



Requirements for Rail Trolleys and Trailers Accessing and Operating on the AMPRN

Engineering Standard

Rail Commissioner

TC4-DOC-000362

DOCUMENT AMENDMENT RECORD

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1. Introduction

The Department of Infrastructure and Transport owns the Adelaide Metropolitan Passenger Rail Network (AMPRN) currently operated and maintained under the Rail Accreditation of third party. This standard is intended to ensure that the introduction of rail trolleys and trailers onto the AMPRN does not create any risks not deemed to meet the So Far as Is Reasonably Practicable (SFAIRP) principles under Rail Safety National Law (RSNL).

The requirements are applicable to DIT owned and Contractor supplied rail trolleys and trailers accessing and operating on the AMPRN under the DIT Rail Accreditation. Where an Access Agreement is in place, enabling a third party to undertake work on the AMPRN under their own rail accreditation, the third party is fully responsible for ensuring that any rail trolley or trailer used on the work complies with all applicable legislative requirements, DIT Rail Access Procedure and all relevant standards.

This standard provides the minimum requirements for rail trolleys and trailers to operate on the AMPRN. It does not obviate the need for a site-specific Safety Management Plan or Work Instruction to ensure that the rail trolley or trailer can undertake its work tasks safely at a particular worksite.

Rail trolleys and trailers that do not meet the minimum requirements in this document are not permitted to operate on the AMPRN. Approval may be granted by DIT, under specified conditions, for a rail trolley and trailer to access the AMPRN for the purposes of examination and testing.

2. Purpose

The purpose of this standard is to specify the minimum certification requirements for rail trolleys and trailers accessing and operating on the AMPRN.

3. Scope

This standard applies to all rail trolleys and trailers accessing and operating on the AMPRN broad gauge (1600mm) mainlines, depots, sidings and worksites.

This standard does not cover road-rail trailers. Separate approval to operate a road-rail trailer is required.

This standard is not intended to provide the requirements for designing and manufacturing rail trolleys and trailers.

Refer to *PTS-MS-10-RS-GUD-00000095 Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN* for certification of road-rail vehicles on the AMPRN.

Refer to *RS4-DOC-000885 Requirements for Track Machines Accessing and Operating on the AMPRN*.

4. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form	EN-OSP-FO-01093
Infrastructure Maintenance Rolling Stock Certificate Template	EN-OSP-CE-00049
Rail Trolley and Trailer Documents Review Checklist	EN-OSP-FO-01110
Rail Trolley and Trailer General Condition Examination Checklist	EN-OSP-FO-01107
Assessment for On Track Plant in 25kV/600V OHW Areas	EN-OSP-FO-01092
Infrastructure Maintenance Rolling Stock Register	KDA share point 153307711
Rolling Stock Examiners Register (Internal Use Only)	KDA share point
Approving Engineers Register (Internal Use Only)	KDA share point
Warning Stickers for Vehicles in a 25kV Overhead Wiring System	TP4-DRG-000025
Infrastructure Maintenance Rolling Stock Annual Confirmation	EN-OSP-FO-01096

5. References

- Rail Safety National Law (SA) Act 2012
- Rail Safety National Law National Regulations 2012
- 200-A3-82-1658 Maximum Outline for Metropolitan Rolling stock and Equipment - 1600 mm gauge
- AS/RISSB 7509 Railway Rolling Stock - Dynamic Behaviour
- AS/RISSB 7508 Track Forces and Stresses
- AS/RISSB 7505 Signalling Detection Interface
- AS 1906 Retroreflective materials and devices for road traffic control purposes
- EN50121-3-1 Railway Applications – Electromagnetic Compatibility – Part 3-1: Rolling Stock – Train and Complete Vehicle
- EN50121-3-2 Railway Applications – Electromagnetic Compatibility – Part 3-2: Rolling Stock – Apparatus
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- RIS-2715-RST Rolling Stock Subsystem and Interfaces to AC Energy Subsystem
- GM/RC2514 Recommendations for Equipotential Bonding of Rail Vehicles to Running Rail Potential
- ISO11451 Series Road Vehicles – Vehicle Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy
- ISO11452 Series Road Vehicles – Component Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy
- RISSB Glossary of Railway Terminology - Guideline
- 243-A3-96-054 MP2 Tread Profile for 2000/3000/4000 series
- PTS-MS-10-XM-STD-00000084 Rail Car Wheel Inspection and Defects Standard
- PTS-MS-10-TR-STD-00000047 Structural Clearances - Design and Rating - Train
- PTS-MS-10-RS-GUD-00000095 Requirements for Road rail Vehicles accessing and operating on the Adelaide Rail gauge Network
- RS4-DOC-000885 Requirements for Track Machines Accessing and Operating on the AMPRN
- 200-A3-82-1658 Maximum Outline for Metropolitan Rolling Stock and Equipment - 1600 mm Gauge
- RS4-DOC-001299 Static Twist Test for Rolling Stock

6. Acronyms

ACRONYM	FULL NAME
AMPRN	Adelaide Metropolitan Passenger Rail Network
DC	Direct Current
DIT	Department for Infrastructure and Transport
EMC	Electromagnetic compatibility
MP2	Modified Profile 2
NDT	Non-Destructive Testing
OHW	Overhead Wiring
PM	Project Manager
PRW	Person Responsible for the Works
PRES	Person Responsible for Electrical safety
RISSB	Railway Industry Safety Standards Board
SWMS	Safe Work Method Statement

7. Definitions

TERM	DEFINITION
Infrastructure Maintenance Rolling Stock ¹	Track machines and road-rail vehicles. Also known as on 'track vehicles'.
Maximum Rated Load	Total of vehicle's tare mass and any additional loading for material or equipment etc., which is not to be exceeded.
Rail Trailer	Rail trailers are non-powered infrastructure maintenance vehicles fitted with rail wheels and hauled by a road-rail vehicle or other approved powered vehicle using an approved drawbar. They are used by maintenance and construction staff to transfer material and equipment or move inspection devices along the railway line.
Rail Trolley	Rail trolleys are non-powered infrastructure maintenance vehicles that are moved on and off track by hand and are used by maintenance and construction staff to transfer material and equipment along the railway line.
Road-Rail Trailer	Road-Rail trailers are small non-powered vehicles essentially for operation on road but fitted with rail wheels such that they can be hauled on rail by a road/rail vehicle or infrastructure maintenance vehicle. Road-rail trailers are not covered by this document – separate assessment and approval is required.
Tare Mass ¹	The mass of the vehicle in the lightest condition under which it will be operated.
Train	The broad-gauge tracks on the AMPRN.
Travel Mode	Where the rail trolley or trailer is travelling to and from the worksite.
Work Mode	Where the rail trolley or trailer is performing its work function within the worksite and under an authorised work possession/authority.

¹ RISSB National Guideline Glossary of Railway Terminology

8. Roles and Responsibilities

8.1. General

There are generally two ways in which a rail trolley or trailer can be introduced onto the AMPRN:

- Through planned construction or maintenance works where an external contractor, who owns or hires a rail trolley or trailer, is engaged by DIT or the service provider for the works.
- Purchasing and maintaining of a new or modified DIT owned rail trolley or trailer by DIT Rail Maintenance.

For construction and maintenance works it is the responsibility of the DIT Project Manager (PM) or Person Responsible for the Works (PRW) to ensure that all rail trolleys and trailers to be used for their works are certified before accessing and operating on the AMPRN.

It is not intended that external contractors apply directly to DIT to have their rail trolleys and trailers certified in anticipation of work on the AMPRN.

For DIT owned rail trolleys and trailers the Service provider for Rail Fleet Manager/Maintainer is responsible for ensuring that all rail trolleys and trailers are certified before accessing and operating on the AMPRN.

8.2. DIT or Service provider Project Manager / Person Responsible for the Works (PM/PRW)

It is the responsibility of the DIT PM/PRW or the service provider to obtain all the documentation and information for certification from the Applicant/Owner follow the process described below:

- Ensure that completed *EN-OSP-FO-01093 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* is obtained and forwarded to the Rolling Stock Engineering Group.
- Ensure all required supporting documentation in accordance with *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist* is obtained and forwarded to the Approving Engineer for review.
- Ensure that completed *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist* and all supporting documentation are obtained and forwarded to the Rolling Stock Engineering Group.
- Ensure that completed *EN-OSP-FO-01092 Assessment for On Track Plant in 25kV/600V OHW Areas* is obtained and forwarded to the OHW Electrical Engineer for review.
- Ensure that the rail trolley or trailer undergoes the general condition examination by an approved Rolling Stock Examiner and ensure *EN-OSP-FO-01107 Rail Trolley and Trailer General Condition Examination Checklist* is completed and forwarded to the Rolling Stock Engineering Group.
- Ensure that completed *EN-OSP-FO-01096 Infrastructure Maintenance Rolling Stock Annual Confirmation* is obtained and forwarded to the DIT Rolling Stock Engineering Group; and

- Ensure that any issues arising from the document review and general condition examination are addressed.

8.3. Applicant/Owner

For planned construction and maintenance works the application form *EN-OSP-FO-01093 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* and *EN-OSP-FO-01096 Infrastructure Maintenance Rolling Stock Annual Confirmation* is to be completed by the external contractor engaged for the works and forwarded to PM/PRW. The form has provision for supply of the rail trolley or trailer owner details where the contractor is hiring the machine.

For DIT owned rail trolleys and trailers both the application form and annual confirmation are to be completed by the Rail Fleet Manager/Maintainer.

8.4. Rail Fleet Manager/Maintainer

It is the responsibility of the Rail Fleet Manager/Maintainer to obtain all of the documentation and information required for certification and:

- Ensure that *EN-OSP-FO-01093 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* is completed and forwarded to the Rolling Stock Engineering Group.
- Ensure all required supporting documentation in accordance with *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist* is obtained and forwarded to the Approving Engineer for review.
- Ensure that completed *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist* and all supporting documentation are obtained and forwarded to the Rolling Stock Engineering Group.
- Ensure that completed *EN-OSP-FO-01092 Assessment for On Track Plant in 25kV/600V OHW Areas* is obtained and forwarded to the OHW Electrical Engineer for review.
- Ensure that the rail trolley or trailer undergoes the general condition examination by an approved Rolling Stock Examiner and ensure *EN-OSP-FO-01107 Rail Trolley and Trailer General Condition Examination Checklist* is completed and forwarded to the Rolling Stock Engineering Group.
- Ensure that *EN-OSP-FO-01096 Infrastructure Maintenance Rolling Stock Annual Confirmation* is completed and forwarded to the Rolling Stock Engineering Group; and
- Ensure that any issues arising from the document review and general condition examination are addressed.

8.5. Approving Engineer

An Approving Engineer shall be appointed jointly by the Rolling Stock Engineering Manager and Manager, Track & Civil Engineering. The Approving Engineer is responsible for carrying out the assessment of documentation in accordance with *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist*. The Approving Engineer shall have:

- Experience in assessing rolling stock against standards.

- Demonstrated knowledge and experience of the RISSB (AS7500 series) rolling stock standards.
- Demonstrated knowledge and experience of the National Rail Safety Law (SA) Act 2012.
- No undeclared conflicts of interest.
- Knowledge of risk management.

The Approving Engineer may be from the DIT Rolling Stock Engineering Team nominated by the Rolling Stock Engineering Manager.

It is the responsibility of the Approving Engineer to review the documentation provided by the PM/PRW or Fleet Manager/Maintainer against the requirements of this standard and complete *EN-OSP-FO-01110 Rail Trolley and Trailer Documents Review Checklist*. For documentation relating to track engineering the Approving Engineer shall consult with the Manager Track & Civil Engineering.

If the Approving Engineer determines that the documentation provided is not satisfactory the PM/PRW or Fleet Manager/Maintainer is to be advised and requested to update and resubmit. If the documentation is satisfactory the completed checklist is to be forwarded to the Rolling Stock Engineering Group. The Approving Engineer shall provide recommendations on restrictions or limitations for the operation of rail trolleys and trailers on the AMPRN.

8.6. Rolling Stock Engineering Manager / Manager, Track & Civil Engineering

It is the responsibility of the Rolling Stock Engineering and the Manager Track & Civil Engineering to:

- Jointly ensure all applications for certification of rail trolleys and trailers are assessed in accordance with this standard.
- Jointly appoint an Approving Engineer.
- Jointly sign all the approval certificates with any restrictions or limitations.

The Rolling Stock Engineering Manager or delegate shall:

- Receive the application pack for the certification or re-certification of rail trolleys and trailers via rolling stock engineering mailbox:

kda-assetmanagement@keolisdowner.com

- Approve the appointment of the Rolling Stock Examiners undertaking the general condition examination.
- Select an Approving Engineer from the Register.
- Determine the expiry date and insert expiry date on the certificate.
- Ensure that the certificate is prepared and arrangements are made for the certificate and labels to be displayed on the rail trolley or trailer; a copy of certificate is to be forwarded to the PM/PRW or Fleet Manager/Maintainer.

- Maintain a register of all Infrastructure Maintenance Rolling Stock, this register shall contain details of rolling stock type, owner, certification/recertification dates.
- Ensure that the Infrastructure Maintenance Rolling Stock Register is updated at every new certification or re-certification; and
- Maintain a register of all Rolling Stock Examiners and Approving Engineers

8.7. **OHW Electrical Engineer**

It is the responsibility of the OHW Electrical Engineer to:

- Ensure that all applications for certification of rail trolleys and trailers are assessed for operation under 25kV electrified train lines in accordance with Sections 13.1 of this standard;
- review and sign the assessment form *EN-OSP-FO-01092 Assessment for On Track Plant in 25kV OHW Areas* and provide the conditions under which a rail trolley and trailer may access and operate under live 25kV electrified train lines.
- ensure that the signed form is forwarded to the Rolling Stock Engineering Group for preparation and issuing of the certificate; and
- arrange for issuing and displaying, in prominent positions on the rail trolley or trailer, of the appropriate labels that detail the conditions for operating on 25kV electrified train lines.

8.8. **Manager Rail Technical and Operational Assurance**

The Manager, Rail Technical and Operational Assurance shall:

- maintain this standard and all associated forms and checklists.
- update this standard or associated form or checklist when required.
- ensure that the current standard and all associated forms and checklists are available via intranet and internet to internal staff and external contractors; and
- advise internal staff and external contractors on interpretation of the standard and requirements for rail trolleys and trailers to access and operate on the AMPRN under this standard

8.9. **Rolling Stock Examiner**

The Rolling Stock Examiner is responsible for carrying out the general condition examination in accordance with *EN-OSP-FO-01107 Rail Trolley and Trailer General Condition Examination Checklist* and assessment in accordance with *EN-OSP-FO-01092 Assessment for On Track Plant in 25kV/600V OHW Areas*.

Only Rolling Stock Examiners approved by DIT are permitted to undertake the general condition examination.

The roles of Rolling Stock Examiner and the Approving Engineer cannot be performed by the same person.

9. General

9.1. Rail Trolley

- Rail Trolleys are to be moved manually only and are not permitted to be towed, pushed or pulled by any powered maintenance vehicles or equipment. If trolleys are required to be towed by a road-rail vehicle or other approved powered vehicle then the trolley is to be treated as a rail trailer for certification purposes.
- Rail trolleys are to be moved at walking pace only.
- A rail trolley shall, at all times when on track, be accompanied by enough workers to control and remove the rail trolley from the track as required.
- Rail trolleys are not permitted to be used for conveying personnel.
- Rail trolleys do not require lights to be fitted.

9.2. Rail Trailer

- A rail trailer may be operated as a trolley. When operating only as a trolley, a trailer shall be treated as a trolley for certification purposes.
- Rail trailers are not permitted to be used for conveying personnel.
- A rail trailer shall, always when on track, be accompanied by enough workers, or other means, to control and remove the trailer from the track as required.
- The maximum speed for rail trailers on the AMPRN is 30 kph or at reduced speed under any special conditions of certification. At level crossings, facing switches, V and K crossings, the speed shall be reduced to 10 km/hr.

Notwithstanding the above all, posted track speeds shall be strictly observed.

- Reversing the towing vehicle with a rail trailer attached is not permitted unless carried out at walking pace under the direct supervision of a pilot located on the ground.
- A rail trailer shall be fitted with automotive tail and stop lights compatible with the towing vehicle.
- A rail trailer shall have a safety chain in addition to a drawbar.
- A rail trailer shall only be towed by a towing vehicle that has been certified by DIT. The total load on a rail trailer, including tare, shall not exceed the towing capacity of the towing vehicle at any time.

10. Vehicle Outline

The static profile of the rail trolley or trailer shall not exceed the limits shown in the following diagrams under any condition of loading or wear:

- 200-A3-82-1658: Maximum Outline for Metropolitan Rolling stock & Equipment – 1600mm Gauge.

The above profiles do not take account of the dynamic and kinematic effects associated with the movement of a rail trolley or trailer and reference should be made to PTS-MS-10-TR-STD-

00000047: Structural Clearances – Design and Rating – Train. The kinematic envelop of the rail trolley or trailer can be determined using one of the following methods:

- Full application of the above standards
- A combination of the application of the above standard and, where applicable, actual performance and measurements of the dynamic behaviour of the rail trolley or trailer.

Details of the rail trolley or trailer kinematic envelope shall be provided.

11. Wheels

The following wheel profiles are used on the AMPRN:

- Train – Modified Profile 2 (MP2)

The use of wheel profiles other than the above may be acceptable but details shall be provided prior to certification.

The rail wheels on the rail trolley or trailer shall comply with all the defect requirements of PTS-MS-10-XM-STD-00000084: Rail car wheel inspection and defects standard.

12. Signal Detection Interface

A rail trolley or trailer has much lower wheel loads than conventional rolling stock which makes their ability to 'short circuit' or 'shunt' track circuits unreliable and introduces the risk that they will not consistently activate signals or level crossings or show up on the network control system.

Accordingly, it is preferred for non-electrified lines that the rail trolley and trailer have electrical isolation between the wheels on adjacent rails to ensure that it cannot activate track circuits and associated signals. Evidence shall be provided that resistance between the wheels on the same axle shall be greater than 20,000 ohms in accordance with *AS/RISSB 7505 Signalling Detection Interface*.

For non-insulated rail trolleys or trailers evidence shall be provided that resistance between the wheels on the same axle is less than 1 milliohm (0.001 ohm) at 1 volt in accordance with *AS/RISSB 7505 Signalling Detection Interface*.

Both insulated and non-insulated rail trolleys and trailers are only allowed to operate under appropriate track possession authorities and are not permitted to run as a 'train' operating under signal indication.

13. Operation on Electrified Train

13.1. Operation on 25kV Electrified Train Lines

This section sets out the requirements for rail trolley and trailer to operate on live 25kV electrified lines on the AMPRN, for the purpose of:

- Reducing the risk of electric shock.
- Controlling any current flow through mechanical components to ensure safety.

13.1.1. Equipotential Bonding

Rail trolley or trailer must be correctly bonded if they are to travel under live 25kV OHW. This is to prevent the dangers of touch potential to personnel

from different voltages and to provide a suitable short circuit path in the event of contact with live OHW equipment.

Any rail trolley or trailer not correctly bonded is not permitted to travel or work under 25kV OHW unless:

- OHW equipment is Isolated and Earthed.
- a Person Responsible for Electrical Safety (PRES) accompanies the rail trolley or trailer and holds an Electrical Work Permit; and
- a Warning Notice (*TP4-DRG-000025*) stating this restriction shall be placed at all access points to the rail trolley or trailer.

Rail wheel axles shall not be insulated if a rail trolley or trailer is travelling or working under live 25kV OHW equipment.

Rail trolley or trailer shall have equipotential bonding in accordance with the requirements of RSSB standard RIS-2715-RST Rolling Stock Subsystem and Interfaces to AC Energy Subsystem

Group Standard *GM/RC2514 Recommendations for Equipotential Bonding of Rail Vehicles to Running Rail Potential* sets out good practice for compliance with *GM/RT2304 Equipotential Bonding of Rail Vehicles to Running Rail Potential* and RIS-2715-RST Iss 1 AC Energy Subsystem (Part 2). in this area. The accepted figures for non-insulation are listed below:

- A maximum rms. fault current of 15kA for 1 second, and a peak current of 37.5kA in the first half cycle.
- The strategy for re-closing of the traction supply circuit breakers after a fault has occurred is firstly immediate re-closure, followed by an investigation if further tripping occurs.

13.1.1.1. Testing

The safety bond continuity tests shall be carried out on each rail trolley or trailer to check a conductive path exists between all external conductive parts of the vehicle and each rail. The maximum impedance between any such part of the rail trolley or trailer and each rail shall not exceed 0.15 ohms. This testing will be carried out annually as part of the rail trolley or trailers maintenance and servicing regime.

The maximum impedance between any external conductive part of the rail trolley or trailer and each rail should be such that no dangerous touch potentials exist in the event of an electrical fault on the rail trolley and trailer or a fault where live OHW comes into contact with the rail trolley or trailer.

13.1.2. Electromagnetic Compatibility

Rail trolley and trailer can be affected by the electromagnetic interference produced by OHW equipment. Likewise electrical equipment fitted to rail trolley or trailer can generate electromagnetic interference that could affect railway signalling and communication equipment including that of other adjacent railway infrastructure owners i.e. ARTC.

A rail trolley or trailer not complying with the directions below is not permitted to travel or work under 25kV OHW unless the OHW equipment is isolated

and earthed and a Person Responsible for Electrical Safety (PRES) accompanies the rail trolley or trailer and holds an Electrical Work Permit. A Warning Notice (*TP4-DRG-000025*) stating this restriction shall be placed at all access points to the rail trolley or trailer.

13.1.2.1. Immunity of Rail Trolleys and Trailers from an Electrified Environment

The component and sub-component parts of the rail trolley or trailer shall be assessed for susceptibility and immunity to electromagnetic induced currents. Each electrical or electronic circuit box shall be assessed for the potential to malfunction under an induced current, and the effect such a malfunction would have on safety or intended operation of the equipment.

Any electrical or electronic circuit which is considered vulnerable to EMC shall comply with the requirements of *EN 50121-3-2 Railway Applications – Electromagnetic Compatibility – Part 3-2: Rolling Stock – Apparatus*, clause 8, tables 7, 8 and 9, or equivalent.

- If electrical equipment is added to, or removed from, an electrical system of 28V or less, then provided this equipment has already been separately tested further testing is not required.
- Where electrical equipment of 28V or less requires testing, the equipment can be tested to the *ISO 11452 Series Road Vehicles – Component Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy* of standards or the complete rail trolley or trailer tested to *ISO 11451 Series Road Vehicles – Vehicle Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy*.
- Where a previously untested rail trolley or trailer exists with an electrical system of 28V or less, then the rail trolley or trailer should be tested to automotive EMC tests set out in *ISO 11451 series*.
- Where a previously untested rail trolley or trailer exists with an electrical system of greater than 28 V then the rail trolley or trailer should be tested to *EN 50121-3-1*.
- If electrical equipment of greater than 28V is to be added to an existing design, then the equipment must be tested to *EN 50121-3-2* or the complete rail trolley or trailer be tested to *EN 50121-3-1*.
- Demonstration of compliance with *EN 50121-3-1* or *EN 50121-3-2* may either be by testing or a letter of compliance signed by a technically competent electromagnetic compatibility engineer.

13.1.3. Assessment

All rail trolley and trailer documentation shall be assessed using the relevant criteria detailed in *EN-OSP-FO-01092 Assessment for On Track Plant in 25kV/600V OHW Areas*.

14. Twist Test

14.1. Rail Trolley

A twist test is not required for rail trolleys.

14.2. Rail Trailer

A twist test is not required for a rail trailer with one axle fitted with rail wheels.

All other rail trailers shall be tested for torsional resilience. The twist test shall be carried out in accordance with Engineering Instruction RS4-DOC-001299 Static Twist Test for Rolling Stock or AS7502 section 10.5.1 Twist test whichever is the more onerous requirement.

- The maximum wheel unloading permitted is 60%.
- A value for wheel unloading exceeding 60% will mean the vehicle has failed the twist test and is not permitted to access or operate on the AMPRN. Permission to operate may be granted, under restricted conditions, following a detailed assessment.

15. Maximum Rated Load

The maximum rated load for a rail trolley or trailer, including tare, shall comply with the manufacturer's recommendations and shall not be exceeded under any circumstances.

15.1. Track Forces and Stresses

Vehicles with a P2 force which exceeds 100 kN per wheel shall comply with *AS/R/SSB 7508 Track Forces and Stresses*.

16. Marking and Identification

All rail trolleys and trailers shall be fitted with compliance plates that display the following information:

- Manufacturer
- Date manufactured
- Model/serial number/VIN
- Tare weight in kg#
- Maximum rated load in kg#

All lettering is to be clearly visible.

Items marked # above shall be displayed on both sides, or both ends, of the rail trolley or trailer.

For Rail Trailers only

A rail trailer shall have reflective tape on both sides and at each end. The colour of the tape should be white or yellow and shall contrast with the colour of the trailer.

Class 1A reflective material compliant with *AS/NZS 1906.2* or class 1W reflective material compliant with *AS/NZS 1906.1* shall be used.

17. Brakes

17.1. Rail Trolley

The rail trolley shall be fitted with a failsafe braking system that ensures that the trolley cannot run away during all stages of on and off tracking.

A brake shall be fitted that will hold a fully loaded trolley indefinitely on a 1 in 30 grade.

Brakes must be fitted to the tread of at least two wheels or on discs on at least one axle. If the trolley has more than two axles, then at least 50% of the wheels (and axles) must be braked.

The brake shall require a positive action to disengage the brake and maintain the brake in the disengaged position. Once the positive action is removed the brake must automatically reapply/reengage. The system shall not be capable of being locked in the disengaged position.

The fully loaded rail trolley shall be capable of stopping within 5 metres from walking pace on dry level track.

Details of the braking system shall be provided.

17.2. Rail Trailer

All rail trailers shall have some form of brake that will automatically apply and remain applied if the trailer is not connected to, or becomes disconnected from, the towing vehicle. The system must be failsafe and would typically be air or hydraulically operated. When travelling or in operation, the rail trailer brake must be capable of being applied using a signal from the towing vehicle i.e. truck-trailer airbrake system.

A brake test for the combined loading of the rail trailer and the towing vehicle shall meet the brake test requirements detailed in DIT document *PTS-MS-10-RS-GUD-00000095: Requirements for road rail vehicles accessing and operating on the Adelaide Rail Network*.

The rail trailer brakes must be fitted to the tread of at least two wheels or on discs on at least one axle. If the trailer has more than two axles, then at least 50% of the wheels (and axles) must be braked.

Details of the braking system shall be provided.

18. Drawbars (Trailers Only)

Drawbars must have an engineer's certificate that validates the design, manufacture and any modifications that have been carried out. The validation shall ensure compliance with all relevant standards and regulations.

Drawbars shall be fitted with compliance plates that display the following information:

- Manufacturer
- Date manufactured
- Model/serial number
- Maximum safe hauling load in kg

All lettering is to be clearly visible.

19. Lifting on and off track

19.1. Rail Trolley

All rail trolleys must be able to be lifted on and off track manually in accordance with approved safe working methods.

19.2. Rail Trailer

Most but not all rail trailers will be able to be lifted on and off track manually. Where the manual method is not possible details of the mechanical means to be used shall be provided i.e. lifting points, type of crane etc. Where a crane or earth moving machine is utilised to on and off track a rail trailer they shall comply with relevant Australian Standards.

20. Stability

The rail trolley or trailer shall be stable under all conditions and evidence of this shall be incorporated in engineer's report.

21. Certification and Re-certification

21.1. Certification

To be certified all rail trolleys and trailers shall comply with all of the requirements of this standard. The Certification Application Form *EN-OSP-FO-01093 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* must be completed by the applicant/owner to enable the rail trolley or trailer to be assessed.

The process to be followed as stated in the following steps for certification of rail trolley and trailer:

The Application Form, Document Review Checklist, General Condition Examination, 25kV/600V Assessment and all associated test documentations shall be provided by the PM/PRW or Rail Fleet Manager/Maintainer. For identification purposes photographs of the front, back and sides of the rail trolley or trailer shall be provided.

A maintenance schedule and service history of a rail trolley or trailer shall be provided for any certification or re-certification application for access and operation on the AMPRN.

If elements of the required evidence are missing the PM/PRW or Rail Fleet Manager/Maintainer will be requested to supply the missing information for further review.

Once certified the rail trolley or trailer shall be issued with a certificate, *EN-OSP-CE-00049 Infrastructure Maintenance Rolling Stock Certificate Template*, and a certification label. The expiry date on a certificate shall be inserted by the Rolling Stock Engineering Manager. Any restrictions or limitation on the certificate are applied by Rolling Stock Engineering Manager and/or Manager Track and Civil Engineering following the recommendations provided by an Approving Engineer.

Infrastructure Maintenance Rolling Stock Register shall be updated at every new certification or re-certification.

Rail Trolleys or trailers may be certified for a maximum 1-year period or period determined by the Rolling Stock Engineering Manager. Following the first year of certification an annual automatic renewal for a maximum of 2 further years (i.e. total 3 years including first certification year) may be granted in accordance with the Section 21.3. The label must be attached to the rail trolley or trailer in a prominent position. The rail trolley or trailer operator must follow all restrictions or conditions as shown in the certificate and/or label. DIT reserves the right to request the certificate and/or label for audit purposes at any time.

21.1.1. Certification of Gauge Convertible Rail Trolleys and Trailers

An advice must be sought from Rolling Stock Engineering Manager for the application of the certification of gauge convertible rail trolleys and trailers.

21.2. General Condition Examination

The general condition examination in accordance with *EN-OSP-FO-01107 Rail Trolley and Trailer General Condition Examination Checklist* is not intended to be an exhaustive assessment of all the operating systems, components and sub-components of the rail trolley or trailer. The examination enables DIT to assess the rail trolley or trailer to determine if its general condition is consistent with the level of compliance attributed by the PM/PRW or Rail Fleet Manager/Maintainer in the document review.

The examination is primarily visual in nature, with some checking, measuring and testing of critical functions and structural elements.

21.2.1. External Contractor Supplied Rail Trolleys and Trailers

All external contractor supplied rail trolleys and trailers are required to undergo the general condition examination. Any issues arising from the examination will need to be corrected before the rail trolley or trailer can be certified.

21.2.2. DIT Owned Rail Trolleys and Trailers

DIT has contracted out the maintenance of its rail trolleys and trailers and it is an expectation that the contractual arrangement will include a maintenance regime that ensures that the requirement for a general condition assessment is satisfied by regular assessments and examinations. The Rolling Stock Engineering Manager and the Manager Track & Civil Engineering shall determine the requirement for a general condition assessment.

21.2.3. Rolling Stock Examiner

Only Companies approved by DIT are permitted to carry out the general condition examination. The companies must demonstrate the following competencies:

- Qualified in a relevant trade with knowledge of the purpose and safety requirements applicable to rail trolleys and trailers.
- Complete understanding of the construction, functionality, maintenance and inspection requirements of rail specific guiding and/ or traction and braking equipment fitted to rail trolleys and trailers.
- Competent in assessing and identifying rail wheel damage and profile condition.
- Familiarity with all operating controls and safety functions installed on the vehicle.
- Familiarity with all interface requirement related to DIT's overhead wiring system.
- Capable of competently checking the operation of the rail equipment.
- Competent in carrying out the testing requirements necessary to establish compliance with the specified acceptance criteria.

21.3. Re-certification and De-Certification

Where the certification is required to be extended past the initial 1-year period the Applicant / Owner may use form, *EN-OSP-FO-01096 Infrastructure Maintenance Rolling Stock Annual Confirmation*, confirm annually (on the initial certification anniversary) the following:

1. That servicing is up to date and being carried out in accordance with the schedule provided at the initial certification.
2. No modifications have been undertaken to the vehicle since the initial certification application.
3. The vehicle has not been involved in any accidents or incidents since the initial certification application.
4. A twist test has been carried out annually since the initial certification.
5. Crack testing of the stub axle has been carried out annually since initial certification. (Only for road-rail vehicles)
6. Equipotential bonding testing has been carried out annually since the initial certification.

7. All records are available for audit.
8. The vehicle is fit for purpose.

On receipt of the completed form the certification of the rail trolley or trailer will be carried over for a further 1-year period or period determined by the Rolling Stock Engineering Manager and the rail trolley and trailer applicant/owner advised accordingly. A 4-week grace period may be granted for the submission of the annual confirmation following the initial expiry date. During this period the rail trolley or trailer shall not be allowed to access and operate on the AMPRN. Unless directed otherwise by the Rolling Stock Engineering Manager there is no requirement for a new Application Form, Documents Review Checklist or General Condition Examination Checklist to be submitted with the Annual Confirmation Form.

A full certification will be required at the end of the 2 automatic renewals period. Full recertification will require submission of a new Application Form; Documents Review Checklist and General Condition Examination Checklist in accordance with Section 21.1.

The rail trolley or trailer may be de-certified at any time at the discretion of DIT. Typical circumstances where this may occur include, but are not limited to:

- Failure to provide the annual confirmation at the end of full certification period.
- A safety incident e.g. runaway, collision etc.
- Evidence of lack of maintenance.
- Substantial modification without notification to DIT.

In the event of de-certification, the certificate and certification label shall be removed from the rail trolley or trailer, and it will not be permitted to access and operate on the AMPRN.

Following a safety incident (e.g. runaway, collision), a rail trolley or trailer shall be removed from the AMPRN until an inspection has been carried out. Any identified issues shall be addressed before the rail trolley or trailer is allowed to resume access and operation on the AMPRN.

21.4. Pre-work Inspection

Evidence must be provided that there is a pre-works start checklist for the rail trolley or trailer. It is a requirement that the pre-work inspection be carried out daily or before the rail trolley or trailer commences any operation on the AMPRN. All defects noted during the inspection must be recorded, reported and rectified before work commences.

DIT reserves the right to audit the pre-work inspection records and logbooks at any time the rail trolley or trailer is operating on the AMPRN.

21.5. Modifications

Where substantial modifications are made to a rail trolley or trailer it will require recertification. A modification is considered substantial if it impacts in any way on the ability of the rail trolley or trailer to operate safely on the AMPRN. Where there is doubt as to the whether the modifications are substantial clarification shall be sought from the Rolling Stock Engineering Manager.

All modifications made to the rail trolley or trailer that have the potential to affect its ability to be fit for purpose shall be notified to DIT for assessment.

21.6. Submission Time Frame

All submissions related to certification or recertification of rail trolleys or trailers are to be emailed to the following email address:

kda-assetmanagement@keolisdowner.com

Submission of all documentation in a single emailed pack at least 10 working days prior to any planned work on the AMPRN is essential for an efficient and smooth certification process.