

**Transport and Main Roads**

# **Queensland Level Crossing Safety Strategy**

**2012-2021**

**Queensland Level Crossing Safety Group**

Transport and Main Roads is Queensland's Rail Safety Regulator. We work with the rail industry to enhance rail safety by:

- conducting regular safety audits of operators
- investigating rail safety incidents
- overseeing compliance with rail safety legislation
- working with rail operators on potential opportunities to improve safety management
- collecting and analysing rail safety incident statistics.

### Contact:

**Web** <http://www.tmr.qld.gov.au>  
**Phone** 07 3066 2915  
**Email** [rsr@tmr.qld.gov.au](mailto:rsr@tmr.qld.gov.au)  
**Post** PO Box 673  
Fortitude Valley Qld 4006

© The State of Queensland (Department of Transport and Main Roads) 2012



<http://creativecommons.org/licences/by/2.5/au>

# **Queensland Level Crossing Safety Strategy**

# **2012-2021**

**Queensland Level Crossing Safety Group**

# Contents

Foreword . . . . .	3
Introduction . . . . .	4
Vision and aims . . . . .	4
Scope . . . . .	5
Challenges . . . . .	6
National context . . . . .	7
Queensland approach . . . . .	8
Strategies . . . . .	9
Implementation and evaluation . . . . .	10
Review . . . . .	10
Appendix - key actions and performance indicators . . . . .	11

# Foreword

All too often, level crossing accidents feature on the news around Australia. Thankfully, collisions with road vehicles in Queensland have been steadily declining since 2006, with relatively few fatalities. But there is no room for complacency. The Queensland Government believes any level crossing accident is one too many, especially when these can be avoided. Zero harm must be our goal.

Governments and rail industry leaders across Australia are acutely aware of the importance of maintaining the safest possible railway operations for both staff and customers. As a result, there have been many improvements made in recent years to level crossings throughout the state. Since 1999, and for the period to 2021, the Queensland Government has allocated over \$250 million to improve rail level crossing safety. Additional warning signs, road markings, flashing lights and boom gates have all contributed to making our level crossings safer.

Building on these achievements, I am pleased to introduce the Queensland Level Crossing Safety Strategy 2012-2021. This 10-year strategy is a comprehensive and carefully targeted commitment to further improve safety outcomes for all level crossing users. It has been developed by the Department of Transport and Main Roads collaboratively with representatives from local and state government organisations and industry.

Working together with the Queensland community, we will implement actions across 12 strategic focus areas. The aim is to eliminate collisions and reduce the number of near miss incidents.

Importantly, the strategy is consistent with national efforts to improve road and rail safety. It targets a wide range of initiatives including promoting safe behaviour at level crossings, enhancing the visibility and audibility of trains, exploring new technology, improving level crossing infrastructure, and undertaking research and development. While it is not always possible to eliminate existing level crossings, an objective of the strategy is to avoid adding any further level crossings to the current network.

A safe and efficient transport network is vital for connecting Queensland's people, places and businesses. This strategy will contribute to achieving a long term vision of zero harm at level crossings across Queensland.



## **Scott Emerson MP**

Minister for Transport and Main Roads



## Introduction

**In Queensland from 2001 to 2011, level crossing incidents accounted for about 25% of all rail fatalities and serious injuries. In almost all cases, incidents have resulted from the actions and behaviours of road users. In a state that aims for ‘zero harm’ in transport safety, this statistic is too high.**

The Queensland Government believes all level crossing incidents are ultimately avoidable. As a result, the Queensland Government has worked with stakeholder support from local and state government organisations and industry to champion this strategy which aims to eliminate level crossing collisions, reduce the number of near miss incidents and minimise the impact of any incidents that occur.

Under the strategy, rail and road stakeholders have committed to work collaboratively to address 12 areas of strategic focus across three themes: people, vehicles and infrastructure, and knowledge.

This strategy complements the National Railway Level Crossing Safety Strategy 2010-2020, which was released by the Australian Transport Council in 2009 to promote national consistency in addressing this important issue.

A reliable state transport network is vital for connecting people, places, goods and services. It is in everyone’s interests that road and rail users work together to make this network as safe and efficient as possible.



# Vision and aims

The long-term vision of this strategy is zero harm at level crossings across Queensland.

To this end, in 2012-2021, the strategy aims to:

- eliminate level crossing collisions
- reduce the number of near miss incidents at level crossings
- minimise the impact of any incidents that occur.



## Scope

This ten year strategy will be implemented at all public level crossings in Queensland, which includes approximately 1600 crossings, including pedestrian crossings.

The strategy focuses on all users of level crossings, including train crew and passengers, road vehicle drivers, riders, passengers and pedestrians.

The strategy excludes private (occupational) crossings and crossings that are part of the cane rail network. These crossings, including any which may be accessible to the public, are considered to be a workplace health and safety matter and are managed under separate arrangements.

A level crossing is defined by Australian Standard 1742.7-2007 as any crossing of a railway at grade, providing for both vehicular traffic and other road users including pedestrians.

# Challenges

Overall, Queensland has a good level crossing safety record when compared with other states, territories and with other countries. Yet more must be done if we are to achieve our vision of zero harm.

## Factors contributing to collisions

There is no single reason for level crossing collisions and near misses occurring. Contributing factors can include:

- people, especially road users and the extent to which they obey the law and respond appropriately to the circumstances of the moment
- vehicles and infrastructure, including speed limits, the design of vehicles, and the design and condition of level crossings and level crossing environments
- the overall management of road-rail interfaces, including coordination between service providers, the allocation of resources, and the ways in which knowledge is applied to enhance safety.

## Number of collisions and near misses

Many level crossing incidents that occur are potentially dangerous but do not result in an actual collision. Often there are 'near misses' between a train and a road vehicle or pedestrian. Sometimes there is damage to level crossing infrastructure, or equipment failure.

In Queensland between 2001 and 2011 there were 5266 reported level crossing incidents – an average of 1.3 incidents a day. Also in the same period, there were 196 reported collisions. While this number may not seem especially high, it is still unacceptable.



In almost all level crossing incidents, the actions and behaviours of individual road users were found to be the key contributing factors. Around 36 per cent of reported level crossing incidents in Queensland during this period involved a truck. It should be noted heavy vehicle mass and length contribute to the risk of collision with trains at level crossings.



## Impacts of collisions

Any level crossing collision can cause service disruptions, property damage, injury and in the most tragic cases, death. This can result in substantial social and economic impacts, as well as a loss of confidence in the public transport system. The combination of speed and more passengers and freight travelling on intersecting rail and road systems also raises significant concerns about the potential for high impact or catastrophic incidents, which could result in mass fatalities.

From 2001 to 2011, collisions at Queensland level crossings resulted in 23 deaths and 45 hospitalisations. This is an average of nearly 6 serious casualties a year. A high proportion of level crossing casualties in Queensland have occurred in rural areas.

The Bureau of Transport and Regional Economics (2002) has estimated that in 1999, the cost of level crossing collisions nationwide was \$32 million. On this basis, after adjustment for inflation, the annual cost to Queensland today could be around \$10 million.





## National Context

Fortunately, there is already a high level of commitment from governments and the rail industry to make level crossings as safe as possible. In recent years, investments have included additional warning signs, road markings, flashing lights and boom gates. This strategy builds on these achievements, and is consistent with the range of existing national, state and local work to improve rail and road safety.

At the national level, the Standing Council on Transport and Infrastructure, formerly known as the Australian Transport Council (ATC), provides a forum for the Australian Government and all states and territories to work cooperatively in support of nationally consistent, safe, sustainable and competitive transport systems. In November 2009, the ATC released the National Railway Level Crossing Safety Strategy (2010-2020).

A Queensland Level Crossing Safety Group has been established, consisting of local and state government representatives and industry. This group provides advice on level crossing strategy and oversees a memorandum of understanding which defines management and funding responsibilities of railway managers and road authorities at level crossings.

Funding of up to \$17 million has been allocated from 2006-2007 to 2012-2013 for public open level crossing assessments and upgrades (excluding grade separations) provided through a contractual agreement between the Queensland Government and Queensland Rail. Upgrades on the rail network are also funded

through commercial business arrangements and additional Australian Government and Queensland Government programs and projects.

The *Transport (Rail Safety) Act 2010* requires all Queensland road managers (primarily local government and the Department of Transport and Main Roads) and rail managers (including Queensland Rail, QR National, Australian Rail Track Corporation and Tourist and Heritage rail operators) to enter into road/rail crossing interface agreements to jointly manage level crossing safety. All road and rail managers are required to enter into these agreements by 1 September 2012. These requirements are also provided for in the Rail Safety National Law.

Importantly, level crossing safety is a shared responsibility. The success of this strategy relies on representatives from government, industry and the community working together.



# Queensland approach

In light of the challenges and complexity of level crossing safety, this strategy takes an approach which is:

- **broad-based**, seeking the involvement of the wide range of stakeholders with shared responsibilities across all possible aspects of level crossing safety
- **balanced**, giving due weight to both behavioural and technical solutions, acknowledging the evidence that level crossing trauma is caused by human factors as much as engineering and design factors
- **collaborative**, basing action on the cooperative engagement of key stakeholders both in Queensland and nationwide
- **knowledge-driven**, basing solutions on evidence and recognising the ongoing need for comprehensive data, investigation, evaluation, research and development
- **proactive**, reducing the number and severity of collisions by addressing known risks and possible risks
- **focused**, targeting specific population groups and risks, as well as adopting more generic solutions
- **prioritised**, seeking value for money to address priority issues
- **accountable**, providing performance indicators and other mechanisms to ensure key stakeholders meet their obligations
- **based on 'safe systems'**, where all aspects of the road-rail interface are geared to safety and all parties are expected to contribute, including road users. Underpinning this approach is an emphasis on knowledge (understanding the way the system works, including the complex interactions between its components).

The Queensland approach is consistent with and supplements the 'safe system' approach of the National Railway Level Crossing Safety Strategy 2010-2020.



Source: The Australian Transport Council, 2009, National Railway Level Crossing Safety Strategy 2010-2020, p5

# Strategies

Level crossing safety in Queensland will be improved through action in 12 key areas. These relate to: people, vehicles and infrastructure, and the effective use of knowledge.

## People

1. Coordinate level crossing services
2. Increase public awareness
3. Address risk to specific population groups
4. Enforce the law

## Vehicles and infrastructure

5. Equip trains, train crews and road vehicles to reduce risk
6. Reduce heavy vehicle risk
7. Maintain and improve level crossing infrastructure
8. Control level crossing environments
9. Eliminate level crossings where appropriate

## Knowledge

10. Evaluate safety initiatives and investigate incidents
11. Collect and analyse data to better understand risk
12. Promote research and development

## People

1. **Coordinate level crossing services**  
Coordinate services effectively at all levels, from high-level policy and strategy development to the management of individual level crossings.
2. **Increase public awareness**  
Promote level crossing safety through all available channels and through both road and rail public awareness campaigns.
3. **Address risk to specific population groups**  
Target the special needs and circumstances of young people, seniors, pedestrians and vulnerable people such as people with disabilities.
4. **Enforce the law**  
Deter would-be offenders, apply police resources effectively and use new technologies to strengthen enforcement.

## Vehicles and infrastructure

5. **Equip trains, train crews and road vehicles to reduce risk**  
Enhance the visibility and audibility of train klaxons, explore the potential of vehicle-to-vehicle Intelligent Transport Systems and strengthen vehicles to reduce the impact of a collision.
6. **Reduce heavy vehicle risk**  
Ensure infrastructure is suitable for heavy vehicle use by only approving over-length vehicle use on roads where level crossing risks will not be increased and assist heavy vehicle drivers through education and awareness.
7. **Maintain and improve level crossing infrastructure**  
Assess risk, maintain and upgrade infrastructure as appropriate, and explore the potential of vehicle-to-infrastructure Intelligent Transport Systems.
8. **Control level crossing environments**  
Address road speed limits, road and rail design and other environmental factors which might contribute to collisions and near misses.
9. **Eliminate level crossings where appropriate**  
Explore opportunities for grade separation or closing level crossings and seek to minimise any proposals to construct a public level crossing on a greenfield site, with a clear objective to add no further open level crossings to the network.

## Knowledge

10. **Evaluate safety initiatives and investigate incidents**  
Use audits, evaluation and investigations to improve knowledge and understanding of the strengths or weaknesses of particular approaches to level crossing safety.
11. **Collect and analyse data to better understand risk**  
Improve data quality and apply data in ways that will increase knowledge of crash causes and countermeasures.
12. **Promote research and development**  
Encourage and monitor research and development relating to level crossing safety, including matters relating to human factors and driver interactions with level crossing (and other) infrastructure.





## Implementation and evaluation

**The Queensland Level Crossing Safety Group will develop annual action plans, statements of current priorities, and outcome indicators to guide and coordinate implementation of this strategy.**

Delivery of specific initiatives in the 12 areas of focus will remain the responsibility of local and state government agencies and industry organisations, in accordance with their existing roles. Individual agencies and organisations will retain responsibility for developing their work programs in consultation with the Queensland Level Crossing Safety Group, and as appropriate to their own resources and priorities. They will report within their own chains of accountability for the delivery of their programs and achievement of key performance measures. The Queensland Level Crossing Safety Group will provide overall direction, and will monitor progress towards achieving the strategy's vision.

While statistical trends and dollars spent can help to demonstrate progress, it is important not to lose sight of the strategy's long-term vision of zero harm. The two overall performance indicators for the strategy are:

- number of collisions and near misses
- number of deaths and hospitalisations (normalised for traffic growth).

A reliable state transport network is vital for connecting people, places, goods and services. It is in everyone's interests that road and rail users work together to make this network as safe and efficient as possible.

## Review

This strategy will be reviewed after three years to ensure it remains consistent with contemporary trends and developments. A reassessment of the strategy will occur towards the end of the strategy period (2021).

## Appendix - key actions and performance indicators

KEY AREA OF FOCUS	KEY AREA OUTCOMES	KEY ACTIONS	INITIATIVE STARTS	
			2012/13	POST 2013
People	Coordinate level crossing services	Coordinate level crossing activities statewide through the Queensland Level Crossing Safety Group.		
		Contribute to the coordination of level crossing safety activities Australia-wide through membership of national bodies.		
		Implement the Memorandum of Understanding for Management and Funding Responsibility for Level Crossing Safety.		
		Facilitate the introduction of interface agreements providing for the coordination of risk management at individual level crossings.		
	Increase public awareness	Promote level crossing safety through the continuous public awareness campaigns that promote overall road safety and rail safety.		
		Promote level crossing safety through public awareness campaigns.		
		Promote level crossing safety through National Rail Safety Week.		
	Address risk to specific population groups	Address risk to young people, seniors and pedestrians through road and rail safety public awareness campaigns.		
		Contribute to the national project developing primary school resources on level crossing safety.		
		Investigate the feasibility of installing lockable gates to prevent pedestrians from forcing gates open when a train is in the vicinity.		
		Undertake the assessment of pedestrian crossings for compliance with Australian Standards.		
	Enforce the law	Review the appropriateness of penalties for breaches of Queensland law in relation to level crossings.		
		Enforce the road rules relating to level crossings through traffic policing.		
		Amend state legislation to provide for use of level crossing safety cameras.		
		Install safety cameras at selected level crossings.		



KEY AREA OF FOCUS	KEY AREA OUTCOMES	KEY ACTIONS	INITIATIVE STARTS	
			2012/13	POST 2013
Vehicles and Infrastructure	Equip trains, train crews and road vehicles to reduce risk	Adopt Australian Standard AS7531 to enhance train conspicuity.		
		Assess the potential to apply new vehicle-to-vehicle warning systems as they become available.		
		Continue support for the Australian Design Rules as an instrument in enhancing road vehicle crashworthiness.		
	Reduce heavy vehicle risk	Ensure approvals for heavy vehicle use of roads will not increase level crossing risks.		
		Enforce multi-combination vehicle compliance with level crossing rules, route use requirements and heavy vehicle performance based standards.		
		Ensure new and existing approvals for heavy vehicle use are correct.		
		Contribute to the national project reviewing policy on use of level crossings by restricted access vehicles.		
		Contribute to the national project developing an education and awareness program addressing heavy vehicle over-representation in level crossing incidents.		
	Maintain and improve level crossing infrastructure	Continue the assessment of risk through application of the Australian Level Crossing Assessment Model (ALCAM).		
		Maintain level crossing infrastructure in accordance with Australian Standards.		
		Maintain a dedicated ongoing program of public open level crossing improvements funded by the Queensland Government.		
		Continue to target additional Australian and Queensland Government programs as an opportunity to fund public open level crossing improvements.		
	Control level crossing environments	Continue the assessment of risk related to level crossing environments through application of ALCAM.		
		Maintain level crossing environments in accordance with Australian Standards.		
		Where appropriate, reduce road speeds in the approach to level crossings.		
		Ensure local planning approvals do not increase risk at level crossings.		
	Eliminate level crossings where appropriate	Contribute to the national project developing agreed protocols for removal of unnecessary or rarely used level crossings.		
		Subject to agreement from stakeholders, close level crossings where appropriate.		
		Undertake grade separations in high priority locations as provided for by the Rail Crossing Grade Separation Program of the Department of Transport and Main Roads.		
		Seek alternatives to the building of new level crossings.		

KEY AREA OF FOCUS	KEY AREA OUTCOMES	KEY ACTIONS	INITIATIVE STARTS	
			2012/13	POST 2013
Knowledge	Evaluate safety initiatives and investigate incidents	Evaluate new safety initiatives to establish which initiatives may provide significant safety improvements.		
		Undertake audits of interface agreements between road managers and rail infrastructure managers.		
		Investigate or assess level crossing incidents, including near misses and respond to findings of investigations as appropriate.		
	Collect and analyse data to better understand risk	Maintain a high standard of data collection including near miss reporting.		
		Continue to explore opportunities for greater use of cameras for collecting data.		
		Undertake effective statistical analysis and provide reports enabling level crossing safety measures to be better targeted.		
		Contribute to national initiatives towards better data quality and coordination, including a national policy and standard for level crossing data.		
	Promote research and development	Trial and evaluate new technologies, with emphasis on low cost solutions and use of Intelligent Transport Systems to enhance level crossing safety.		
		Contribute to projects of the Cooperative Research Centre for Rail Innovation and development of the national research agenda.		
		Monitor current Australian and overseas research and assess its implications for Queensland.		
		Contribute to the national project developing safe system guidelines for level crossing environments.		

