NSW GOVERNMENT

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Specification

Type Approval Requirements for Signalling Systems and Equipment

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Document information

Owner: Director Signals & Control Systems Engineering, AMB, SER

Mode Heavy rail

Discipline Signals and control systems

Document history

Revision	Effective date	Summary of changes
Version 2.0	January 2022	TfNSW template applied.
Version 3.0	30 January 2022	Internal revision only – no change.
Version 4.0	30 January 2022	First full UGLRL release.

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1. General

1.1. Scope

This document defines requirements and procedures for the type approval of equipment and systems offered for use in signalling systems on the Country Regional Network (CRN) railway system.

It shall be read in conjunction with Australian Standard AS 7702 Rail Equipment – Type Approval. Its purpose is to clarify definitions and roles described in the Australian Standard so that the intent of the Australian Standard is applicable and relevant to the NSW CRN.

Formal type approval is a prerequisite for CRN acceptance and permission to use equipment and systems in CRN's signalling systems. It is not the only requisite and type approval itself does not guarantee that the item will be used in any specific application.

Type approval is granted by the Principal Signal & Communications & Network Control Engineer.

Approval of construction methods, maintenance service levels, test plans, quality systems, operational processes and the like are covered by other CRN processes, procedures and standards.

1.2. Requirement

Type approval of a particular item or system used in a signalling system is required where

- malfunctioning of the equipment could reduce the required level of protection provided by the signalling system, or
- failure to function could result in significant levels of use of less inherently safe means of regulating train movements, or
- unreliable operation could have an impact upon the CRN business, or
- inadequacy could reduce integrity or life span by reducing the required level of defence or tolerance, or increase the vulnerability of, protected elements of signalling items to degradation, damage, vandalism, interference, manipulation, collapse, overheating, flooding, corrosion, infestation and attack.

The type approval process is carried out to prove robust compliance of the item in meeting the specified performance requirements as well as the technical requirements. The greater the risk associated with non-compliance the greater the degree of proof required.

Type approval is the outcome of an assessment of the initial and ongoing safety, reliability and cost-effectiveness of an item over the whole of its life in its intended application, to CRN's objectives. Should the assessment in relation to these factors change, type approval may be

suspended or withdrawn if it cannot be demonstrated that the item is still fit for purpose for the CRN.

Items may range in complexity and safety requirements from, for example, cable troughing, to a terminal block, to a miniature relay, up to a telemetry and train describer system or a computer-based interlocking system. Each assessment takes these factors into consideration.

Where an item comprises a number of component units, every such unit shall be submitted for type approval. Non-type-approved components may not be substituted for use subsequently, without first undergoing the same type approval process. Subsequent modifications to a type approved item will render void the type approval.

Type approval is required before the item is connected to the working signalling system.

The majority, but not all, of items used in signalling systems are required to have formal type approval.

Items do not require type approval if they:

- do not affect the operation of the signalling system, or
- are separate structures for housing or mounting signalling equipment, except where these are integral to the required integrity or life span of signalling items, or
- are common, commercial products, certified to comply with a national or international standard (compliance with which can be ascertained by a normal user) and used in a manner for which they are designed and marketed.

Final determination of whether any particular item requires type approval will be made by the Principal Signal & Communications & Network Control Engineer, acting (as / on the advice of) the Independent Technical Reviewer.

Whether items are deemed to require type approval or not, all signalling items provided to CRN are required to meet specification requirements including stipulated quality assurance and acceptance testing requirements; procurement selection will also be based on comparative evaluation criteria e.g., technical merit, value for money, support.

The type approval process described in AS 7702 is written with reference to systems, both vital and non-vital, as these have the most complex type approval requirements. Less complex items are subject to a reduced set of requirements.

1.3. Referenced Documents

This document refers to the following Australian Standards, International Standards and CRN documents

AS 7702 - Rail Equipment Type Approval

1.4. Definitions in AS 7702

This section of the document addresses the specific meaning in the context of the CRN, of some terms and definitions included in AS 7702.

1.4.1. Evaluating RTO

“An RTO undertaking a process of railway product type approval”

UGL Regional Linx (UGLRL) managing the NSW CRN, or a person or organisation delegated the responsibility for this function.

1.4.2. Independent Technical Reviewer (ITR)

“A person, working on behalf of (and possibly employed by) an RTO, not involved with the RTO’s original type approval evaluation”

For the CRN this is typically the Principal Signal & Communications & Network Control Engineer

1.4.3. Rail Transport Operator (RTO)

“For the purposes of this Standard the RTO is the Operator or Railway Infrastructure Manager responsible for the type approval of railway products”

UGLRL manage the NSW CRN on behalf of Transport for NSW.

1.4.4. Railway Infrastructure Manager (RIM)

“The person or body responsible by reason of ownership, control or management, for the construction and maintenance of track, civil and electrical traction infrastructure, or the constructiojn, operational and maintenance of train control and communications systems, or a combination of these; or a person or body acting on its behalf.”

UGL Regional Linx managing the NSW CRN and represented by the Principal Signal & Communications & Network Control Engineer.

1.4.5. Railway Network

“A railway system within Australia owned or managed by a RIM. Some railway networks are connected to others and permit interoperability. Other railway networks are not connected to others.”

The NSW CRN.

1.5. Definitions

This section of the document addresses the specific meaning in the context of the CRN, of some terms and definitions included in AS 7702.

1.5.1. CRN (Rail Network)

The New South Wales Country Regional Network

1.5.2. CRN (Rail Infrastructure Manager)

UGLRL managing the NSW CRN and represented by the Principal Signal & Communications & Network Control Engineer.

1.5.3. Principal Signal & Communications & Network Control Engineer

The person granted engineering authority by the UGLRL CEO to carry out or oversee the type approval process and grant type approvals.

1.5.4. Vital Signalling Equipment

Equipment which is directly involved in providing the safety and integrity of the signalling system.

1.5.5. Non-vital Signalling Equipment

Equipment involved with peripheral control and indication of vital signalling equipment, but not directly related to the safety integrity of the signalling system.

2. Submissions for Type Approval

AS 7702: 2.1.1 General

> The RTO shall document the positions within its organisation that have management and engineering responsibilities for the type approval process
>
> The RTO shall document its type approval process
>
> The RTO should make its type approval process documentation available to other RTOs on request
>
> The RTO should communicate to the industry its point of contact for type approval submissions”

Submissions for Type Approval shall be addressed to the UGLRL Principal Signal & Communications & Network Control Engineer.

3. Type Approved Equipment

Signalling equipment installed and operational within the CRN can be classified in a number of ways in relation to the period it was installed.

3.1. Grandfather Rights

This is signalling equipment with no known prior approval.

- It may be used, maintained and renewed in its current location, but
- It may not be used in new works or upgraded locations without further CRN approval.

3.2. Predecessor Rights

Predecessor authority equipment approvals fall into three categories:

- Listed as approved, but approval details are unknown, or
- A type approval document is on file, or
- A type approval document plus supporting information is on file.

For all three categories, the equipment that falls within these categories:

- May be used and maintained in its current location
- May be used in applications equivalent to an existing installation.

A CRN type approval will supersede any predecessor approval. However, equipment may continue to be used in accordance with the Predecessor Approval even where such use conflicts with the conditions of any CRN Type Approval.

3.3. CRN Type Approval

Equipment that has been Type Approved for use on the CRN based on the Standards in place since the take-up by John Holland Rail and subsequently by UGLRL.

3.4. Type Approved Equipment Register

Links to the Grandfather Rights, Predecessor Rights and CRN Type Approval registers are provided on the CRN website.

The Grandfather and Predecessor Rights registers will remain static as they are historical documents.

The CRN Type Approval register shall be updated as new equipment is type approved.