Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN

Engineering Standard

Rail Commissioner

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Government of South Australia
Rail Commissioner

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0	Initial Issue	Oct 2012	Keith Charlton	Philip Degenhardt Peter Haskard	Brian Green
1	Minor changes in various sections along with new forms for application, document review and general condition examination in line with AS 7502. Certification process has been revised. Inclusion of the assessment in OHW areas.	March 2017	Kuldeep Zala Keith Charlton	Matthew Reedman Gary Webb	Philip Agnew
2	Sections 11,16,18, 20, 22 and Appendix 5 updated	May 2018	Kuldeep Zala Keith Charlton	Mark Pronk Gary Webb	Philip Agnew
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1. Introduction

The Department of Planning, Transport and Infrastructure (DPTI) operates and maintains the Adelaide Metropolitan Passenger Rail Network (AMPRN) under the Rail Accreditation assigned to the Rail Commissioner. This standard is intended to ensure that the introduction of road-rail vehicles 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 DPTI owned and Contractor supplied road-rail vehicles accessing and operating on the AMPRN under DPTI 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 road-rail vehicles used for the work comply with all applicable legislative requirements, DPTI Rail Access Procedures, and all relevant standards.

A “road-rail vehicle” is a road vehicle fitted with retractable rail wheels that enable it to be driven along the track. It can be moved on or off the track at level crossings or other suitable places and can also operate as a road vehicle.

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

Road-rail vehicles that do not meet the minimum requirements in this standard are not permitted to access and operate on the AMPRN. Approval may be granted by DPTI, under specified conditions, for a road-rail vehicle to access the AMPRN for the purpose of vehicle examination and testing.

Note: the terms ‘hi-rail vehicle’, ‘hy-rail vehicle’, ‘road/rail vehicle’ and ‘road-rail vehicle’ have all been used to describe this type of vehicle. In this standard the term ‘road-rail vehicle’ is used exclusively.

2. Purpose

The purpose of this standard is to specify the minimum certification requirements for road-rail vehicles to access and operate on the AMPRN. The standard *AS 7502 Road Rail Vehicles* shall be used for the safe design, construction, testing, maintenance, decommissioning and modifications of road-rail vehicles.

3. Scope

This standard applies to all road-rail vehicles, including DPTI owned vehicles, accessing and operating on the AMPRN broad gauge (1600mm) train, and standard gauge (1435mm) tram, mainlines, depots, sidings and worksites.

Refer to *TC4-DOC-000362 Requirements for Rail Trolleys and Trailers Accessing and Operating on the AMPRN* for certification of rail trolleys and trailers on the AMPRN.

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

4. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form	FO-RC-OE-897 (KNet # 9053676)
Infrastructure Maintenance Rolling Stock Certificate Template	FO-RC-OE-666 (KNet # 7068833)
Road-Rail Vehicle Document Review Checklist	FO-RC-OE-910 (KNet # 9562009)
Road-Rail Vehicle General Condition Examination	FO-RC-OE-909 (KNet # 9562036)
Assessment for on Track Plant in 25kV/600V OHW Areas	FO-AM-GE-898 (KNet # 9380110)
DPTI Infrastructure Maintenance Rolling Stock Register	KNet # 7068447
DPTI Rolling Stock Examiners Register (Internal Use Only)	KNet # 10790167
DPTI Approving Engineers Register (Internal Use Only)	KNet # 12942824
Warning Stickers for Vehicles in a 25kV Overhead Wiring System	TP4-DRG-000025 (KNet # 9464438)
Infrastructure Maintenance Rolling Stock Annual Confirmation	FO-RC-OE-975 (KNet # 10712235)

5. References

- Rail Safety National Law (SA) Act 2012
- Rail Safety National Law National Regulations 2012
- Work Health and Safety Regulations 2012 (South Australia)
- 200-A3-82-1658 Maximum Outline for Metropolitan Rolling stock and Equipment - 1600 mm gauge
- AS2550.10 Cranes, hoists and winches - Safe use – Mobile elevating work platforms
- AS1418.10 – Cranes, hoists and winches - Mobile Elevating Work Platforms
- AS7501 Railway Rolling Stock - Rolling Stock Compliance Certification
- AS7502 Road-Rail Vehicles
- AS7505 Railway Rolling Stock – Signalling detection interface
- AS7531 Rolling stock – Lighting & Visibility – Part 4 – Infrastructure Maintenance Rolling Stock.
- AS1841 Portable Fire Extinguishers
- AS 3978 Non-destructive Testing – Visual Inspection of Metal Products and Components
- AS 1171 Non-destructive Testing – Magnetic Particle Testing of Ferromagnetic Products, Components and Structures
- EN13309 Construction Machinery – Electromagnetic Compatibility of Machines with Internal Power Supply
- 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
- GM/RT2304 Equipotential Bonding of Rail Vehicles to Running Rail Potential
- 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
- ISO 9712 Non-destructive Testing – Qualification and Certification of NDT Personnel

- European Automotive EMC Directive 2004/104/EC
- RISSB Glossary of Railway Terminology - Guideline
- CP-TS-975 Structural Clearances(Tram)
- DPTI Mass and Dimension Limits for General Access Heavy Vehicles Operating in South Australia.
- PTS-MS-10-TR-STD-00000047 Structural Clearances – Design and Rating – Train
- PTS-MS-10-XM-STD-00000084 Rail car wheel inspection and defects standard
- PTS-MS-10-XM-STD-00000092 Tram car wheel inspection and defects standard
- RS2-DRG-300000 MGTP wheel profile for tramline (KNet # 7755265)
- 243-A3-96-054 MP2 Tread Profile - Rail car wheel (KNet # 6914832)
- TC4-DOC-000362 Requirements for Rail Trolleys and Trailers Accessing and Operating on AMPRN (KNet # 7590491)
- RS4-DOC-000885 Requirements for Track Machines Accessing and Operating on the AMPRN (KNet # 10609126)
- RS4-DOC-001299 Static Twist Test for Rolling Stock (KNet # 12545472)

6. Acronyms

ACRONYM	FULL NAME
ADR	Australian Design Rules
AMPRN	Adelaide Metropolitan Passenger Rail Network
DC	Direct Current
DPTI	Department of Planning, Transport and Infrastructure
EMC	Electromagnetic Compatibility
MGTP	Modified Glenelg Tramline Profile
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 and Standards Board
SWMS	Safe Work Method Statement

7. Definitions

TERM	DEFINITION
Gross Mass	Total mass of road-rail vehicle including tare mass, maximum load, maximum service capacity of crew and passengers.
Infrastructure Maintenance Rolling Stock[1]	Track machines and road-rail vehicles. Also known as on ‘track vehicles’.
Rolling Stock[1]	Any vehicle that operates on, or intends to operate on, or uses a railway track, including any loading on such a vehicle, but excluding a vehicle designed for both on- and off-track use when not operating on the track. Rolling stock is a collective term for a large range of rail vehicles of various types, including locomotives, freight wagons, passenger cars, track

[1] RISSB National Guideline Glossary of Railway Terminology

TERM	DEFINITION
	machines and road-rail vehicles.
Tare Mass[1]	The mass of road-rail vehicle in the lightest condition under which it will be operated. This includes provisioning with sand and water but fuelled to no more than one-third of capacity.
Train	The broad gauge tracks on the AMPRN.
Tram	The standard gauge tracks on the AMPRN.
Travel Mode	Where the road-rail vehicle is travelling to and from the worksite
Work Mode	Where the road-rail vehicle is performing its work function within the worksite and under an authorised work possession/authority.

8. Roles and Responsibilities

8.1. General

There are generally two ways in which a road-rail vehicle can be introduced onto the AMPRN:

- Through planned construction or maintenance works where an external contractor, who owns or hires a road-rail vehicle, is engaged by DPTI for the works.
- Purchasing and maintaining of a new or modified DPTI owned road-rail vehicle by DPTI Fleet Services for use by DPTI Rail Maintenance.

For construction and maintenance works it is the responsibility of the DPTI Project Manager (PM) or Person Responsible for the Work (PRW) to ensure that all road-rail vehicles 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 DPTI to have their road-rail vehicles certified in anticipation of work on the AMPRN.

For DPTI owned vehicles the DPTI Rail Fleet Manager/Maintainer is responsible for ensuring that all road-rail vehicles are certified before accessing and operating on the AMPRN.

8.2. DPTI Project Manager/Person Responsible for the Works (PM/PRW)

It is the responsibility of the DPTI PM/PRW to obtain all of the documentation and information required for certification from the Applicant/Owner, follow the process described in Appendix 8 and:

- ensure that completed *FO-RC-OE-897 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* (Appendix 1) is obtained and forwarded to the Rolling Stock Engineering Group;
- ensure all required supporting documentation as required in accordance with *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2) is obtained and forwarded to the Approving Engineer for review;
- ensure that completed *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2) and all supporting documentation are obtained and forwarded to the Rolling Stock Engineering Group;
- ensure that completed *FO-AM-GE-898 Assessment for on Track Plant in 25kV/600V OHW Areas* (Appendix 5) is obtained and forwarded to the OHW Electrical Engineer for review;
- ensure that the road-rail vehicle to undergo the general condition examination by an approved Rolling Stock Examiner and ensure *FO-RC-OE-909 Road-Rail Vehicle General Condition Examination (*Appendix 3) is completed and forwarded to the DPTI Rolling Stock Engineering Group;
- ensure that completed *FO-RC-OE-975 Infrastructure Maintenance Rolling Stock Annual Confirmation (Appendix 7)* is obtained and forwarded to the DPTI 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 *FO-RC-OE-897 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* (Appendix 1) and *FO-RC-OE-975 Infrastructure Maintenance Rolling Stock Annual Confirmation (Appendix 7)* is to be completed by the external contractor engaged for the works and forwarded to the PM/PRW. The form has provision for supply of the road–rail vehicle owner details where the contractor is hiring the vehicle.

For DPTI owned road-rail vehicles both the application form and annual confirmation are to be completed by the DPTI Rail Fleet Manager/Maintainer.

8.4. DPTI Rail Fleet Manager/Maintainer

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

- ensure that *FO-RC-OE-897 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* (Appendix 1) is completed and forwarded to the Rolling Stock Engineering Group;
- ensure all required supporting documentation in accordance with *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2) is obtained and forwarded to the Approving Engineer for review;
- ensure that completed *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2) and all supporting documentation are obtained and forwarded to the Rolling Stock Engineering Manager for review;
- ensure that completed *FO-AM-GE-898 Assessment for on Track Plant in 25kV/600V OHW Areas* (Appendix 5) is obtained and forwarded to the OHW Electrical Engineer for review;
- ensure that the road-rail vehicle to undergo the general condition examination by an Approved Rolling Stock Examiner and ensure *FO-RC-OE-909 Road-Rail Vehicle General Condition Examination (*Appendix 3) to be completed and forwarded to the Rolling Stock Engineering Group;
- ensure that *FO-RC-OE-975 Infrastructure Maintenance Rolling Stock Annual Confirmation (Appendix 7)* is to be 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

A New 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 in accordance with *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2). The Approving Engineer shall have:

- Experience in assessing rolling stock against standards;
- Demonstrated knowledge and experience of the RISSB rolling stock and road-rail vehicles standards;

- Demonstrated knowledge and experience of the Rail Safety National Law (SA) Act 2012;
- No undeclared conflicts of interest;
- Knowledge of risk management;

The Approving Engineer may be from the DPTI Rolling Stock Engineering Team as 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 DPTI Fleet Manager/Maintainer against the requirements of this standard and complete *FO-RC-OE-910 Road-Rail Vehicle Document Review Checklist* (Appendix 2). 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 DPTI 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 PM/PRW. The Approving Engineer shall provide recommendations on restrictions or limitations for the operation of road-rail vehicles on the AMPRN.

8.6. Rolling Stock Engineering Manager And Manager Track & Civil Engineering

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

- jointly ensure all applications for certification of road-rail vehicles are assessed in accordance with this standard;
- jointly appoint a New Approving Engineer;
- jointly sign all 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 the road-rail vehicles via rolling stock engineering mail box: DPTI.RollingstockEngineering@sa.gov.au
- approve the appointment of the Rolling Stock Examiners undertaking the general condition examinations;
- select an Approving Engineer from the Register;
- determine the expiry date and inserting expiry date on the certificate;
- ensure that the certificate is prepared and arrangements made for the certificate and labels to be displayed on the road-rail vehicle. A copy of certificate is to be forwarded to the PM/PRW or DPTI Fleet Manager/Maintainer
- maintain a register of all Infrastructure Maintenance Rolling Stock, this register shall contain details of road-rail vehicle 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 road-rail vehicles are assessed for operation under live 25kV electrified train lines and 600V electrified tram lines in accordance with Sections 20 and 21 of this standard;

- review and sign the assessment form *FO-AM-GE-898 Assessment for on Track Plant in 25kV/600V OHW Areas (*Appendix 5) and provide the conditions under which the road-rail vehicle may access and operate under live 25kV electrified train and 600V electrified tram lines;

- ensure that the signed form is forwarded to the Rolling Stock Engineering Group for preparation and issuing of the certificate

- arrange for issuing and displaying, in prominent positions on the road-rail vehicle, of the appropriate labels that detail the conditions for operating on 25kV electrified train lines or 600V electrified tram 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/internet to internal staff and external contractors; and

- advise to internal staff and external contractors on interpretation of the standard and requirements for road-rail vehicles 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 *FO-RC-OE-909 Road-Rail Vehicle General Condition Examination (*Appendix 3) and assessment in accordance with *FO-AM-GE-898 Assessment for on Track Plant in 25kV/600V OHW Areas*.

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

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

9. General

The Railway Industry Safety Standards Board (RISSB) has developed and issued *AS7502 Road-Rail Vehicles* for the design, construction, testing, maintenance, decommissioning and modification of road-rail vehicles.

DPTI adopts all mandatory requirements as specified in *AS7502 Road-Rail Vehicles* unless modified as shown in the following sections.

DPTI adopts all recommended requirements as specified in *AS7502 Road-Rail Vehicles* as mandatory unless modified as shown in the following sections. If the applicable clause contains the word 'should', it is to be read as the word 'shall'. This is to eliminate any doubt as to the requirements of the clause.

The certification process for road-rail vehicles shall be in accordance with Section 32 of this standard.

10. Road-Rail Vehicle Classification

AS7502 Road-Rail Vehicles provides the method for classification of road-rail vehicles.

Type 2 – friction drive road-rail vehicles are not preferred for operation on the AMPRN however they may be permitted under special conditions.

10.1. Road-rail Guidance System Identification

All new road rail guidance systems, both front and rear, shall be identified with a unique identification number and shall be fitted with identification plate displaying the information in accordance with *AS 7502 Road Rail Vehicles*.

11. Maintenance Schedule and Service History

Each road-rail vehicle shall be maintained in accordance with the manufacturer's requirements or as per *AS 7502 Road-rail vehicles.*

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

12. Crack Testing - Rail Guidance Equipment

For road-rail vehicles that have been in service for more than 10 years, a visual examination of the axles, rail wheels and structural elements of the rail guidance equipment, including the mounting on the vehicle chassis, shall be conducted in accordance with the requirements of *AS 3978 Non-destructive Testing – Visual Inspection of Metal Products and Components* by an inspector certified to *ISO 9712 Non-destructive Testing – Qualification and Certification of NDT Personnel* Level 3 or equivalent. The Level 3 inspector shall then prepare a procedure for NDT of all welds and critical members of the rail guidance system. This NDT procedure shall be implemented by an inspector certified to *ISO 9712* level 1 or higher for the applicable method(s). The crack testing shall be carried out at certification and every two years thereafter. Evidence of the crack testing in the form of a certificate along with relevant photographs and the procedure used shall be provided.

Notwithstanding the above, the stub axles on all road-rail vehicles accessing and operating on the AMPRN shall be inspected using the magnetic particle method in accordance with the requirements of *AS 1171 Non-destructive Testing – Magnetic Particle Testing of Ferromagnetic Products, Components and Structures* at certification and annually thereafter. Evidence in the form of a testing certificate along with relevant photographs shall be provided.

13. Vertical Load

Road-rail vehicles have three (3) possible loading configurations:

- Complete vehicle loading is carried on the rail wheels.
- Complete vehicle loading is shared between the front rail wheels and the rear road wheels with the rear rail wheels providing guidance only.
- Complete vehicle loading is carried on the road wheels and the rail wheels providing guidance only.

Details of the manner in which the loading is configured shall be provided. The vertical load on any fully load supporting rail wheel will be based on the maximum permitted road loading as shown in following tables[2].

AXLE/TYRE CONFIGURATION AND ROAD VEHICLE MASS LIMITS PER AXLE			
Single axle or single axle group fitted with single tyres with a section width of:	Road vehicle mass limits for single axles and axle groups in tonnes	**Tandem axle** group fitted with single tyres with section width of	Road vehicle mass limits for single axles and axle groups in tonnes
1. Less than 375 mm	6.0	1. less than 375 mm	11
2. 375 mm or more but less than 450 mm	6.7	2. 375 mm or more but less than 450 mm	13.3
3. 450 mm or more	7.0	3. 450 mm or more	14
Single axle fitted with dual tyres	9.0		

Table 13.1 Road Vehicle Mass Limits Per Axle

AXLE/TYRE CONFIGURATION AND PERMITTED VERTICAL LOAD PER RAIL WHEEL			
Single axle or single axle group fitted with single tyres with a section width of:	Permitted vertical load per rail wheel in tonnes	**Tandem axle** group fitted with single tyres with section width of	Road vehicle mass limits for single axles and axle groups in tonnes
1. less than 375 mm	3.0	1. less than 375 mm	5.5
2. 375 mm or more but less than 450 mm	3.35	2. 375 mm or more but less than 450 mm	6.65
3. 450 mm or more	3.5	3. 450 mm or more	7
Single axle fitted with dual tyres	4.5		

Table 13.2 Road Vehicle Mass Limits Per Axle

13.1. Safe Working Loads for Road-Rail Cranes and Excavators / Backhoes / Front end loaders

Details of the safe working loads for cranes and excavators / backhoes / front end loaders on road-rail vehicles shall be provided and a sign or placard displayed on the vehicle in such a way that it is visible to operators.

[2] DPTI Mass and Dimension Limits for General Access Heavy Vehicles Operating in South Australia

14. Travel & Work Modes

Road-rail vehicles have two modes of operation:

- Travel mode – where the vehicle is travelling to and from the worksite with all componentry fully retracted and secured.

- Work mode – where the vehicle is performing its work function within the worksite under an authorised work possession/authority.

15. Road-Rail Vehicle Outline

The static profile of the road-rail vehicle 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'*

- A DPTI Tram Rolling Stock Outline drawing is still to be developed for the tram system (the Flexity vehicle outline shall be used in the interim).

The above profiles do not take account of the dynamic and kinematic effects associated with the movement of the road-rail vehicle and reference should be made to *PTS-MS-10-TR-STD-00000047 'Structural Clearances – Design and Rating – Train* and *CP-TS-975 Structural Clearances for Tram*. The kinematic envelope of the road-rail vehicle can be determined using one of the following methods:

- Full application of the above standards.

- A combination of the application of the above standards and, where available, actual performance and measurements of the dynamic behavior of the road-rail vehicle.

Details of the road-rail vehicle kinematic envelope shall be provided.

The road-rail vehicle componentry, when in work mode within a controlled worksite, may exceed the permissible outline, but must be retracted and securely locked within the maximum rolling stock outline when in travel mode. A diagram or illustration shall be supplied clearly defining the retracted positions of the components in travel mode.

16. Speed and Ride Performance

The maximum speed for road-rail vehicles on the AMPRN is 40 km/hr or reduced speed under special conditions. This speed shall be clearly displayed in the cab and be visible to the operator.

At level crossings, facing switches, V and K crossings the speed shall be reduced to 10 km/hr.

The maximum reversing speed is 20 km/hr.

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

17. Wheels

The following rail wheel profiles are used on the AMPRN:

- Train – Modified Profile 2 (MP2)

- Tram – Modified Glenelg Tramline Profile (MGTP – Flexity/Citadis)

The use of wheel profiles other than the above may be permitted under special conditions. Details of the alternative profile shall be provided.

The back to back measurement for each wheel set shall be measured at three different locations around the wheel (120 degrees apart). For broad gauge the back to back measurement shall be within the range of 1522-1525mm and for standard gauge 1387 -1389 mm.
The wheel alignment “toe in” shall be measured for the front and back wheel set and shall not exceed 3mm.

The rail wheels on the road-rail vehicle shall comply with all of the requirements of *PTS-MS-10-XM-STD-00000084 Rail car wheel inspection and defects standard* for Train and *PTS-MS-10-XM-STD-00000092 Tram wheel inspection and defects standard* for the tramline.

A twist test shall be carried out in accordance with *Engineering Instruction RS4-DOC-001299 Static Twist Test for Rolling Stock.*

The maximum wheel unloading permitted is 60%. A value for wheel unloading exceeding 60% will mean the road-rail vehicle has failed the twist test and is not permitted to access or operate on the AMPRN.

18. Traction Drive

The road-rail vehicle traction system shall be independently capable of moving the road-rail vehicle in both tare and gross laden conditions in a smooth manner without wheel spin on dry level track.

Details of the traction system shall be provided.

Traction systems using a friction drum roller or friction drive applied directly to the rail wheels may be permitted on the AMPRN under special conditions. A braking system independent of the friction drive and applied to the rail wheels shall be fitted.

19. Signal Detection Interface

Road-rail vehicles have 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 road-rail vehicles have electrical isolation between the wheels on adjacent rails to ensure that they cannot activate track circuits and associated signals. Evidence shall be provided that the isolation will be effective and that the direct current (DC) electrical resistance between the rail contact surfaces of wheels on the same axle is greater than 20,000 ohms in accordance with *AS7505 Signalling Detection Interface.*

For non-insulated road-rail vehicles 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 *AS7505 Signalling Detection Interface*.

Both insulated and non-insulated road-rail vehicles are only allowed to operate under appropriate track possession authorities and are not permitted to run as a ‘train’ operating under signal indication.

20. Operation on 25kV Electrified Lines

This section sets out the requirements for a road-rail vehicle to operate on 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

20.1. Equipotential Bonding

Road-rail vehicles must be correctly bonded if they are to travel under live 25kV OHW. This is to prevent 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 road-rail vehicles not correctly bonded are 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 road-rail vehicle and holds an Electrical Work Permit; and
- a Warning Notice (*TP4-DRG-000025*) stating this restriction shall be placed in front of the operator's position and on all access points to the vehicle.

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

Road-rail vehicles shall be equipotentially bonded in accordance with the requirements of Group Standard *GM/RT2304 Equipotential Bonding of Rail Vehicles to Running Rail Potential*.

Group Standard *GM/RC2514 Recommendations for Equipotential Bonding of Rail Vehicles to Running Rail Potential* sets out good practice for compliance with *GM/RT2304* in this area. The accepted figures for non-insulation are listed below.

- A maximum r.m.s. 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 of one immediate re-closure, followed by an investigation if further tripping occurs.

20.1.1. Testing

The safety bond continuity tests shall be carried out on each vehicle 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 vehicle and each rail shall not exceed 0.15 ohms. This testing will be carried out annually as part of the road-rail vehicles maintenance and servicing regime.

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

20.2. Electromagnetic Compatibility

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

Road-rail vehicles not complying with the directions below are 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 road-rail vehicle and holds an Electrical Work Permit. A Warning Notice (*TP4-DRG-000025*) stating this restriction shall be placed in front of the operator's position and on all access points to the vehicle.

20.2.1. Emissions from Vehicles

Except where the original road vehicle is already stated to be compliant with European Automotive EMC Directive *2004/104/EC*, vehicles shall meet the requirements of *EN 13309:2000 Construction Machinery – Electromagnetic Compatibility of Machines with Internal Power Supply or EN 50121-3-1 Railway Applications – Electromagnetic Compatibility – Part 3-1: Rolling Stock – Train and Complete Vehicle Clause 6.*

Any electrical component that is added to a vehicle that has already been tested shall either be assessed as a component for its potential to affect railway signals, or the whole vehicle shall be re-assessed.

20.2.2. Immunity of Vehicle from an Electrified Environment

The component and sub-component parts of each vehicle 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.

- Where a vehicle is a conversion of an existing road vehicle which had its own Conformité Européenne marking (or equivalent road vehicle acceptance) and an electrical system of 28V or less, then providing no electrical equipment is added, no further EMC testing is required.

- 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 *ISO11452* Series *Road Vehicles – Component Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy* of standards or the complete vehicle tested to *ISO11451 Series Road Vehicles – Vehicle Test Methods for Electrical Disturbances from Narrowband Radiated Electromagnetic Energy*.

- Where a previously untested vehicle exists with an electrical system of 28V or less, then the vehicle should be tested to automotive EMC tests set out in *ISO11451* series.

- Where a previously untested vehicle exists with an electrical system of greater than 28 V then the vehicle should be tested to *EN50121-3-1*.

- If electrical equipment of greater than 28V is to be added to an existing design, then the equipment must be tested to *EN50121-3-2* or the complete vehicle be tested to *EN50121-3-1*.
- Demonstration of compliance with *EN50121-3-1 or EN50121-3-2* may either be by testing or a letter of compliance signed by a technically competent electromagnetic compatibility engineer.

20.3. Protection from Overhead Line Equipment

Any road-rail vehicle 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 road-rail vehicle and holds an Electrical Work Permit. A warning notice stating this restriction shall be placed in front of the operator's position and on all access points to the vehicle.

- All fixed platforms or work surfaces on road-rail vehicles where personnel might reasonably be present under OHW, including all normal and emergency access and egress routes, shall be covered by a metallic framed roof. The roof cover is permitted to be a mesh or fibre reinforced plastic. The mesh size shall be a maximum of 25mm.

- Exceptions to the requirement for the platforms and surfaces to have a roof are permitted with respect to areas that are locked out of use, or have a locked physical barrier, during normal operation, and have OHW Warning Notices and display a notice forbidding access/use under live OHW.

- Warning Notices shall be displayed at the access point to each platform or surface not fitted with a roof. They shall state "No access under live electrical wires" and be visible and readable from a distance of 2m.

- All roofing materials shall be shatter proof.

- OHW Warning Notices shall be fixed adjacent to all access points to the superstructure, cab, platforms, work surfaces, footboards and steps.

20.4. Working and Travelling Under Live Overhead Equipment

A vehicle fitted with a roof over the whole vehicle within the AMPRN rolling stock maximum outline as defined in Section 15 suitably bonded to running rail potential, shall be deemed acceptable for use in work and travel modes under live OHW.

The vehicle certification and instruction shall be endorsed "*This vehicle is suitable for use under Live OHW when used in conjunction with a safe system of work".*

Corresponding signage shall be fitted to the vehicle at all access points and in front of the operator's position.

Road-rail vehicles fitted with equipment capable of extending beyond the Maximum Rolling Stock Outlines, including cranes, excavators, backhoes, front end loaders and personnel baskets, are not to travel or work under live OHW equipment unless the extendable equipment is locked in the stowed position.

20.5. On and Off Tracking Vehicles

If a vehicle authorised to travel under live OHW exceeds 3800mm above rail head level during on - or off-tracking, it is not to be on - or off-tracked under live OHW.

20.6. Assessment

All road-rail vehicles shall be assessed using the criteria detailed in *FO-AM-GE-898 Assessment for on Track Plant in 25kV/600V OHW Areas (*Appendix 5).

21. Operation on 600V Electrified Tram Lines

Road–Rail vehicles are only permitted to access and operate on 600V electrified tramlines if:

1. The 600V electrified tram lines are isolated and earthed for the area in which the road-rail vehicle is travelling or working and is accompanied by a PRES who holds a Certificate of Isolation for the OHW.

   OR

2. The road-rail vehicle fully complies with Section 20 of this document and a vehicle specific Safe Work Method Statement (SWMS) is available that details how that vehicle will safely travel and work under live 600V OHW equipment.

22. Lighting

The lighting on road-rail vehicles shall fully comply with ADR regulations.

Where a road-rail is required to reverse any greater than 500 metres it shall be fitted with headlights, stop lights, tail lights and marker lights at both ends. Under these circumstances the headlights, stop lights, tail lights and marker lights shall be suitably interlocked to provide clarity of direction of travel and avoid contravention of the ADR regulations while on road.

The road-rail lighting shall comply with all of the requirements relevant to road-rail vehicles in *AS7531 Rolling stock – Lighting & Visibility – Part 4 – Infrastructure Maintenance Rolling Stock.*

23. Vigilance System

A vigilance system shall be installed on the road-rail vehicle.

The vigilance system shall periodically alert the driver with a flashing light and auditory alarm which requires acknowledgement to prevent an emergency brake application and loss of traction power/engine cut-out.

The time from reset to the first vigilance system alarm shall not be less than 25 seconds nor more than 90 seconds. The time from reset to the emergency brakes application shall not be less than 30 seconds nor more than 110 seconds. The total time from reset to the emergency brakes application, including the first vigilance system alarm, shall not be more than 110 seconds.

The over speed function shall prevent the road-rail vehicle from over speeding by applying the emergency brakes. The maximum allowable speed on the AMPRN shall be in accordance with Section 16. The threshold speed limits at which the emergency brakes apply shall be no greater than 5km/hr above the maximum allowable speed for both the forward and reverse directions.

The road-rail vehicle shall have provision for isolation of the vigilance system should the vigilance unit become inoperable due to a malfunction. The isolation switch/mechanism shall have a permanent seal that is required to be broken to effect the isolation. The vigilance isolation shall only be used to enable travel of the road-rail vehicle to an on-off tracking point for removal to depot for repair of the vigilance malfunction. Under these circumstances driver only operation is not permitted – a second person must be present on the road-rail vehicle as it travels to the on-off tracking point. Where the vigilance system is isolated a visual indication shall be provided to the driver. Road-rail vehicles with a broken vigilance seal are not permitted to access or operate on the AMPRN.

The road-rail vehicle shall be configured to ensure that the vigilance system can automatically distinguish between travel and work modes. When in travel mode the vigilance system shall be fully operational. When in work mode the road-rail vehicle shall be configured to enable the vigilance system to be suppressed – the sealed isolation switch is not permitted to be used for this purpose. Suppression of the vigilance system is required to enable the road-rail vehicle driver to concentrate on work activities. The configuration shall ensure that the suppression of the vigilance is automatically cancelled when work mode is terminated. Where the vigilance system is suppressed a visual indication shall be provided to the driver.

Details of the type, operation and configuration of the vigilance system shall be provided.

24. Event Recorders

An event recorder shall be fitted to all road rail vehicles.

An event recorder shall be able to record the data in accordance with *AS 7502 Road Rail Vehicles.*

25. Communications

The road-rail vehicle shall have a communication system that is compatible with the AMPRN communication system.

26. Safety and Emergency Equipment

The road-rail vehicle shall be fitted with the following safety and emergency equipment:

- First aid kit
- Fire extinguisher compliant with *AS1841 Portable Fire Extinguishers*
- Torch
- At least two (2) red and one (1) white signalling flags
- Jack

27. Emergency Stop[3]

If the road-rail vehicle is designed to be operated or attended by more than one (1) person and more than one (1) emergency stop control is fitted, it must ensure that the multiple emergency stop controls are of the "stop and lock-off" type so that the road-rail vehicle cannot be restarted after an emergency stop control has been used unless that emergency stop control is reset.

28. Elevated Work Platforms (EWPs)

All elevated work platforms shall comply with:

- *AS2550 Cranes, hoists and winches - Safe use – Mobile elevating work platforms*

[3] Work Health and Safety Regulations 2012 (South Australia)

- Work Safe SA document *Safeguard CS6 'Elevating Work Platforms'*
- *AS1418.10 – Cranes, hoists and winches - Mobile elevating work platforms*

In travel mode all EWP componentry shall be fully retracted and secured. It is acknowledged, however, that where an EWP is working on successive overhead wiring electrification poles (nominally 60 metres apart) or progressively inspecting overhead wires that it is impractical to retract the platform to move the EWP from pole to pole or work point to work point. In addition it may also be necessary for the platform to move while outside of the minimum structure clearance. Moving the EWP under these circumstances carries the risk of the platform striking structures in the corridor.

To manage this risk the PM/PRW shall ensure:

- that a Safety Management Plan or Safe Work Method Statement is developed that demonstrates that all risks have been identified and control measures put in place so far as is reasonably practicable.

- that the speed of the EWP does not exceed 6 km/hr or that specified by the EWP manufacturer if this is less;

- that the EWP is of a Type 3 design as defined in *AS1418.10* i.e. the control of the movement of the EWP is from the platform only for the duration of the work

The EWP shall be fitted with track clearers at the leading and trailing ends to remove any obstacles on the track that may cause a derailment.

Workers are not permitted to occupy the work platform during travel mode.

29. Height, Slew and Reach Restrictors

Road-rail excavators, elevated work platforms (EWP's), backhoes, front end loaders and cranes shall have all lifting equipment capable of elevating above the vehicle or slewing fitted with restrictors to automatically prevent over travel and ensure stability.

Where the vehicle is operating on electrified lines it shall be fitted with height restrictors.

30. Towing

Where a road-rail vehicle is used to tow a trailer the arrangement shall comply with engineering standard *TC4-DOC-000362 Requirements for Certification of Rail Trolleys and Trailers for the certification of rail trolleys and rail trailers.*

31. Derailment Catch System

A derailment catch system shall be installed on the road-rail vehicle in accordance with *AS7502*. The distance from the engagement surface of the catch system to the back of the nearest wheel shall be no greater than 270mm to ensure the derailed wheel does not travel beyond the sleeper end.

32. Certification and Recertification

32.1. Certification

In order to be certified all road-rail vehicles shall comply with all of the requirements of this standard. The Road-rail Vehicle Certification Application Form, *FO-RC-OE-897 Road-Rail Vehicle and Rail Trolley & Trailer Certification Application Form* (See Appendix 1), must be completed by the applicant/owner to enable the vehicle to be assessed.

The process to be followed for certification of road-rail vehicles is shown in the flow chart in Appendix 8. This flow chart is intended to specify the action to be taken by the person responsible at each stage of the process towards certification.

The Application Form (See *Appendix 1), Document Review Checklist (See Appendix 2), General Condition Examination (See Appendix 3), 25kV/600V Assessment (See Appendix 5) and all associated test documentations* shall be provided by the PM/PRW or DPTI Rail Fleet Manager/Maintainer. For identification purposes photographs of the front, back and sides of the road-rail vehicle shall be provided. If elements of the required evidence are missing the PM/PRW or DPTI Rail Fleet Manager/Maintainer will be requested to supply the missing information for further review.

Once certified the road-rail vehicle shall be issued with a certificate, *FO-RC-OE-666 Infrastructure Maintenance Rolling Stock Certificate Template* (See Appendix 4), and a certification label as shown in Appendix 6. 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.

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

Road-rail vehicles 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 32.3.

Both the certificate and the label must be retained on the vehicle at all times when accessing and operating on the AMPRN. The road-rail vehicle driver must follow all restrictions or conditions as shown on the certificate and/or label. DPTI reserves the right to request the certificate for audit purposes at any time. The label must be attached to the vehicle in a prominent position.

32.1.1. Certification of Gauge Convertible Road-Rail Vehicles

The general condition examination in accordance with *FO-RC-OE-909 Road-Rail General Condition Examination Checklist* (See Appendix 3) shall be required for both standard gauge and broad gauge configurations for the application of a gauge convertible road-rail vehicle to access and operate on the AMPRN.

For any subsequent gauge conversion on the AMPRN during the certificate validity period, a detailed inspection by an approved Rolling Stock Examiner is required to ensure that the gauge conversion has been carried out correctly. A record of this inspection may be requested by DPTI at any stage during the operation on the AMPRN for auditing purposes.

32.2. General Condition Examination

The general condition examination, *FO-RC-OE-909 Road-Rail General Condition Examination Checklist* (See Appendix 3), is not intended to be an exhaustive assessment of all of the operating systems, components and sub-components of the road-rail vehicle. The examination enables DPTI to assess the road-rail vehicle to determine if its general condition is consistent with the level of compliance attributed by the PM/PRW or DPTI 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.

32.2.1. External Contractor Supplied Road-Rail Vehicles

All External Contractor supplied road-rail vehicles are required to undergo the general condition examination. Any issues arising from the examination will need to be corrected before the road-rail vehicle can be certified.

32.2.2. DPTI Owned Road-Rail Vehicles

DPTI has contracted out the maintenance of its road-rail vehicles 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.

32.2.3. Rolling Stock Examiner

Only companies approved by DPTI 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 equipment fitted to road-rail vehicles.
- Complete understanding of the construction, functionality, maintenance and inspection requirements of rail guidance, traction and braking equipment fitted to road-rail vehicles.
- Competent in assessing and identifying rail wheel damage and profile condition.
- Familiarity with all operating controls and safety functions installed on road-rail vehicles.
- Familiarity with all interface requirements related to DPTI's overhead wiring system.
- Familiarity with RISSB *AS 7502 Road Rail Vehicles.*
- Capable of competently checking the operation of the rail guidance equipment.
- Competent in carrying out the testing requirements necessary to establish compliance with the specified acceptance criteria.

32.3. Recertification and Decertification

Where the certification is required to be extended past the initial 1 year period the Applicant / Owner, may use the form, *FO-RC-OE-975 Infrastructure Maintenance*

Rolling Stock Annual Confirmation (See Appendix 7), to confirm annually (on the initial certification anniversary) the following:

1. That regular servicing has been carried out and includes all of the check items detailed in the General Condition Examination form used at the initial certification.
2. No modifications have been undertaken to the vehicle since the initial certification.
3. The vehicle has not been involved in any accidents or incidents since the initial certification.
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 the initial certification.
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 road-rail vehicle will be carried over for a further 1 year or period determined by the Rolling Stock Engineering Manager and the vehicle owner advised accordingly. A 4 weeks grace period may be granted for the submission of the annual confirmation following the initial expiry date. During this period the road-rail vehicle 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 recertification 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 32.1.

The road-rail vehicle may be decertified at any time at the discretion of DPTI. 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 DPTI.

In the event of decertification the certificate and certification label will be removed from the road-rail vehicle and it shall not be permitted to access or operate on the AMPRN.

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

32.4. Pre-work Inspection

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

DPTI reserves the right to audit the pre–work inspection records and log books at any time the road-rail vehicle is operating on the AMPRN.

32.5. Modifications

Where substantial modifications are made to a road-rail vehicle it will require recertification. A modification is considered substantial if it impacts in any way on the ability of the road-rail vehicle 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 road-rail vehicle that have the potential to affect its ability to be fit for purpose shall be notified to DPTI for assessment.

32.6. Submission Time Frame

All submissions related to certification or recertification of road-rail vehicles are to be emailed to the following email address:

DPTI.RollingstockEngineering@sa.gov.au

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.

Appendix 1 Road-Rail Vehicle Certification Application Form

Form

Rail Commissioner

ROAD-RAIL VEHICLE AND RAIL TROLLEY & TRAILER CERTIFICATION APPLICATION FORM

Applicant Name	
Applicant Contact Details	
Vehicle Name and Type	
Vehicle Registration Number	**Vehicle Serial Number:**
Vehicle Details	Make: Year: ☐ Crane ☐ EWP ☐ Excavator ☐ Backhoe ☐ Front end loader Number of Axles: Axle Spacing (mm): ☐ Insulated ☐ Non - Insulated ☐ Both (Adjustable) Road Rail Manufacturer: Road Rail (R)
Vehicle Dimensions (mm)	Height: Width: Leng
Vehicle Maximum Speed (km/hr)	Vehicle ass GVM:
Vehicle Owner If different to Applicant	
Vehicle Owner Contact Details	
Reason for Accessing AMPRN	☐ Non-Electrified Network ☐ Both
Vehicle Gauge	☐ Standard (1435 mm) ☐ Gauge Convertible
Certification Type	☐ New Certification ☐ Recertification

Vehicle Type			
	☐ 1 Self Powered Traction and braking directly on rail wheels	☐ 2 High Ride Traction and braking on road wheels, in contact with rail wheels. Use of Friction drums or roller (Not Preferred)	☐ 3 Low Ride Traction and braking on road wheels; rail wheels are for guidance only

Declaration
I declare that the information submitted is correct to the best of my knowledge and complies with DPTI document *PTS-MS-10-RS-GUD-00000095 Requirements for Road-Rail Vehicles accessing and operating on Adelaide train and tram system* or document *TC4-DOC-000362 Requirements for Rail Trolleys and Trailers Accessing and Operating on the Adelaide Rail & Tram Network.*

Name			
Signature		**Date**	
Contact Details			
Acknowledged by DPTI Project Manager / Person Responsible for the Works	Name:	Title:	
	Signature:	Date:	

Appendix 2 Road-Rail Vehicle Document Review Checklist

Checklist

Rail Commissioner

ROAD RAIL VEHICLE DOCUMENTS REVIEW CHECKLIST

ROAD RAIL VEHICLE DETAILS			
Review Date		Road Vehicle Registration Number	
Vehicle Make		Vehicle Year	
Vehicle Description	☐ Crane ☐ EWP ☐ Excavator ☐ Backhoe ☐ Front end loader		
	Other	Date Road Rail Guidance System fitted	
Serial Number		Odometer / Hour reading	
Applicant / Owner			
Reviewed By	Name		Title
Company Details			

Item No.	Description	Compliant Yes	Compliant No	Compliant N/A	Details and Supporting Evidence	Non-Compliance Details and Control
Approvals and Engineering Reports		✓	✗			
1	Does the vehicle have current certification demonstrating structural integrity of the road-rail system	☐	☐	☐		
2	Is there evidence that issues identified in the failure of a previous application for certification have been addressed?	☐	☐	☐		
3	Is there evidence provided that the vehicle has been approved for use in other railway networks?	☐	☐	☐		
4	Has the vehicle been subject to substantial modification from the original design since last certified on the AMPRN?	☐	☐	☐		
5	Is there evidence provided that the modification has been the subject of an engineering report?	☐	☐	☐		
6	Does the modification comply with AS7502 *Road-rail vehicles* and relevant DPTI standards	☐	☐	☐		

Maintenance Records		✓	✗	✓		
7	Is there evidence provided of a valid maintenance regime for the vehicle?	☐	☐	☐		
8	Is there evidence provided that the vehicle is being maintained to that regime?	☐	☐	☐		
9	Are the maintenance records up to date?	☐	☐	☐		
10	Is there any deferred work that may affect the operation of the vehicle on the AMPRN?	☐	☐	☐		
11	Is there evidence of a pre-work inspection regime?	☐	☐	☐		
Road Registration and Compliance of Road-Rail Vehicles		✓	✗	✓		
12	Is there evidence that the vehicle is registered in accordance with AS7502 *Road-Rail Vehicles*?	☐	☐	☐		
Emergency Off-Tracking System		✓	✗	✓		
13	Is there evidence that the vehicle has an emergency off-tracking system in accordance with AS7502 *Road–Rail Vehicles*?	☐	☐	☐		
Transferring To and From Rail Operation		✓	✗	✓		
14	Is there evidence that the method of transfer for road to rail mode or rail to road mode complies with AS7502 *Road–Rail Vehicles*?	☐	☐	☐		
Vehicle Chassis and Rail Guidance Equipment		✓	✗	✓		
15	Is there evidence that the rail guidance equipment is fitted with compliance plates in accordance with AS7502 *Road-Rail Vehicles*?	☐	☐	☐		
16	Is there evidence of stub axle crack testing?	☐	☐	☐		
17	Is there evidence of rail axle crack testing? (At 10 years and every 2 years thereafter)	☐	☐	☐		
18	Is there evidence of rail wheel crack testing? (At 10 years and every 2 years thereafter)	☐	☐	☐		
19	Is there evidence of rail guidance structural elements crack testing? (At 10 years and every 2 years thereafter)	☐	☐	☐		
Vertical and Safe Working Load		✓	✗	✓		
20	Is there evidence that the vertical load configuration complies with AS7502 *Road-Rail Vehicles* and Section 12 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		

21	Is there evidence that the safe working loads (SWL's) for cranes, excavators, backhoes and front end loaders have been determined and comply with all the necessary legislation and standards?	☐	☐	☐		
22	Is there evidence that the safe working load for cranes, excavators, backhoes and front end loaders is displayed in such a way that it is visible to operators?	☐	☐	☐		
Vehicle Outline		✓	×	✓		
23	Is there evidence provided that the vehicle's static outline complies with Section 14 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
24	Is there evidence provided that the kinematic vehicle outline complies with Section 14 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN??*	☐	☐	☐		
25	Is there evidence that the locking system for retractable components will ensure that vehicle does not infringe DPTI's Rolling Stock Outline or Structural Clearance Standards in travel mode?	☐	☐	☐		
Track Forces and Stresses		✓	×	✓		
26	Is there evidence that the vehicle complies with AS7502 *Road-Rail Vehicles*?	☐	☐	☐		
Dynamic Behaviour and Speed & Ride Performance		✓	×	✓		
27	Is there evidence that the vehicle complies with AS7502 *Road-Rail Vehicles?*	☐	☐	☐		
28	Is there evidence that the vehicle complies with Section 15 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
Suspension, Axles and Axle Bearings			×	✓		
29	Is there evidence that the suspen[illegible] co[illegible]w AS7502 *Road- Rail Vehicles?*	☐	☐	☐		
30	Is there evidence that th[illegible]s [illegible]ith AS 7502 *Road-Rail Vehicles?*	☐	☐	☐		
31	Is there evidence that the axle bearings in a[illegible]rdan[illegible]with AS 7502 *Road- Rail Vehicles*?	☐	☐	☐		
Brakes		✓	×	✓		
32	Is there evidence th[illegible]se[illegible]ce brakes comply with AS 7502 *Road- Rail Vehicles*	☐	☐	☐		
33	Is there evidence that the parking brake complies with AS 7502 *Road- Rail Vehicles*?	☐	☐	☐		
Wheels and Traction Drive		✓	×	✓		
34	Is there evidence that the wheels of the road-rail vehicle comply with section 16 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
35	Is there evidence that the wheel profile is compatible with the AMPRN's infrastructure?	☐	☐	☐		
36	Is there evidence that the wheel diameter complies with AMPRN's Rolling Stock Standard: PTS-MS-10-XM-STD-00000084 *Rail car wheel inspection and defects standard for train* or PTS-MS-10-XM-STD-*00000092 Tram wheel inspection and defects standard for the tramline*?	☐	☐	☐		
37	Is there evidence that the vehicle is fitted with effective traction control to prevent wheel spin?	☐	☐	☐		
Insulation		✓	×	✓		
38	For insulated vehicles is there evidence that the vehicle has effective electrical isolation in accordance with section 18 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
39	For non-insulated vehicles, is there evidence that the vehicle meets the resistance requirements in accordance with section 18 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
Operation on Live Electrified Lines		✓	×	✓		
40	Is there evidence the road-rail vehicle has been equipotentially bonded and tested in accordance with Section 19 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
41	Has the road-rail vehicle been assessed to ensure it is not affected by electromagnetic interference and does not	☐	☐	☐		

	generate electromagnetic interference that could affect railway signalling and communication equipment in accordance with Section 19 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*					
42	Have the component and sub-component parts of the road-rail vehicle been assessed for susceptibility and immunity to electromagnetic induced current in accordance with Section 19 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
Rail Guidance Equipment Status Indications		✓	×	✓		
43	Is there evidence that the vehicle is fitted with Rail Guidance Equipment Status indicators in accordance with AS7502 *Road-Rail Vehicles*?	☐	☐	☐		
Audible Warning Device		✓	×	✓		
44	Is there evidence that the vehicle is fitted with an Audible Warning Device in accordance with AS 7502 *Road-Rail Vehicles*?	☐	☐	☐		
Lighting and Visibility		✓	×	✓		
45	Is there evidence that the road-rail vehicle lighting and visibility complies with AS7502 *Road-Rail Vehicles?*	☐	☐	☐		
Driving Cabs		✓	×	✓		
46	Is there evidence that the road-rail vehicle driving cab complies with AS7502 *Road-Rail Vehicles?*	☐	☐	☐		
Vigilance System		✓	×	✓		
47	Is there evidence that the road-rail vehicle vigilance system complies with Section 22 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
Event Recorder		✓	×	✓		
48	Is there evidence that the road-rail vehicle is fitted with an event recorder in accordance with AS7502 *Road-Rail Vehicles?*	☐	☐	☐		
Communication system			×	✓		
49	Is there evidence that the road-rail vehicle [illegible] a communication system compatible [illegible] communication system?	☐	☐	☐		

Safety and Emergency Equipment		✓	×	✓		
50	Is there evidence that the road-rail vehicle is fitted with safety & emergency equipment in accordance with Section 21 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operation on the AMPRN?*	☐	☐	☐		
Derailment Catch System		✓	×	✓		
51	Is there evidence that the road-rail vehicle is fitted with a derailment catch system in accordance with AS7502 *Road-Rail Vehicles?*	☐	☐	☐		
Height, Slew and Reach Restrictors		✓	×	✓		
52	Is there evidence that the road-rail vehicle is fitted with height, slew and reach indicators in accordance with Section 27 of PTS –MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
Elevated Work Platforms (EWPs)		✓	×	✓		
53	Is there evidence that the EWP complies with the *AS14818.10 Crane, hoists and winches – Mobile Elevating Work Platforms?*	☐	☐	☐		
54	Is there evidence of the EWP inspection by competent person in accordance with the requirements of *AS2550.10 Cranes, hoists and winches – Safe use – Mobile elevating work platforms?*	☐	☐	☐		

General		✓	×	✓		
55	Are vehicle photographs provided in accordance with Section 30 of PTS–MS-10-RS-GUD-00000095 *Requirements for Road-Rail Vehicles Accessing and Operating on the AMPRN?*	☐	☐	☐		
56	Is there evidence of the risk assessment for external vehicles in normal, degraded and emergency modes?	☐	☐	☐		

The documentation supplied by the Applicant has been reviewed against the requirements detailed in the checklist. ☐ Satisfactory ☐ Unsatisfactory

Approving Engineer (Please list any special operational conditions or restrictions in comment box below)

Name	Signature	Date
Contact Details		

Comments	List all special operational conditions or restrictions

Appendix 3 Road-Rail Vehicle General Condition Examination

Checklist

Rail Commissioner

DPTI

ROAD-RAIL VEHICLE GENERAL CONDITION EXAMINATION

Review Date	/ /	Road Vehicle Registration Number	
Vehicle Make		Vehicle Year	
Vehicle Description	☐ Crane ☐ EWP ☐ Excavator ☐ Backhoe ☐ Front end loader		
	Other:	Date Road Rail Guidance System Fitted: / /	
	Road Rail Guidance System Serial Number: (F)	(R)	
Serial No		Odometer/Hour Reading	
Applicant / Owner			
Inspected by	Name:	Title:	
Company Details			
DPTI Review by	Name:	Title:	

Item No.		1st Inspection Pass	1st Inspection Fail	2nd Inspection Pass	2nd Inspection Fail	N/A
	Record Keeping	✓	×	✓	×	✓
1	Check maintenance inspection records for correct reporting of faults.	☐	☐	☐	☐	☐
2	Check the vehicle is registered with relevant [illegible] State or Territory legislative and regulatory requirements.	☐	☐	☐	☐	☐
3	Check rail guidance equipment fitted with compliance plates.	☐	☐	☐	☐	☐
	Road Rail Vehicle Classification					
4	Check the classification type of Road rail vehicle	Type ☐ 1		☐ 2		☐ 3
	Emergency Off-Tracking System	✓	×	✓	×	✓
5	Check the emergency off-tracking system for correct function/damage.	☐	☐	☐	☐	☐
	Transferring To and From Rail Operation	✓	×	✓	×	✓
6	Is the transfer of the road rail vehicle to and from rail operation satisfactory?	☐	☐	☐	☐	☐
	Vehicle Chassis and Rail Guidance Equipment	✓	×	✓	×	✓
7	Check the vehicle chassis and rail guidance equipment for condition, cracks, wear, excessive corrosion, lack of lubrication & damage.	☐	☐	☐	☐	☐
8	Check all hydraulic systems and associated equipment for correct function/damage.	☐	☐	☐	☐	☐
	Vertical Load	✓	×	✓	×	✓
9	Is loading configuration satisfactory?	☐	☐	☐	☐	☐
10	Measure rubber tyre width					
	Wheel	Measurement/Category Front	Rear			
	Minimum width	mm	mm			
	Maximum width	mm	mm			
	Road Rail Vehicle Outline	✓	×	✓	×	✓
11	Check that the overall height and width of the road-rail vehicle	☐	☐	☐	☐	☐

12	For componentry that exceeds the AMPRN rolling stock static outline in work mode check the retracting and locking mechanisms in travel mode for correct function/damage.		☐	☐	☐	☐	☐
	Dynamic Vehicle Behaviour		✓	x	✓	x	✓
13	Conduct twist test in accordance with RS4-DOC-001299 Static Twist Test for Rolling Stock to satisfy maximum wheel unloading requirement						
	Vehicle Side	Maximum % wheel unloading					
		Front rail wheel	Rear rail wheel				
	Left			☐	☐	☐	☐	☐
	Right			☐	☐	☐	☐	☐
	Rail Wheels, Axles, Wheelsets & Suspension		✓	x	✓	x	✓
14	Check rail wheels & wheelsets for condition, cracks, wear, damage & correct/matching dimensions.		☐	☐	☐	☐	☐
15	Check axles for condition, cracks, wear and damage.		☐	☐	☐	☐	☐
16	Check axle bearings for wear and damage.		☐	☐	☐	☐	☐
17	Check suspension for condition, cracks, wear and damage.		☐	☐	☐	☐	☐
18	Check back to back gauge of front and rear rail wheelsets (back to back 1522 – 1525mm for train and 1387 – 1390mm for tram)						
	Back to back gauge – front	Back to back gauge – rear					
	mm		☐	☐	☐	☐	☐
19	Check the wheel alignment toe-in (3 mm is maximum limit)						
	Wheel	Left	Right	Difference			
	Front	mm		mm	☐	☐	☐	☐	☐
	Rear	mm	mm	mm	☐	☐	☐	☐	☐
	Brakes		✓	x	✓	x	✓
20	Test service and parking brake for correct function in full load condition.		☐	☐	☐	☐	☐
21	Conduct full emergency application of service brake to satisfy minimum requirement						
	Parameter	Measurements					
	Initial Speed	km/hr	☐	☐	☐	☐	☐
	Deceleration	m/s/s	☐	☐	☐	☐	☐
	Stopping Distance	Metres	☐	☐	☐	☐	☐
22	Test parking brake holding ability on 1 in 30 grade track for at least 10 minutes.		☐	☐	☐	☐	☐
23	Check that provision has been made for the manual release (conscious action by the operator) of the fail-safe parking brake in a recovery situation.		☐	☐	☐	☐	☐
24	Check the automatic application of the parking brake for correct function/damage. (Loss of brake energy, engine shut down, vigilance time out & operator alighting the vehicle)		☐	☐	☐	☐	☐
25	Check the visual indication showing the parking brake status for correct function/damage.		☐	☐	☐	☐	☐
26	Check the emergency stop for correct function/damage. (Road-rail vehicle cannot be restarted after an emergency stop control has been used unless that control is reset)		☐	☐	☐	☐	☐
	Signal Detection Interface		✓	x	✓	x	✓
27	Where the road-rail vehicle has facility to interchange from insulated to non-insulated check for correct function/damage.		☐	☐	☐	☐	☐

	Rail Guidance Equipment Status Indication	✓	x	✓	x	✓
28	Check rail guidance equipment status indicator for correct function/damage.	☐	☐	☐	☐	☐
	Audible Warning Devices	✓	x	✓	x	✓
29	Check warning horns for correct function/damage.	☐	☐	☐	☐	☐
30	Check reversing and movement awareness alarms for correct function/damage.	☐	☐	☐	☐	☐
	Lighting and Visibility	✓	x	✓	x	✓
31	Check all lighting for correct function/damage.	☐	☐	☐	☐	☐
32	Where interlocked - check headlights, stop lights, tail lights and marker lights to ensure they are suitably interlocked with the direction of travel.	☐	☐	☐	☐	☐
33	Check flashing beacons for correct function/damage.	☐	☐	☐	☐	☐
34	Check reflective delineators are fit for purpose.	☐	☐	☐	☐	☐
	Driving Cabs	✓	x	✓	x	✓
35	Check driving cab for seating comfort, condition, access, egress and emergency exit.	☐	☐	☐	☐	☐
36	Check that the vehicle is fitted with rear vision devices and that they are functioning correctly.	☐	☐	☐	☐	☐
37	Check all controls and actuators for correct marking, illumination and function/damage.	☐	☐	☐	☐	☐
38	Check all interior lighting for correct [illegible] function/damage.	☐	☐	☐	☐	☐
39	Check the control which [illegible] position, of both front and rear rail guidance equipment at the same time, from road to rail.	☐	☐	☐	☐	☐
40	Check rail wheel deployment controls to ensure that the [illegible] cannot be placed on rail in an unbraked condition.	☐	☐	☐	☐	☐
41	Check the speed indicating device for correct function/damage.	☐	☐	☐	☐	☐
	Vigilance System	✓	x	✓	x	✓
42	Check vigilance system for correct function/damage.	☐	☐	☐	☐	☐
43	Check isolation seal intact.	☐	☐	☐	☐	☐
44	Check suppression system for correct function / damage.	☐	☐	☐	☐	☐
45	Check the automatic configuration of vigilance system, which distinguishes between work & travel mode, for correct function/damage.	☐	☐	☐	☐	☐
	Event Recorder	✓	x	✓	x	✓
46	Check event recorder for correct function/damage.	☐	☐	☐	☐	☐
	Communications System	✓	x	✓	x	✓
47	Check communication system for correct function/damage.	☐	☐	☐	☐	☐
	Safety & Emergency Equipment	✓	x	✓	x	✓
48	Ensure that all safety and emergency equipment is fitted and check for correct function/damage.	☐	☐	☐	☐	☐
	Derailment Catch System	✓	x	✓	x	✓
49	Check derailment catch system for correct function/damage.	☐	☐	☐	☐	☐
	Height, Slew and Reach Restrictors	✓	x	✓	x	✓
50	Check height, slew and reach restrictors and locking devices for correct function/damage.	☐	☐	☐	☐	☐
	Elevated Work Platforms (EWPs)	✓	x	✓	x	✓
51	Check crane or EWP for correct function/damage.	☐	☐	☐	☐	☐

52	Is Road-rail vehicle generally in good condition for the road network?	☐	☐	☐	☐	☐

This road-rail vehicle has been examined for general condition against the above checklist	☐ Satisfactory ☐ Unsatisfactory
Comments:	
Authorised Representative of Rolling Stock Examiner.	

Name (Print)		**Signature**		**Date**	/ /
Position		**Contact Details**			

Appendix 4 Road-Rail Vehicle Certificate Template

INFRASTRUCTURE MAINTENANCE ROLLING STOCK CERTIFICATE

DPTI Doc No:

APPLICANT NAME	
APPLICANT CONTACT DETAILS	
VEHICLE NAME / TYPE	
VEHICLE REGISTRATION NO	
VEHICLE OWNER (IF DIFFERENT TO APPLICANT)	
VEHICLE OWNER DETAILS	
ACCESS TRACK GAUGE	☐ BROAD (1600 mm) ☐ STANDARD (1435 mm)
ALLOWED TO ACCESS TRACK UNDER LIVE OVERHEAD	☐ YES (See Electrical ... for details) ☐ NO
INSULATION STATUS	☐ INSULATED ☐ NON-INSULATED ☐ SWITCHABLE

ANY RESTRICTIONS / CONSTRAINTS

SAMPLE ONLY

KNet # 7068833

MANAGER TRACK INFRASTRUCTURE ENGINEERING		
Name:	Signature:	Date: / /
ROLLING STOCK ENGINEERING MANAGER		
Name:	Signature:	Date: / /

EXPIRY DATE: / /

The above vehicle is approved to access and operate on AMPRN with above restrictions and compliance with this certificate. This certification is valid **until the date specified above**.

Folder Number: KNet:

Document Number FO-RC-OE-666
Knet No: 7068833
Version Number: 4
Issue Date: 10-November-2017

Government of South Australia
Rail Commissioner

Appendix 5 Assessment for on Track Plant in 25kV/600V OHW Areas

Form

Rail Commissioner

ASSESSMENT FOR ON TRACK PLANT IN 25kV/600V OHW AREAS

PLANT/VEHICLE DETAILS					
Vehicle Make:		**Vehicle Year:**		**Vehicle Rego:**	

ASSESSMENT CRITERIA – BY EXAMINING COMPANY				
Reference	**Compliance**		**Evidence**	**Comments**
	Yes	**No**		
Equipotential Bonding	☐	☐		
Electromagnetic Compatibility	☐	☐		
Protection from Overhead Line Equipment	☐	☐		
Working and Travelling Under Live Overhead Equipment	☐	☐		
On and Off Tracking Vehicles	☐	☐		
Sign Off				
Name:			**Title:**	
Company Details:				
Signature:			**Date:**	

APPROVAL CONDITIONS – BY DPTI [illegible] ENGINEER (OHW)				
Conditions / Limitations	**Yes**	**No**	**N/a**	**Comments**
Prohibited from 25kV/600V OHW Areas unless Isolated, Earthed and Certificate of Isolation issued to [illegible]RES	☐	☐	☐	
Permitted to Travel in live 25kV/600V OHW Areas with Restrictions	☐	☐	☐	
Permitted to Travel in live 25kV/600V OHW without Restrictions	☐	☐	☐	
Permitted to Work in live 25kV/600V OHW Areas	☐	☐	☐	
Permitted to On/Off Tracking in live 25kV/600V OHW Areas	☐	☐	☐	
Sign Off				
Name:			**Title:**	
Signature:			**Date:**	
Valid Until:				

Appendix 6 Certification Label

Appendix 7 Annual Certificate Confirmation Form

Checklist

Rail Commissioner

DPTI

INFRASTRUCTURE MAINTENANCE ROLLING STOCK ANNUAL CONFIRMATION

Date: / /

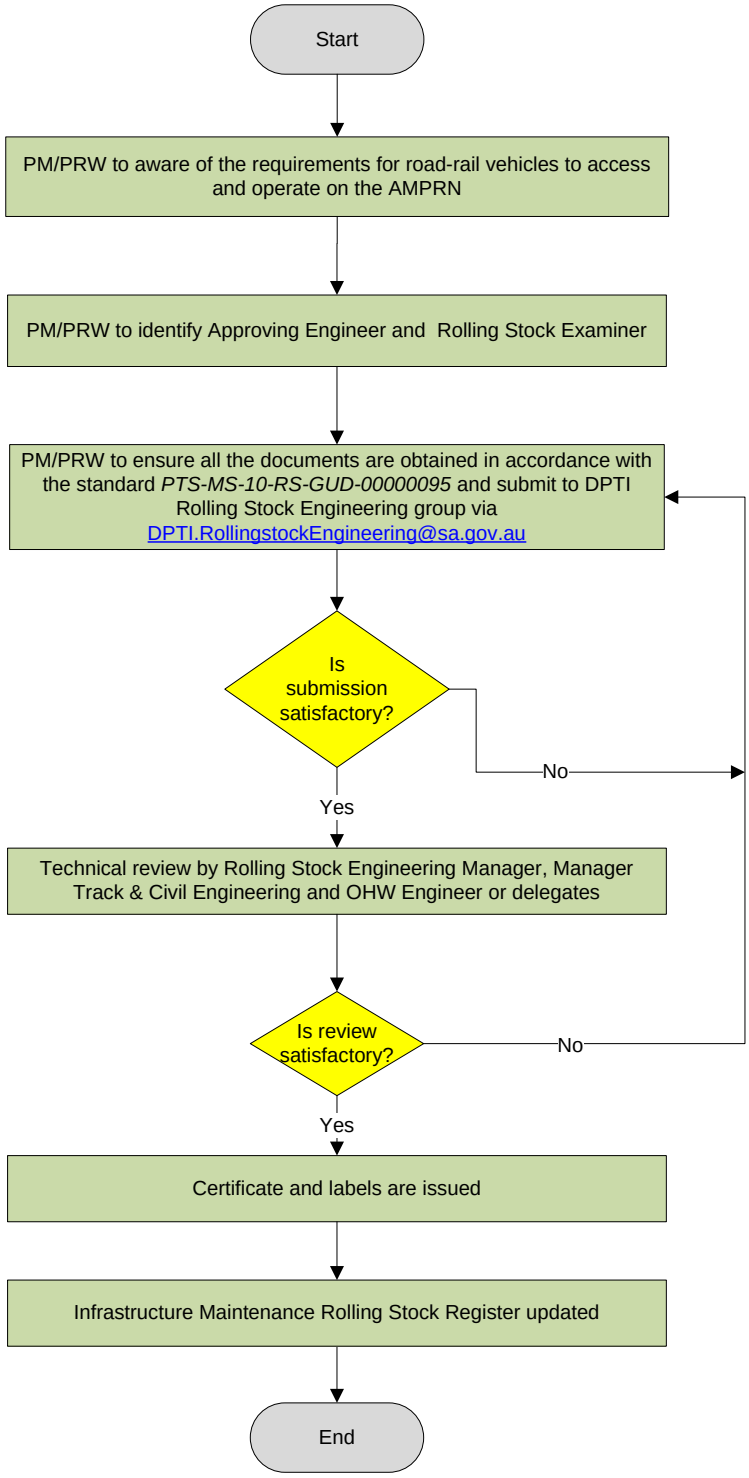
Vehicle Name/Type	
Vehicle Registration Number/Unique Identifier	
Date of Initial Certificate	

I/We confirm the following:

Item No.		Pass ✓	Fail ✗
1	That regular servicing has been carried out and includes all of the check items detailed in the *General Condition Examination form* used at the initial certification.	☐	☐
2	No modifications have been undertaken to the vehicle since the initial certification.	☐	☐
3	The vehicle has not been involved in any accidents [illegible] since the initial certification.	☐	☐
4	Twist test has been carried out annually since the initial certification.	☐	☐
5	Crack testing of the [illegible] been carried out annually since the initial certification (for road-rail vehicles)	☐	☐
6	Equipotential bonding testing has been carried out annually since the initial certification.	☐	☐
7	All records are available for [illegible]	☐	☐
8	The vehicle is fit for purpose.	☐	☐

Name:	Signature:	Date: / /
Company Details:		
Acknowledged by DPTI Project Manager / Person Responsible for the Works		
Name :	Signature:	Date: / /
Title :		

Appendix 8 Certification and Approval Process Flow Chart



FO-RC-OE-897 Certification Application Form - **Applicant / Owner**

FO-RC-OE-910 Documents Review Checklist - **Approving Engineer (Appointed by DPTI)**

FO-RC-OE-909 General Condition Examination - **Rolling Stock Examiner (Approved by DPTI)**

FO-AM-GE-898 Assessment for 25kV/600V OHW Areas - **Rolling Stock Examiner (Approved by DPTI)**

FO-RC-OE-975 Annual Confirmation – **Applicant / Owner**

FO-RC-OE-666 Certificate – **DPTI Rolling Stock Engineering**

Note: PM/PRW will be replaced by DPTI Rail Fleet Manager / Maintainer for DPTI internal vehicles