Passenger Rolling Stock Fire Safety

Version 2.0

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Standard governance

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Document history

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<td>First issued 29 August 2016.</td>
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Preface

The Asset Standards Authority (ASA) is a key strategic branch of Transport for NSW (TfNSW). As the network design and standards authority for NSW Transport Assets, as specified in the ASA Charter, the ASA identifies, selects, develops, publishes, maintains and controls a suite of requirements documents on behalf of TfNSW, the asset owner.

The ASA deploys TfNSW requirements for asset and safety assurance by creating and managing TfNSW’s governance models, documents and processes. To achieve this, the ASA focuses on four primary tasks:

- publishing and managing TfNSW’s process and requirements documents including TfNSW plans, standards, manuals and guides
- deploying TfNSW's Authorised Engineering Organisation (AEO) framework
- continuously improving TfNSW’s Asset Management Framework
- collaborating with the Transport cluster and industry through open engagement

The AEO framework authorises engineering organisations to supply and provide asset related products and services to TfNSW. It works to assure the safety, quality and fitness for purpose of those products and services over the asset's whole-of-life. AEOs are expected to demonstrate how they have applied the requirements of ASA documents, including TfNSW plans, standards and guides, when delivering assets and related services for TfNSW.

Compliance with ASA requirements by itself is not sufficient to ensure satisfactory outcomes for NSW Transport Assets. The ASA expects that professional judgement be used by competent personnel when using ASA requirements to produce those outcomes.

About this document

This standard provides requirements for the safety of passengers in the event of a fire over the life cycle of passenger rolling stock operating on the TfNSW Metropolitan Heavy Rail Network.

This is a second issue.

The changes from the previous version include the incorporation of the technical note TN 017:2017 Amendment of classification of vehicles within T HR RS 17010 ST Passenger Rolling Stock Fire Safety.
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1. **Introduction**

This standard provides the safety requirements for passenger rolling stock in the event of a fire. This standard has adopted the requirements from the following national standards:

- AS 7529.1 Australian Railway Rolling Stock – Fire Safety – Locomotive
- AS 7529.3 Australian Railway Rolling Stock – Fire Safety – Passenger

This standard also provides additional requirements for the peak heat release rate of a carriage.

2. **Purpose**

The purpose of this standard is to provide the requirements for passenger rolling stock operating on the TfNSW Metropolitan Heavy Rail Network (formerly known as the RailCorp network) to ensure the safety of occupants in the event of a fire.

2.1. **Scope**

This document specifies the requirements for fire safety over the life cycle of passenger rolling stock operating on or intended to operate on the TfNSW Metropolitan Heavy Rail Network. Refer to TS TOC 1 Train Operating Conditions (TOC) Manual – General Instructions which defines the areas associated with the network.

2.2. **Application**

This standard applies to new, refurbished or modified passenger rolling stock operating on the TfNSW Metropolitan Heavy Rail Network.

This standard does not apply to the Sydney metro networks.

3. **Reference documents**

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

**Australian standards**


**Transport for NSW standards**

- TS TOC 1 Train Operating Conditions (TOC) Manual – General Instructions
Other references


4. Terms and definitions

The following terms and definitions apply to this document:

**commuter rolling stock** passenger rolling stock utilised for city commuter services, including outer suburban services and suburban services and metro; for example, self-propelled vehicles such as: diesel-electric rail cars, diesel multiple units, electric multiple units, fixed formation trains (electric or diesel)

**long distance rolling stock** passenger rolling stock utilised for inter-urban, intercity and interstate passenger operations, including diesel / electrically powered: fixed formation train sets with dedicated power car locomotives; fixed formation train sets with distributed power (for example, multiple unit rolling stock); locomotive hauled coaches / carriages. (AS 7529.3:2014)

**operator** the party that has responsibility for defining the technical requirements for the railway vehicle so that it will perform the intended operation

**PHRR** peak heat release rate; the maximum rate of heat generation from a fire event measured in Watts

**SFAIRP** so far as is reasonably practicable

5. Passenger rolling stock fire safety requirements

The safety of passengers communting on passenger rolling stock operating on the TfNSW Metropolitan Heavy Rail network is important and shall be maximised. Passenger rolling stock fire safety requirements are defined in Section 5.1 and Section 5.2.

5.1. Application of Australian standards

Passenger rolling stock designed for use on the TfNSW Metropolitan Heavy Rail Network shall comply with the requirements of AS 7529.3:2014 *Australian Railway Rolling Stock – Fire Safety – Passenger.*

Power car locomotives designed for use in passenger rolling stock on the TfNSW Metropolitan Heavy Rail Network shall comply with the requirements of AS 7529.1:2014 *Australian Railway Rolling Stock – Fire Safety – Locomotive.*

AS 7529 divides rolling stock into two operational categories; commuter and long distance.
The operator shall determine the appropriate category and apply the standard requirements accordingly.

The following are examples of the two categories of the TfNSW rolling stock fleet:

- **commuter rolling stock**
  - Waratah (A sets), Oscar (H sets) and Hunter (J sets) are examples of commuter rolling stock on the TfNSW Metropolitan Heavy Rail Network

- **long distance rolling stock**
  - XPT rail cars, Xplorer rail cars and V-sets are examples of long distance rolling stock on the TfNSW Metropolitan Heavy Rail Network

For vehicles that undergo modification, a so far as is reasonably practicable (SFAIRP) justification shall be undertaken to determine whether this standard is applicable.

### 5.2. Peak heat release rate


A limit of 30 MW PHRR per car is acceptable for passenger rolling stock operating on the TfNSW Metropolitan Heavy Rail Network. Materials that in total make up less than 0.7 m² of total surface area within a car may be exempted from the PHRR calculation.

Any modification adding to the PHRR of a car shall require a recalculation of the PHRR and shall not raise the PHRR of a carriage beyond 30 MW as determined by the Duggan method.

### 6. Demonstration of compliance with this standard

Any modification to rolling stock that affects a whole system or multiple systems, or is deemed safety critical to the operation of passenger rolling stock on the TfNSW Metropolitan Heavy Rail Network is considered as a major modification.

A detailed fire and life safety strategy, to guide the development of the fire safety assessment undertaken by a registered fire engineer in accordance with Section 2.2 of AS 7529: 2014, shall be provided for any major modification to existing rolling stock, and for the design and construction of new rolling stock that operates on the TfNSW Metropolitan Heavy Rail Network.

This fire strategy shall describe how the proposed design or modification will achieve compliance with the provisions of this standard.