



Level crossings – rail industry requirements

RiSSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

Train Control Systems Standard



This Australian Standard® AS 7658 Level crossings – rail industry requirements was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

ARTC	UGL	Pacific National
ARC Infrastructure	Aurizon	South Australian Government
Siemens	Queensland Rail	PTA WA
KiwiRail	TfNSW	QUT
University of the Sunshine Coast	Wabtec	VicTrack
MTM		

The Standard was approved by the Development Group and the Train Control Standing Committee in September, 2020. On September 22, 2020 the RISSB Board approved the Standard for release.

This standard was issued for public consultation and was independently validated before being approved.

Development of the Standard was undertaken in accordance with RISSB's accredited process. As part of the approval process, the Standing Committee verified that proper process was followed in developing the Standard

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comment on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



Deb Spring
Exec. Chair / CEO
Rail Industry Safety and Standards Board

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This Standard was prepared by the Rail Industry Safety and Standards Board (RISSB) Development Group AS 7658 Level crossings – rail industry requirements. Membership of this Development Group consisted of representatives from the organisations listed on the inside cover of this document.

This Standard supersedes AS 7658:2012.

This Standard has been reviewed and updated to reflect current legislative requirements, and current practices in level crossing management.

Objective

This standard provides the rail industry with a set of requirements and recommendations to be used to control level crossing risks, and to promote a consistent treatment of level crossings.

This Standard

- (a) provides a uniform basis for compliance with Rail Safety National Law;
- (b) complements the requirements of the road rules in each jurisdiction in relation to level crossings;
- (c) covers differing rail operations across Australia;
- (d) recommends the process and requirements for the application of new technology;
- (e) provides a basis for the evaluation of changes to railway operations that affect the risks, and;
- (f) identifies the hazards and associated risks associated with level crossings.

This Standard applies to new and upgraded level crossings and may be applied by rail infrastructure managers (RIM) against existing level crossings.

Compliance

There are four types of provisions contained within Australian Standards developed by RISSB:

1. Requirements.
2. Recommendations.
3. Permissions.
4. Constraints.

Requirements – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term 'shall'.

Recommendations – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term 'should'.

Recommendations recognise that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

Permissions – conveys consent by providing an allowable option. Permissions are identified within the text by the term 'may'.

Constraints - provided by an external source such as legislation. Constraints are identified within the text by the term 'must'.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities, or interfacing organisations where the risk may be shared.

RISSB Standards address known hazards within the railway industry. Hazards, and clauses within this Standard that address those hazards, are listed in Appendix A

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1 Scope and general

1.1 Scope

This standard specifies minimum operational and engineering requirements of the life cycle of a level crossing. Note that all level crossings must comply with Rail Safety National Law and all stakeholders, including the rail infrastructure manager (RIM) and road manager, need to ensure compliance with that law.

The requirements for level crossing traffic control devices for road users in this Standard are intended to supplement details already prescribed in AS 1742.7

Level crossings contribute to the risks of railway operation. Grade separation of road and railway alignments is the preferred option where possible.

This standard applies to all railways over 600 mm track gauge, including rail freight and passenger networks, heritage and tourist railways and cane railways where appropriate. Whilst not mandated, light rail organisations may adopt this Standard if appropriate to do so.

This standard does not apply to level crossings within a restricted access railway yard and used solely by personnel authorized to access the level crossing by the RIM.

The key level crossing elements addressed in this Standard:

- (a) Safety practices within the level crossing lifecycle that consist of the following processes.
 - (i) Requirements definition and analysis.
 - (ii) Design.
 - (iii) Construction.
 - (iv) Testing and commissioning.
 - (v) Maintenance.
 - (vi) Degraded mode operation.
 - (vii) Upgrade and renewal.
 - (viii) Decommissioning.
 - (ix) Disposal.
- (b) Safety requirements for level crossing infrastructure, which can consist of a combination of these components.
 - (i) Passive traffic control devices.
 - (ii) Active traffic control devices.
 - (iii) Train detection system.
 - (iv) Power supply for level crossing equipment.
 - (v) Monitoring systems.
 - (vi) Warning systems
 - (vii) Railway signals for rail vehicles.
 - (viii) Train control system technology.

1.2 Exclusions

The standard does not address train operation requirements in emergency situations.

1.3 Normative references

The following referenced documents are indispensable for the application of this Standard:

- AS 1428.1 Design for access and mobility - General requirements for access - New building work.
- AS 1742.7 Manual of uniform traffic control devices - Railway crossings.
- AS 2439.1 Perforated plastics drainage and effluent pipe and fittings – Part 1: Perforated drainage pipe and associated fittings.
- AS 4292.1 Railway safety management - Part 1: General requirements.
- AS 7470 Human Factors Integration in Engineering Design - General Requirements.
- AS 7635 Railway infrastructure - Track geometry.
- AS 7637 Railway infrastructure - Hydrology and Hydraulics.
- AS 7638 Railway infrastructure - Earthworks.
- AS 7639 Railway infrastructure - Rail support systems.
- AS 7640 Railway infrastructure - Rail Management.
- AS 7651 Axle Counters.
- AS 7770 Rail Cyber Security.
- AS 7717 Signal Testing & Commissioning.
- AS 7718 Signal design process management
- AS 60529 Degrees of protection provided by enclosures
- AS/NZS 1158 Lighting for roads and public spaces.
- AS/NZ IEC 31010 Risk management - Risk assessment techniques.
- AS ISO 31000 Risk management - Guidelines.
- SA HB 198 Guide to the specification and testing of slip resistance of pedestrian surfaces.