

AS 7645:2014



Rail Corridor Management



Infrastructure Standard



This Australian Railway Standard AS 7645 Rail Corridor Management was prepared by the RISSB Development Group. It was signed off by the Development Group and the Infrastructure Standing Committee in May, 2014 and subsequently by the Development Advisory Board (DAB) in August, 2014. The DAB confirmed that the process used to develop the standard was in accordance with the RISSB accredited development process. On September 02, 2014 the RISSB Board approved the Standard for release.



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The following organisations were represented on the RISSB Development Group:

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This standard was issued for an open review and was subject to a combined workshop. It was also 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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Justification

Specification of Standard

The purpose of AS 7645 Rail Corridor Management Standard is to specify the requirements for the management of fire and vegetation hazards along the rail corridor including hazards related to fire and weeds including noxious weeds and pest plants.

The Standard has included reference to the following documents:

- AS 4292.1 Railway Safety Management - General Requirements
- AS/NZS ISO 31000 Risk Management - Principles and Guidelines
- AS/RISSB 7630 Railway Infrastructure - Track Classification
- ISO 14001 Environmental Management
- Glossary of Railway Terminology (RISSB)
- Rail Safety National Law 2012

This Standard complements ISO 14001 Environmental Management.

This Standard covers rail networks classified in AS/RISSB 7630 Railway Infrastructure - Track Classification. This Standard is not specifically intended to cover urban on-street tramway or light rail networks, cane railways, or heritage railways operating on private reservation, but items from this Standard may be applied to such systems as deemed appropriate by the relevant Rail Infrastructure Manager.

Objectives of Standard

The Standard specifies the requirements for fire prevention and control, vegetation hazard management and remediation of the rail corridor to be undertaken by the Rail Infrastructure Managers.

The fire prevention and control requirements include: undertaking a suitable and sufficient assessment of the risks; carrying out proactive management of risks to prevent the occurrence of fire within the rail corridor; having in place appropriate equipment to manage fires; undertaking the reactive management of incidents in coordination with the emergency services, and implementing a risk management approach based on AS 31000 or other suitable standard(s). These requirements can result in enhanced safety of the workforce, passengers and the public arising from a fire caused by, or affecting, their operations.

The Standard's management of vegetation hazards section requires that the specified risks to the infrastructure (such as obscuring sight lines for signals, signage, level crossings) are assessed and appropriate control measures implemented to ensure that the risks to railway operations and activities are reduced So Far As Is Reasonably Practicable (SFAIRP). These requirements aim to control the impacts of vegetation hazards on safety risks, rail operations and assets, including damage to electrification systems, damage to train control and

communication systems, vandalism, impacts on line speed and volume of traffic, type of traffic and gradients etc.

The remediation of the rail corridor section in the Standard requires that a suitable and sufficient assessment of the contamination risks be undertaken to determine the need for remediating the corridor. These requirements aim to control contamination and related safety, environmental and health risks to passengers, staff and local communities.

The 2014 RISSB Products Survey reported an average reduction of 11% in safety risks that may result from adoption of RISSB products in the infrastructure products category (AS7645 Standard was not included in the survey because it had not been published at that stage). Based on these assessments, it is broadly concluded that adoption of the AS7645 Standard is likely to lead to a significant reduction in the risks associated with rail incidents e.g. fire risks, falling tree branches.

Identification of Benefits

An important indicator of the benefit of the AS 7645 Rail Corridor Management Standard is the level of industry demand for this standard, which is measured by its likely adoption rate. While the AS7645 Standard was not included in the 2014 RISSB Products Survey, 15 infrastructure standards and the Code of Practice were listed. The 2014 survey results indicate that adoption rates for RISSB infrastructure products are high, currently at around 38% and likely to increase in future to 78% of potential users¹. This result, together with the fact that AS7645 Standard helps to complete existing suite of products, suggests that the industry demand for the standard and its adoption rate following introduction will likely be high.

Another important indication of the benefit of AS7645 is the estimated benefits of RISSB infrastructure products to their users. The 2014 Products Survey reported the following possible reductions in risks and operating costs for adopting members of infrastructure products: 11% for safety risk, 14% for asset costs, 11% for operational costs and 6% for training costs. In addition, users rated potential operational improvement at 5.4 (from 1 to 10). Based on these estimates and as AS7645 Standard also helps to complete an existing suite of RISSB infrastructure products, its adoption is expected to lead to significant benefits.

Valuation of the Benefit

The average annual economic burden of railway safety incidents during the past 8 years 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)². The significant amount of economic burden associated with safety incidents in Australia means that a small percentage improvement in safety performance can translate into a significant economic benefit.

The quantification of the benefit that would be obtained from AS7645 Rail Corridor Management Standard is estimated to be \$2.4 million per year or present value of \$16.6 million over the next 10 years. This estimate was derived from the 2014 RISSB products survey which reported that the estimated benefit of the 16 infrastructure standards for rail safety performance, asset cost savings, operational cost savings and workforce training costs were \$3.2 million, \$16.8 million, \$27.3 million and \$100K respectively. In total, the total benefit for adopting the 16 infrastructure standards was \$47.3 million per year.

¹ Potential users do not include those in other sectors of the rail industry that do not use of infrastructure standards

² Strategex estimates based on 'Cost Benefit Analysis of RISSB and its products' report by AECOM ("CBA of RISSB Products (2012)").

Cost of Implementation

Adoption of the AS 7645 Standard is not expected to impose significant additional cost on the industry, with the equipment supply sector to respond by incorporating relevant requirement in their product development cycle.

Case Study

The AS 7645 Standard can contribute to the mitigation of fire risks such as that experienced in the following fire incident in rail corridor.

The WA Department of Fire and Emergency Services (DFES) reported fire incidents occurring adjacent to the railway line between George and Oakover Roads Middle Swan on 28 February 2013. Available information suggested that the fire started alongside the railway in an area adjacent to properties on George and Oakover Roads Middle Swan (the cause of which was determined to be Accidental). From their original locations, a series of fires burnt through many paddocks before being controlled, contained and extinguished. DFES recorded the damage as being: sheds, 1463.5 hectares of bush and pasture, stock losses, farm machinery, fencing, natural and planted vegetation, road signs, power infrastructure, fauna, and vehicles.

<http://www.dfes.wa.gov.au/publications/MajorIncidentReports/DFES-BushFireInvestigationReport-AvonValley-series-of-fires-February-March-2013.pdf>

Broader Industry and Economic Benefits

Development of a more complete suite of RISSB infrastructure 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.

Release of the AS7645 Rail Corridor Management 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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Standard Change Procedures

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.

RISSB will identify and communicate changes to this publication.

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Preface

The Rail Industry Safety & Standards Board ('RISSB') provides a range of template products, collectively called the 'RISSB Products', including:

- Standards;
- Codes of Practice;
- Rules;
- Guidelines; and
- Handbooks.

The aim of this Standard is to outline requirements that encourage rail organisations to adopt a whole-of-life approach to rail corridor management. This approach includes the requirements in relation to rail corridor management in terms of management of fire and vegetation hazards related to fire and weeds including noxious weeds and pest plants for a range of railways in Australia.

For the purposes of this Standard, all clauses containing the term 'shall' are considered mandatory requirements; all clauses containing the term 'should' are considered recommendations, and all other clauses are explanatory statements.

All RISSB standards provide controls for hazards contained in RISSB's hazard guideline. In this particular Standard, the reference number of the hazard being addressed is identified in the attached appendix (where appropriate). RISSB's hazard guideline can be found on the RISSB website at www.rissb.com.au.

1 Introduction

1.1 Purpose

This document describes the requirements for the management of fire and vegetation hazards along the rail corridor including hazards related to fire and weeds including noxious weeds and pest plants. This Standard complements ISO 14001 Environmental Management.

1.2 Scope

This Standard covers rail networks classified in AS/RISSB 7630 Railway Infrastructure - Track Classification.

This Standard is not specifically intended to cover urban on-street tramway or light rail networks, cane railways, or heritage railways operating on private reservation, but items from this Standard may be applied to such systems as deemed appropriate by the relevant Rail Infrastructure Manager.

This Standard includes requirements for:

- Fire prevention and control; and
- vegetation hazard management.

ISO 14001 is a wider environmental management standard and may be used in conjunction with this Standard.