External FAQs for Code of Practice - Train Visibility at Level Crossings

Question	Answer
What is the purpose of the Code of Practice – Train Visibility at Level Crossings (the code)?	The code provides a nationally consistent means for rail transport operators to comply with the Rail Safety National Law (RSNL) duty to manage, so far as is reasonably practicable, the safety of rail and road users at level crossings where interactions occur between trains and road users. The code focuses on improving train visibility at level crossings taking into consideration the different risks and hazards that contribute to a road user not being able to see a train on approach to a level crossing.
Broadly speaking how was the research on train illumination, which informed the code, conducted by Monash IRT?	The Monash Institute of Railway Technology (Monash IRT) research reports (April 2023 and September 2024) commissioned by ONRSR use a measure of luminance in assessing the visibility of a train in certain circumstances. While this is currently not common practice in the rail industry, using the luminance of an object is standard practice in road lighting design. For instance, luminance is considered in the design of traffic lights, and car taillights. The common method to date in the rail industry has been to rely on a subjective assessment by a person or road user at different distances and viewing angles. This research adopts a more scientific approach to the assessment of train visibility, a step forward in improving the safety of level crossings.
The code was originally focused on train illumination - why was the scope of the final code expanded beyond lighting?	ONRSR's position on train illumination remains consistent. That is, train illumination is one of several measures that may assist in dealing with the risk of a collision at a level crossing. The code aims to improve train visibility at level crossings taking into consideration the different risks and hazards that contribute to a road user not being able to see a train on approach to a level crossing. Throughout 2022 and 2023 ONRSR facilitated the delivery of important research to improve awareness and visibility of train approaching level crossings as part of continuing focus on safety at regional level crossings. In June 2023 Infrastructure and Transport Ministers committed to improving level crossing safety across Australia by improving illumination of trains approaching level crossings. Data on collisions and near-hits at level crossings show that the majority occur in daylight (74% of collisions and 81% of near-hits).

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	Given this data, the scope of the code was extended beyond train illumination to address a wider range of visibility hazards that can impact a road user's ability to safely use a level crossing. The code puts an emphasis on improving train visibility within the broader objective of improving safety at level crossings. Train visibility at level crossings requires a multifaceted approach to risk management for the identification, assessment, and selection of controls to manage risks arising from interactions between trains and road users at level crossings.
Who is the Code of Practice for?	The code is for use by all Australian rail transport operators (rolling stock operators and rail infrastructure managers) as safety duty holders under the RSNL. It has application to Australian road managers, who are not RSNL duty holders but have RSNL responsibilities as key level crossing management partners across Australia. Effective cooperative and coordinated management by rail transport operators and road managers is essential to underpin the shared responsibility to manage risks to safety at level crossings.
Is adoption of the code compulsory?	Compliance with an approved code of practice is not mandatory provided a rail transport operator has an alternative solution with the same or better control measures, or they can show a recommended control is not reasonably practicable for their operations. Adoption of an approved code is a positive way in which to meet legal requirements and to discharge general safety duty obligations, having the objective of protecting rail safety workers and the public from harm. As per section 250 of the RSNL in the case of proceedings, a code may be used as evidence of what should be known about the safety risk the code is addressing and the nature of controls that should be in place.
What if rail transport operators don't adopt the code?	Under the RSNL, a rail transport operator must either eliminate the risks associated with their railway operation or where this is not possible, must reduce those risks as far as is reasonably practicable. A court may use an approved code as evidence to determine whether a rail transport operator, so far as is reasonably practicable, addressed a safety risk.

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	Under section 250(4) of the RSNL, in the case of proceedings, evidence of compliance different to the code may be introduced if it achieves an equivalence or higher standard of safety. If a rail transport operator is unable to satisfy the Court that it has either adopted the code, or adopted alternative risk controls that the Court deems to be at least the equivalent of the code, the operator would then be liable for the penalty associated with the matter at hand.
Why are more lights on the front and sides of locomotives not specified in the Australian Standard or in the Code?	The Australian Standard for Rolling Stock Lighting and Visibility was revised in 2023. It drew heavily from the research undertaken by Monash Institute of Railway Technology. The research results indicated that in certain conditions, additional lights on the front of a locomotive may improve its visibility on approach to a level crossing. However, the review considered that further data was appropriate before additional lighting was specified. Subsequently, further research was undertaken in late 2023. The findings are now being considered by Rail Industry Safety and Standards Board (RISSB) for possible inclusion in a further revision of the Standard for Rolling Stock Lighting and Visibility.
Are lights being installed on all freight wagons?	The code of practice sets out train visibility best practice to provide rolling stock operators with guidance on how to tailor the assessment and treatment of the risks associated with train visibility particularly at level crossings. To comply with the code of practice, rolling stock operators must assess risks with the relevant infrastructure manager with the aim of establishing a program of work to modify the rolling stock to the expected requirements. The timeframe for delivering any modifications must not exceed 5 years.
Why does ONRSR not force train operators to fit additional lights to their trains?	The RSNL does not have universal prescriptive requirements for operators to fit lights on trains. Instead, each rail operator must assess the safety risks associated with their operation. The operator is required to either eliminate the safety risks associated with their railway operation or where this is not possible, to reduce those risks so far as is reasonably practicable (SFAIRP). ONRSR expects operators to assess a range of measures that may be suitable to control the risks to safety at level crossings.

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	The code provides guidance to rail operators on how to achieve a SFAIRP outcome. It is appropriate for each rail operator to complete the related risk assessments as they are the most familiar with, and best understand, the nature of the safety risks of their operation.
Who managed the research conducted by Monash Institute of Railway Technology?	ONRSR commissioned the Monash Institute of Railway Technology to undertake research on train visibility. ONRSR also established an industry working group to support this research.
Should all rolling stock operators fit flashing beacon lights and side lights to their locomotives and rolling stock?	The RSNL requires that a rail transport operator must either eliminate the risks associated with their railway operation or where this is not possible, must reduce those risks as far as is reasonably practicable. The RSNL and the code do not mandate the fitting of flashing beacon lights and side lights on locomotives and rolling stock. The code helps operators and road managers undertake a more tailored risk assessment for level crossings. Each operator must assess the risks to safety and available control measures so as to improve train visibility for road users approaching level crossings. Whether controls such as flashing beacon lights and side lights are necessary depends on each operator's risk assessment. Several large national operators including Pacific National and Aurizon have committed to adopting the code and ONRSR will be communicating with all rail transport operators to ensure they are aware of the code and their responsibilities.
How long would it take for locomotives in Australia to have flashing beacon lights and side lights fitted and operational?	There are financial and engineering implications to modifying rolling stock. It is expected that each rolling stock operator will assess the risk implications of their operations and fleets with the aim of establishing a program of work to complete necessary modifications. The Code allows rolling stock operators up to 5 years to complete this work. Several large national operators including Pacific National and Aurizon have committed to adopting the new code and ONRSR will be communicating with all rail transport operators to ensure they are aware of the code and understand their responsibilities.
In the trucking industry, there are mandated lighting requirements. Why is this not the case for trains?	The regulatory framework for railway operations in Australia differs from that of heavy vehicles. In addition to safety duties, the Heavy Vehicle National Law (HVNL) has prescriptive requirements for the lighting of heavy vehicles in states that have adopted the HVNL. Heavy vehicles are

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	also required to comply with legislative requirements in the road rules and the Australian Design Rules. The number of heavy vehicles and the high frequency at which they interact with other road users means that lighting is an appropriate means of managing risks to road safety. Under the RSNL, each rail operator must assess the risks to safety at level crossing and the available control measures so as to improve train visibility for road users approaching level crossings. Whether controls such as flashing beacon lights and side lights are necessary depends on each operator's risk assessment. To establish universal mandated requirements for train illumination would require legislative amendment which is a decision for Australia's Infrastructure and Transport Ministers.
What changes were made to the Rolling Stock Lighting and Visibility Standard - AS7531 released in December 2023?	The improvements to the Standard in December 2023 include:- o Design principles that consider the visibility of rolling stock from a road users' perspective, visibility during day and night, and other environmental factors o Technical requirements for the use of LED light technology o Additional technical requirements for visibility (ditch) lights o Detailed maintenance requirements for lighting fixtures, reflectors and clarifications of operator responsibility to ensure the effectiveness of lighting and livery.
What is the extent of the research conducted by Monash Institute of Railway Technology (Monash IRT)?	There have been two studies undertaken by Monash IRT. Firstly, in October 2021, the Office of the National Rail Safety Regulator (ONRSR) commissioned the Australasian Centre for Rail Innovation (ACRI) to conduct a review of current research and best practice both in Australia and internationally on train visibility. The report identified approximately 30 potential controls for improving train visibility at level crossings, with the majority focussed on better illumination of trains. In March 2022, ONRSR met with the Freight on Rail Group (FORG) to discuss opportunities to trial some suggested controls identified in the ACRI report. Following on from this meeting, ONRSR engaged Monash Institute of Rail Technology (MIRT) to design a scientific testing regime to validate two suggested recommendations from the ACRI report under supervised trial conditions. These two being: • flashing beacons on locomotives; and • conversion of locomotive headlights from halogen globes to light-emitting diode (LED).

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	The full report relating to this piece of research was released in April 2023 and is available HERE. Secondly, in late 2023, ONRSR commissioned Monash IRT to undertake further research to assess the effectiveness of additional lighting on a locomotive, specifically flashing LED lights mounted on the front, and marker lights mounted on both sides, primarily during daylight but also at night. Over 500 luminance measurements were collected in various scenarios including vegetation obscurity, simulated weather conditions, and different daylight and nighttime condition. These research findings were published in September 2024 and can be viewed here.