

AS 7473:2020



# Complex system integration in railways

**RISSB**  
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

Safety Standard



This Australian Standard® AS 7473 Complex system integration in railways was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

Amoq Consulting	Asset Standards Authority	Aurecon
BHP	CWQ Consulting	Department of Transport (Victoria)
Metro Trains	Public Transport Authority (WA)	Rail Assurance Consulting
Siemens	Transport for New South Wales	CQUniversity
University of Wollongong	WSP	

The Standard was approved by the Development Group and the Safety Standing Committee in June, 2020. On June 30, 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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## AS 7473:2020

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This Standard was prepared by the Rail Industry Safety and Standards Board (RISSB) Development Group AS 7473 Complex system integration in railways. Membership of this Development Group consisted of representatives from the organisations listed on the inside cover of this document

## Objective

The objective of this Standard is to establish an industry approach for managing:

- (a) the risks associated with integrating complex systems;
- (b) the design and implementation of complex system interfaces; and,
- (c) the planning, conducting and reporting on system integration testing (SIT).

It achieves this by providing the railway industry with a set of requirements which may be integrated into a management system and which underpin successful integration of complex systems in railways.

## Compliance

There are two types of control contained within Australian Standards developed by RISSB:

1. Requirements.
2. Recommendations.

**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.

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.

Controls in RISSB standards address known railway hazards.

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## 1 Scope and general

### 1.1 Scope

This Standard defines an approach to support the preparation and execution of system integration for rail projects in Australia. It provides processes to support the definition, control and optimization of integration processes used within an organization or project that can be applied by the adopter when delivering railway systems.

This Standard is targeted at railway systems integrators such as operators, delivery authorities, prime contractors and alliances, or other bodies involved in integrating systems for or into a railway environment. Specifically, activities that result in changes or creation of railway configuration or operation.

This Standard applies to any railway modification that requires integration of a complex system, as described in Appendix A.

#### NOTES:

1. The Standard is supported by a number of appendices, the first of which provides informative guidelines to support the rationale and application of the normative content.
2. Additional guidance and recommendations that aid in reducing the risk surround integration of systems is given in Appendix B.
3. The references to assurance in this Standard, relate only to the assurance of the integration process, and not to the assurance that results from a systems safety approach.

### 1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document:

- BS EN 50126 – Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS)
- ISO/IEC/IEEE 15288 – Systems and software engineering — System life cycle processes
- AS ISO 31000 – Principles and Guidelines on Implementation of Risk Management

NOTE: Documents for informative purposes are listed in Appendix D.

### 1.3 Terms and definitions

For the purposes of this document, the terms and definitions given in the RISSB Glossary: <https://www.rissb.com.au/products/glossary/>, ISO/IEC/IEEE 15288, BS EN 50126, ISO 10007, and the following apply:

- (a) **acquirer**  
stakeholder that acquires or procures a product or service from a supplier
- (b) **architecture**  
fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution
- (c) **assurance**  
confidence in achieving a goal being pursued