

RISSB Product Proposal (and Prioritisation)

Primary information	
Type of product being suggested:	<i>Standard</i>
Title of product being suggested:	<i>Environmental Requirements for signalling interlockings and train control systems equipment</i>
Date of suggestion:	<i>Mar 2019</i>
Reason for suggestion:	<i>Different railways are currently undertaking this task in different ways, and to different qualities. It is often left to the vendor who, especially if they're overseas, may not be best placed to do it. There is significant opportunity to harmonise this, for reliability and safety benefit.</i>
Railway discipline area:	<i>Signalling & Train control</i>
Objective:	
<i>Australian rail spans many different operating environments; this document will offer the principles to be applied in assessing those operating environments so that they may be consistently and robustly specified to train control system vendors. This will help railways ensure that they are considering environmental aspects adequately when procuring signalling interlocking and train control systems and will help vendors in designing/building high quality equipment.</i>	
Scope:	
<i>The document will outline the process for how railways can determine the environmental limits for categories of equipment – to specify those to manufacturers. It will support rail companies in researching the environmental conditions in their operating environment.</i>	
<i>Having applied the standard and used it to establish the withstandability of equipment, it will help rail companies in being able to conduct construction/operational works to not exceed those limits.</i>	
<i>The Standard will consider (this list is not meant to be exhaustive):</i>	
<ul style="list-style-type: none"> • <i>Vibration</i> • <i>Temperature</i> • <i>EMC (links to AS 7722)</i> • <i>Wind loading</i> • <i>Moisture</i> • <i>Hail</i> • <i>Frost</i> • <i>Bushfire</i> • <i>Coal / iron ore dust</i> 	
<i>This document will not cover specific functionality for equipment which is covered in a particular specification for that equipment type.</i>	
Hazard identification: (what safety hazards would the proposed product seek to address)	
1	<i>Field equipment and or enclosures failures (design, test&comm, operations,</i>
	6

	<i>maintenance)</i>		
2	<i>Power supply failure (design, test&comm, operations, maintenance)</i>	7	
3	<i>Train detection failure (design, test&comm, operations, maintenance)</i>	8	
4		9	
5		10	

Definitions

i A **Guideline** is a set of informative guidance. It is not normative but informative.

A **Code of Practice** is a set of descriptions. It is the “how” one can meet a higher-level requirement (either of a Standard, or a piece of Legislation). It is normative, but by its nature can contain several options about how to achieve compliance with the higher-level requirement. It can also have some informative guidance within it if it is more practical than writing a separate guideline.

A **Standard** is a set of requirements only. It is the “what” must be done to be claim compliance to the standard. It is normative. It can also contain optional and/or supplementary requirements, but they still should be worded as requirements.

Benefits: *(enter wherever applicable in below categories)*

Safety

Signalling Interlockings, their associated field controllers and Train control systems are fundamental in the safe movement of trains around rail networks. Often they are exposed to the elements, or in testing operating environments. They need to be designed to operate effectively, their failure can lead to the worst outcomes. Consistent, high quality specification of train control system environmental operating requirements will ‘raise the bar’ where practice is lower than the industry benchmark, and lead to safer outcomes at a national level.

Interoperability / harmonisation

Consistent approaches to determining environmental operating requirements will reduce problems with mobile workforces having to learn different approaches possibly creating opportunities for errors to creep in. It will be sympathetic to the fact that Australia does have different operating environments, but create a consistent framework for assessing/specifying them.

Financial

If rail companies can better specify equipment operating environments it will minimise the need for vendors to make assumptions, leading to equipment that is better suited, leading to higher reliability and therefore better whole-life costs.

Environmental

Better performing rail systems reduce the opportunity for failings that might have environmental impacts.

Impacts:

The huge diversity in Australian rail will lead to some effort in consolidating material down into a concise Standard, however the source material that exists will aid greatly.

Reference / source materials:

#	Reference / source material	Available from
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1	<i>T HR SC 01000 SP Common Signals and Control Systems Equipment Requirements</i>	ASA
2	<i>T HR SC 01000 SP Ambient Environmental Conditions and it's technical note TN 024: 2017</i>	ASA
3	<i>Other RTO specific documents</i>	
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Definitions

ii **Interoperability** is the ability of a process, system or a product to work with other process, systems or products (aka compatible systems through managed interfaces).

iii **Harmonisation** - the act of bringing into agreement so as to work effectively together (aka uniformity of systems).