetation and clearing regulations Potential for adverse reputation and prosecution Complaints/ Negative publicity	Clearing permits Works in accordance with the *Guideline for Activities in a watercourse, lake or spring*	1	2	**Low**	**3**	Good construction documentation Effective project management of contractor Compliance with permits and licence conditions.	1	2	**Low**	**3**
Dust pollution	Construction activities	Dust generation and nuisance to residences, motorists and flora and fauna along the alignment	CEMP Soil Handling and Management Plan	5	2	**Moderate**	**7**	Contractor to employ dust mitigation methods such as regular watering of construction access roads during dry and windy periods. CTMP	4	2	**Moderate**	**6**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Waste management	Construction waste	Community complaints Visual amenity Damage to wildlife Vectors	CEMP Waste Management Sub Plan Recycle and reuse where practical	3	2	**Moderate**	**5**	Obtain appropriate ERA (ERA 76) and operate in accordance with conditions (weed incineration) Removal of waste in accordance with license or permit conditions by a licensed operator	3	2	**Moderate**	**5**
Cultural heritage	Location of cultural heritage sites Inadequate consultation with Traditional Owners Uncoordinated construction activity	Project delay Impact on relationship with Traditional Owners Damage to CH artefacts	CHMP CEMP Traditional Owner consultation and maintaining a good relationship with Traditional Owners	3	4	**Moderate**	**7**	Continue Traditional Owner consultation CHMP to be adopted prior to construction phase Use of cultural heritage monitors during clearing works at commencement of contract	3	4	**Moderate**	**7**
Adverse publicity	Inadequate consultation and communication	Complaints Community relations Loss of reputation	Landowner consultation Implement EIS communication plan Newsletter Media release	4	3	**Moderate**	**7**	Landowner consultation Community consultation	4	3	**Moderate**	**7**
Fire Ants	Earthworks and equipment movement between the WICT project area and the MLARP project area	Financial penalties Delays Political consequences Spread of fire Ants	CEMP Soil Handling and Management Plan Separation from declared Fire Ant Restricted Area	2	2	**Low**	**4**	Use approved sources of construction material	2	2	**Low**	

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Existing Treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Action Plan (Proposed Treatments)**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Inappropriate works within waterways	Lack of contractor control Unclear permit conditions	Financial penalties Damage to marine plants/fauna Downstream sedimentation Bank stability	CEMP Works in accordance with the *Guideline for Activities in a watercourse, lake or spring* Good construction documentation Effective project management of contractor Compliance audits Appropriate penalties	1	2	**Low**	**3**	Obtain appropriate approvals under the *Water Act 2000* Obtain ERA (ERA 19) and operate in accordance with conditions	1	2	**Low**	**3**
Construction workplace accidents	Blasting, earthmoving, heavy lifting, trenches, equipment, tools, work practices	Risk of personal injury/fatality	CEMP	3	5	**High**	**8**	Contractor to develop a construction safety management plan to be reviewed and approved by QR before implementation. Rigorous implementation of overall safety management plan.	2	5	**Moderate**	**7**
Site sanitation during construction - illness	Leaks and spills Inadequate facilities and/or capacity Poor maintenance and or waste management practices	Illness Disease vectors	Spill kits Training and education Compliance with Australian Standards CEMP	3	2	**Moderate**	**5**	Review existing site policy and recommend appropriate action	2	2	**Low**	**4**

Table 18.4 Risk assessment (rail operations)

Risk identification and analysis			Risk rating (after implementation)								
Risk issue	**Causes**	**Impacts or consequences**	**Planned controls**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Risk treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Distillate, degreaser spray, fuel, oil/lubricant, etc. spills	Rollingstock maintenance operations (storage, cleaning and maintenance operations)	Soil/water contamination, air pollution, loss of biodiversity	Adequate design standards Stormwater Management System OEMP QRs emergency procedures	4	2	**Moderate**	**6**	Existing control measures in place are adequate Obtain appropriate ERA (ERA 72) and operate in accordance with conditions	3	2	**Moderate**	**5**
Fire	Fuel explosion Wildfire	Widespread damage to adjoining property, flora and fauna, personnel	OEMP QR's standard management procedures Fuel handling and storage in accordance with Australian Standards	2	5	**Moderate**	**7**	QRs emergency controls and procedures QR to implement regular corridor maintenance procedures for maintaining vegetation within corridor	2	4	**Moderate**	**6**
Noxious weeds	Inadequate control measures in place during operation	Widespread growth and transfer of weeds to neighbouring properties affecting grazing and ecological value	OEMP including weed management sub plan Wash down and shake down facilities	6	3	**High**	**9**	QR to control weeds and weed spread within corridor through regular corridor vegetation maintenance and appropriate clean down practices. Obtain appropriate ERA (ERA 76) and operate in accordance with conditions Adopt weed management practices in consultation with relevant agencies and landowners	4	3	**Moderate**	**7**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Planned controls**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Risk treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Erosion and flood damage	Inadequate design measures and poor maintenance work during operations	Sustained damage to vegetation, creeks, adjoining properties, etc	OEMP	4	3	**Moderate**	**7**	Regular corridor inspections and maintenance works during operation using established inspection procedures. Operation and safety management plans EDR	3	2	**Moderate**	**5**
Flora and fauna	Train operations Operations outside the project area	Sensitive fauna pathways are dissected by the corridor Accidental loss or disturbance to flora and fauna	OEMP Limit operations outside project area	5	2	**Moderate**	**7**	Planning and design to identify and design adequate protection measures (eg fauna access tunnels). Obtain necessary approvals EDR	4	2	**Moderate**	**6**
Coal spillage	Derailment, Train operations	Large scale (eg majority of wagons spilling) in a low sensitive (such as within the corridor) environment	Address in design phase OEMP QRs emergency procedures	3	3	**Moderate**	**6**	Implement mitigation from the Coal Loss Management Project in agreement with the EPA and industry	1	3	**Low**	**4**
Dust pollution	Operational activities	Localised dust generation and nuisance to residences, motorists, flora and fauna along the rail corridor	OEMP	5	2	**Moderate**	**7**	Implement mitigation from the Coal Loss Management Project in agreement with the EPA and industry	4	2	**Moderate**	**6**
Fuel storage handling	Fuel delivery/storage during Operation stage	Explosion, soil/water contamination/EPA involvement, risk of personal injury/fatality	OEMP Aldoga Rail Yard emergency procedures AS1940	2	5	**Moderate**	**7**	Adopt established fuel transfer procedures, Containment within bund area (storage leaks), alarm procedures, hard wire control, etc. Obtain appropriate ERA (ERA 72) and operate in accordance with conditions EDR	1	5	**Moderate**	**6**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Planned controls**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Risk treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Discharge of waste water/contaminants	Rollingstock/ provisioning cleaning operations - failure of effluent treatment	Water contamination/EPA involvement	OEMP Recycling and reuse of wastewater to minimise offsite water discharge Stormwater management systems Sewage treatment plant and Industrial wastewater treatment plant QR emergency procedures	2	3	**Moderate**	**5**	Regular inspections of treatment plant and regular maintenance plans. Appropriate approvals and permits Removal of wastewater water in accordance with license or permit conditions by licensed operator Obtain appropriate ERA (ERA 15b) and operate in accordance with conditions EDR Connect to existing Aldoga Sewage Treatment Plant (Stage 3 and 4)	1	3	**Low**	**4**
Noise	Train and yard operations	Nuisance to residences along the rail corridor	OEMP Code of Practice Railway Management Noise	1	1	**Low**	**2**	Noise levels during operation are calculated to be well below EPP (Noise) limits Communication of the outcome of the Project's noise modelling to local community	1	1	**Low**	**2**
Cattle on rail corridor	Cattle straying into rail corridor	Accidents leading to injury/death to cattle, personnel injury or damage to equipment	OEMP	4	2	**Moderate**	**6**	Contractor and landowners to agree on appropriate procedures for facilitating crossing of corridor. Fencing of the rail corridor.	3	2	**Moderate**	**5**
Road/rail intersection	Increased traffic across existing rail tracks Incorrect motorist practices	Accidents leading to injury/death to persons, damage to vehicles and trains	ALCAM modelling for level crossings Grade separation of major road/rail intersections	1	6	**Moderate**	**7**	Use appropriate safety control devices as determined by ALCAM Modelling Agreements with DMR and GRC Designated occupational crossings Consultation with local landowners and key stakeholders	1	6	**Moderate**	**7**

Risk identification and analysis			Risk rating (after implementation)									
Risk issue	**Causes**	**Impacts or consequences**	**Planned controls**	**Likelihood rating**	**Consequence rating**	**Risk rating**		**Risk treatments**	**Likelihood rating**	**Consequence rating**	**Risk rating**	
Pedestrian/ Rail alignment interface	Part of the track to remain "unsupervised"	Risk of injury/fatality to people	SMP QR safety design standards for crossings	1	5	**Moderate**	**6**	Whole of rail corridor is to be fenced with well defined occupational and public crossings Agreement with DMR, GRC Consultation with local landowners and key stakeholders	1	5	**Moderate**	**6**
Rail yard lighting	Visual impact Fauna issues Motorists	Visual amenity Nuisance - light pollution	Shielding Directional lighting OEMP	3	2	**Moderate**	**5**	To be addressed in detailed design phase EDR	2	2	**Moderate**	**4**

Table notes:

CEMP – Construction environmental management plan
EDR – Environment Design Report
ERA – Environmental relevant activity
OEMP – Operation environmental management plan
OTMP – Operation traffic management plan
SMP – Safety management plan
SPP – State planning policy
DMR – Department of main Roads
GRC – Gladstone Regional Council

18.4 QR coal haul network incidents

18.4.1 Previous network incidents

Table 18.5 provides a profile of historical accidents and incidents that have occurred on the QR coal network between years 2001 and 2005. The accident profile is worked out based on an estimate track haul length of 2,040 km (this is an approximation only and does not include passing loops and yard sidings).

The majority of the train derailments that occur within the coal network are as a result of the loading and unloading of coal as opposed to the transport of coal.

Table 18.5 QR system wide coal haul accident profile rating

Obstruction type	Average number of accidents/incidents per km per year						Total
	Accidents			Safety incidents#			
	Collisions	Derailment	Others	Collisions	Derailment	Others	
Level crossings							
Livestock							
Motor vehicles/cyclist/pedestrians	0.001			0.007			0.008
Others*	0.001						0.001
On track							
Livestock	0.017			0.037			0.053
Motor vehicles/cyclist/pedestrians				0.004			0.004
Others*	0.010	0.003		0.003			0.015
Yard/sidings							
Livestock							
Motor vehicles/cyclist/pedestrians							
Others*	0.006	0.031		0.001			0.038
Other areas							
Livestock							
Motor vehicles/cyclist/pedestrians							
Others*		0.001					0.001
Total number/km track/year	**0.034**	**0.034**		**0.051**			**0.120**

Table notes:
Accident Profile worked out based on estimated track haul length of 2,040 km (Approximate only, does not include passing loops and yard sidings) and record of incidents over 5 year period. (2001-2005)
These include Near-Miss incidents, potential safety situations
* Others include objects on track, natural obstructions, other animals, other rollingstocks, etc
Source: QR 2008

18.4.2 Potential network incidents

Based on the data in Table 18.5 and the configuration of the proposed trackwork, the projected annual accidents and incidents associated the Project are shown in Table 18.6.

Table 18.6 Projected annual number of accidents and incidents associated with the Project

Obstruction type	Projected average number of accidents/incidents per year						Total
	Accidents			Safety incidents#			
	Collisions	Derailment	Others	Collisions	Derailment	Others	
Level crossings							
Livestock							
Motor vehicles/cyclist/pedestrians	0.076			0.522			0.597
Others*	0.060						0.060
On track							
Livestock	1.293			2.827			4.120
Motor vehicles/cyclist/pedestrians				0.333			0.333
Others*	0.733	0.212		0.234			1.179
Yard/sidings							
Livestock							
Motor vehicles/cyclist/pedestrians							
Others*	0.557	0.031		0.001			3.333
Other areas							
Livestock							
Motor vehicles/cyclist/pedestrians							
Others*		0.001					0.045
Total number/year	**2.719**	**2.972**		**3.976**			**9.668**

Table notes:
Accident/incident rates worked out based on QR system wide profile (refer Table 18.5)
These include Near-Miss incidents, potential safety situations
* Others include objects on track, natural obstructions, other animals, other rollingstocks, etc
Source: QR 2008

18.5 Conclusion

The potential construction hazards and risks will be managed by implementing the CEMP and the Construction Safety Management Plan.

QR has a comprehensive risk management system, emergency procedures and access to Emergency Services at local and State levels. Additional procedures will be incorporated into the existing system to cover the new rail infrastructure.

18.6 Commitments

The relevant hazard and risk commitments for the Project include:

- Amend the existing emergency procedures to accommodate the proposed Project
- Prepare and implement the following management plans:
  - CEMP (prior to construction)
  - CTMP(prior to construction)
  - CHMP(prior to construction)
  - OEMP (prior to operation)
  - Other relevant management plans and/or procedures designed to minimise environmental harm