RISSB

RAIL INDUSTRY SAFETY AND STANDARDS BOARD

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Accredited Australian Standards Development Organisation

AS 7702:2014

Rail Equipment Type Approval

Standard

Australian STANDARD

This Australian Railway Standard AS 7702 Rail Equipment Type Approval was prepared by the RISSB Development Group. It was signed off by the RISSB Development Group and Train Control Systems and Infrastructure Standing Committees in September, 2014 and subsequently by the Development Advisory Board (DAB) in October, 2014. The DAB confirmed that the process used to develop the standard was in accordance with the RISSB accredited development process. On October 13, 2014 the RISSB Board approved the Standard for release. This Standard was published on the RISSB website (www.rissb.com.au) on December 05, 2014.

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The following organisations were represented on the Standard's Development Group:

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This standard was issued on two occasions for open review and was independently validated before being signed off and the approvals granted.

RISSB wish to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the committees and through the open review periods.

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RISSB welcomes suggestions for improvements, and encourages readers to notify it immediately of any apparent inaccuracies or ambiguities. Contact us via email at rissb@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 4608, Kingston, ACT 2604.

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Notice to Users

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Justification

Objective of this Standard

Across the railway, approvals regimes are broad and varied. In some instances they are overly onerous and add significant expense; elsewhere they are weak, and possibly introduce risk vulnerabilities. AS7702 seeks to harmonise type approvals processes nationally making them scalable (appropriate to the products being approved) and robust. AS7702 provides two types of controls (explained in Section 1.7) for various hazards as identified in RISSB's hazard register. The hazards and controls should be used as a guide when undertaking risk assessments, prior to the introduction of the standard into an organisation.

Identification of Benefits

Harmonisation of type approval processes across the industry is expected to provide the following benefits:

- Reduced costs
  - Suppliers have one approvals 'process' to contend with (albeit, potentially with multiple customers). The costs that suppliers encounter in navigating different approvals processes would therefore be reduced, and cost savings passed on to customers (railway companies).
  - Given that this standard describes a generic type approval process, type approvals may be streamlined through consideration of whole, or parts of, type approvals conducted elsewhere.

It should be noted that an RTO which might deploy a type approved product (or any other product) remains responsible for ensuring that any risks introduced are controlled so far as is reasonably practicable (SFAIRP). One RTO would not be bound by a type approval given by another RTO.

- Improved safety
  - By improving approvals where they are currently weak.
  - Removing discrepancies.

The 2014 RISSB Products Survey reported the possible reductions in risks and costs resulting from AS7702 adoption to be: 14% for safety risk, 13% for asset cost, 12% for operational cost and 9% for training cost.

An important indicator of the benefit of AS7702 is the level of industry demand for this standard, which is measured by its likely adoption rate. The 2014 RISSB Products Survey reported that the adoption rate for AS7702 was around 27% and likely to increase in future to 75% of potential users.

Valuation of the Benefits

The value of improved safety resulting from AS7702 adoption is calculated at $230K per annum, based on the estimates of risk reduction (14%), the overall economic cost of railway safety incidents (described below) and the types of incidents that the Standard can help mitigate.

The average annual economic burden of railway safety incidents during the 8 years prior to publication (2014) was estimated to be approximately $360.1 million. The safety incidents included in this estimation are Signals Passed at Danger (SPADs), signal restored, level crossing collisions – persons and vehicles, load irregularity, fatalities and serious injuries (excluding level crossing) and collisions (trains, rolling stock, infrastructure) .

The other benefits of AS7702 identified in the aforementioned RISSB product survey are asset and operational cost savings and training cost, estimated at $0.9 million, $1.7 million and $10K per annum respectively, using the relevant industry cost base.

The total benefit from AS7702 is calculated at approximately $2.9 million per year or a present value of $20 million over the next 10 years. These estimates are conservative as they have not accounted for the full benefit of economy of scale that would accrue in the equipment supply market.

For RTOs with an AS7702 compliant system, the benefit will be in the time to approve lower priced products. That is, the ability to take advantage of market pressure within current projects, rather than needing to persist with current approved higher price products to avoid projects schedule risk. For example, in signalling, there are typically 50% labour, 25% plant/consumables/sub-contract, and 25% high cost materials. There may be a competitive cost reduction of 5% total costs (10% reduction in 50% of costs) through competitive purchasing and efficient type approval.

Cost of Implementation

Adoption of the AS7702 Standard is not expected to place a cost impost on industry members, as follows:

- If users have already had a good approval process, adoption would be cost neutral or involve low cost i.e. there is a cost to remap existing process, but this would be expected to be offset within one year.
- If users have not implemented an approval process, adoption cost would be from low to medium i.e. for product categories without a current process, there is a cost to evaluating. Assuming that most of the adjustment is handled by suppliers in their product development cycle, these users would only incur no more than normal business improvement cost.

Broader Industry and Economic Benefits

Development of a more complete suite of RISSB products will promote their recognition and further adoption by industry members which, leads to greater harmonisation in the rail industry. A more harmonised national rail industry will be more cost-efficient as well as being more competitive with other modes of transport, in particular, road transport, which, in turn, brings the following benefits: lower equipment cost, lower operating costs and cost competitive rail. Induced mode transfer (shifting passengers and freight from road to rail) can result in GHG reductions and road decongestion.

The CBA of RISSB Products Report (2012) estimated the benefit cost ratio of investment in RISSB products for the industry at approximately 17 to 1 (i.e. for every $1 spent, the industry

receives $17 of benefits). In addition, the broader economic benefits to the national economy have been estimated at between $92-142 million per year.

Approval of the AS7702 Type Approval Standard can deliver benefits to its individual users as well as contributing to the overall rail harmonisation process.

Document Control

Identification

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Document History

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Approval

Name	Date
Development Advisory Board (DAB)	1/10/2014
Rail Industry Safety and Standards Board (RISSB)	13/10/2014

Standard Change Procedures

The RISSB maintains the master for this document and publishes the current version on the RISSB website.

Any changes to the content of this publication require the version number to be updated.

Changes to this publication must be approved according to the procedure for developing management system documents.

The RISSB will identify and communicate changes to this publication.

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Appendix Contents

1 Introduction

1.1 Purpose

This standard is intended to provide a common framework for Rail Transport Operators (RTOs) to evaluate novel or modified railway products for type approval.

The concepts within this standard are intended to be applied throughout the railway industry supply chain.

This Standard is intended to be applied to railway products and to specify the following:

(a) the minimum requirements to be evaluated for type approval of railway products;

(b) the information to be provided by the supplier of railway products requiring type approval;

(c) the evaluation process to be applied;

(d) the responsibility of those organisations that use the type approval process and/or result;

(e) the standard type approval certificate and supporting documents;

(f) a framework for the production of type approval documentation.

The RTOs remain responsible for ensuring that any risks introduced by new products are controlled so far as is reasonably practicable (SFAIRP).

Type approval is a generic process that is an efficient method for the RTO to accept novel or modified products for use on its infrastructure in the RTO's jurisdiction. This does not mean however that an RTO will necessarily be bound by a type approval given by another RTO.

By describing a standard process, this Standard aims to provide productivity gains for both RTOs and Suppliers.

A flowchart overviewing the process is presented in Appendix G.

1.2 Scope

This standard specifies the evaluation of novel or modified products for use on Australasian railway network infrastructure and defines:

(a) the approval criteria;

(b) the submission formats;

(c) the information required.

This Standard specifies the process requirements for the issuing of appropriate type approval certification to Suppliers.

This Standard is intended to be used by Railway Infrastructure Managers, Operators and Suppliers of railway products.

This Standard is intended to be applied for new products or modifications; it is not intended to be applied retrospectively.

Rolling Stock, its associated equipment and on-track plant are excluded from the scope of this Standard. However if it is decided to apply the principles of this Standard for rolling stock related equipment then AS 7501 Railway Rolling Stock - Rolling Stock Compliance Certification will take precedence if there is a conflict.