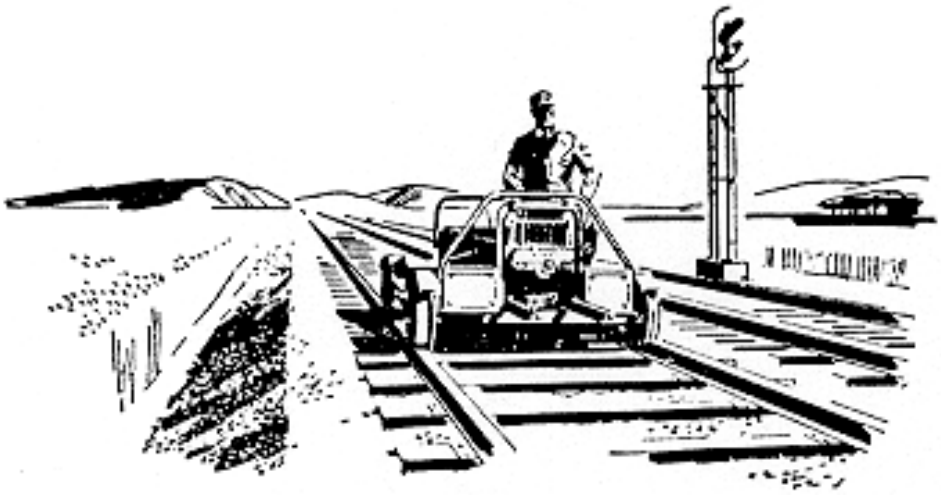
SteamRanger
Heritage Railway

INFRASTRUCTURE MAINTENANCE ROLLINGSTOCK: Safety Management & Compliance

Procedure: SHRI-004-WPQA-03



Track & Infrastructure Services

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AMENDMENTS REGISTER

Issue Date	Summary of Change	Change Authorised By
11th November 2013	Reviewed content to align with new daily inspection forms; updated document structure to current format.	TC Barker SHR BoM
25th July 2014	Added detail to the following sections: Trolley Definition part 3.0; Inspection Timeframe 4.1; Identification & loads 4.3	TC Barker SHR BoM
18-2-2016	Added Sections 4.5.6, 4.5.7, updated 4.5.3 and 4.6.3 on account of ONRSR Compliance Inspection 28th February 2015 on RRVs. Approved by BOM 1-2-2016.	TC Barker SHR BoM

CONTENTS

1.0 PURPOSE

To establish a standard process for the management of rail safety compliance of on track vehicles used on SteamRanger Heritage Railway rail network.

2.0 SCOPE

All items of rollingstock used for the maintenance of railway infrastructure and are detailed upon compliance register SHRI-004-REQA-03.

3.0 DEFINITIONS & STANDARDS

Infrastructure Maintenance Rollingstock - items of rollingstock as detailed in this section below, used for the purpose of railway maintenance.

Track Vehicles – items of rollingstock used by infrastructure maintenance workers for the purpose of travelling to worksites or for inspecting lengths of railway. The vehicles may carry from one to six workers on-board together with small tools.

Track Machines – items of rollingstock that are used by infrastructure maintenance workers for the purpose of heavy track maintenance tasks that cannot be undertaken manually. These machines are not used for the purpose of travelling or inspection.

Road-Rail Vehicle
Vehicles designed essentially for operation on road but fitted with rail wheels for guidance to permit them to operate on rail. Some types of Road-Rail vehicles are called Hyrail vehicles.

Rail Guidance System is a dedicated installation specifically designed to provide safe operation of a road vehicle or plant item on track. The rail guidance system can be engaged at any time to allow operation on rail depending upon requirements. Road vehicles fitted with a rail guidance system are often called “Hy-rail” vehicles.

Supervisor refers to the drivers direct line manager or the divisional manager responsible for the site, location or rollingstock item.

Trolley - is a small non-powered vehicle fitted with rail wheels which enables it to be hauled on rail by a road-rail vehicle or rail-bound infrastructure maintenance vehicle. It may also be moved by hand on rail by infrastructure maintenance personnel.

3.1 STANDARDS

The following standards and codes of practice apply to this policy:

- Australian Code of Practice Roll 41-1 (ver0.2), Guideline for the Safe Operation of Road/Rail vehicles.
- ARTC Document WOS 01.700 Track Maintenance Vehicle Specific Interface Requirements
- Vol 3.1 Code of Practice for the Defined Interstate Rail Network - Rules
- Manufacturer's Manuals for each item of Rollingstock, where they exist. Refer to SHR Track & Infrastructure Library at Mt Barker.
- SteamRanger Infrastructure Work Procedure - SHRI-004-WPQA-04 Infrastructure Maintenance Rollingstock Rail Wheel Inspection.

4.0 MAINTENANCE COMPLIANCE & SERVICE PROCEDURES

4.1 Safety Compliance Service Inspection Timeframes

Infrastructure Maintenance Rollingstock shall be inspected for maintenance and servicing in accordance with the timeframes detailed below.

Track Vehicles: Fairmont M19, Fairmont ST2, Tamper TMC-2, AN 5 Man Section Car
Subject to compliance inspection every 24 months or 200 hours worked, based upon whichever milestone is reached first.

Motor Inspection Car
Subject to compliance inspection every 24 months or 4000 miles worked, based upon whichever milestone is reached first.

Road-Rail Vehicles: Mazda, Bedford
Subject to compliance inspection every 24 months or 4000 miles worked, based upon whichever milestone is reached first.

Hyrail
Subject to compliance inspection every 10000 rail kilometres or every 6 months, based upon whichever milestone is reached first.

Track Machines: Plant items such as Sleeper Extractors/Inserters, Compressors
Subject to compliance inspection every 24 months or 500 hours worked, based upon whichever milestone is reached first.

Tampers and Ballast Regulators
Subject to compliance inspection every 24 months or 500 hours worked, based upon whichever milestone is reached first.

Trolleys: All four wheel trolleys as listed in the register SHRI-004-REQA-03
Subject to compliance inspection every 24 months.

4.2 Safety Compliance Service Inspection Process

The safety compliance service inspection task involves inspection of the following broad mechanical sub-sections of all infrastructure maintenance rollingstock.

1. **Rail Wheels – Wear, Gauge, Bearings and Seals, Axles, Suspension**
2. **Transmission**
3. **Engine**
4. **Brakes**
5. **Electrical system**
6. **Body and under frame**
7. **Safety devices**

For each type of rollingstock, a safety compliance inspection checklist provides the specific details related to each of the above hazard areas that need to be assessed for compliance. The inspection task is performed by a qualified mechanic who completes the required checklist and details upon same any defects detected for each element to be inspected.

4.2.1 Service During Inspection

During the inspection a service of components can be conducted by the mechanic or another worker subject to the satisfactory final inspection of the mechanic.

4.2.2 Corrective Actions

Items requiring corrective action will be identified on the Compliance Service Sheet as per the instructions detailed thereon. If the rollingstock requires new parts or components, but these are unable to be supplied in a timely fashion and the Mechanic determines that the vehicle or machine is still fit for purpose, then the vehicle or machine can be granted provisional compliance approval.

4.2.3 Compliance Approval

The vehicle or machine will receive final approval for network use once all items requiring corrective action have been closed out satisfactorily and signed off. Any comments relating to the inspection and servicing process are to be recorded.

Upon completion of all required actions, the vehicle will undergo a track test and comment made. A service sticker must be placed on the vehicle detailing date/hours of last compliance inspection and service, with the details of the next inspection due also being recorded on the sticker.

The completed service sheet will be forwarded to Infrastructure Standards where the Compliance Register will be updated.

4.3 Safety Compliance Service Inspection Process - Track Vehicles & Trolleys

All track vehicles and trolleys are required to undergo Compliance Service Inspection in accordance with section 4.1 and 4.2 above. All compliance inspections must be performed using form SHRI-004-WFQA-01 Compliance Service Record Sheet.

All Track Vehicles and Trolleys must affixed upon the body a unique asset identification number. In addition, all trolleys must have affixed a label identifying maximum permissible loads as specified in register SHRI-004-REQA-03.

Pressed steel 16 inch rail wheels and wheel alignment will be inspected in accordance with procedure detailed in SHRI-004-WPQA-04 Infrastructure Maintenance Rollingstock Rail Wheel Inspection, section 10. Motor Inspection Car wheels are to be inspected in accordance with instructions as for Track Machines in document SHRI-004-WPQA-04.

Any major Corrective Actions should be recorded on form SHRI-004-WFQA-08 Infrastructure Rollingstock Fault Report Job Sheet to enable repairs to be arranged.

4.4 Safety Compliance Service Inspection Process - Track Machines General

All track machines are required to undergo Compliance Service Inspection in accordance with section 4.1 and 4.2 above. All compliance inspections must be performed using form SHRI-004-WFQA-01 Compliance Service Record Sheet.

4.4.1 Tampers

The Torsion Beam Tamper TMS-01 and Spot Tamper TMS-02 shall be maintained in accordance with Service Sheet SHRI-004-WFQA-05 Tamper Inspection & Service Sheet. This form details the requirements of inspection for the A, B, C, D level services. Rail Wheel Inspection will be performed in accordance with procedure SHRI-004-WPQA-04 Infrastructure Rollingstock Rail Wheel Inspection and the form SHRI-004-WFQA-07 shall be completed by the workshop fitter.

A qualified mechanic is required to undertake third party verification of inspection process by signing off on the above form. Network Approval for this rollingstock item cannot be granted unless this section is complete.

4.4.2 Ballast Regulators

Ballast Regulators TMS-03 and TMS-08 shall be maintained in accordance with Service Sheet SHRI-004-WFQA-06 Ballast Regulator 500hr Inspection & Service Sheet. This form details the requirements of inspection for the 500 hour service. Rail Wheel Inspection will be performed in accordance with procedure SHRI-004-WPQA-04 Infrastructure Rollingstock Rail Wheel Inspection and the form SHRI-004-WFQA-07 shall be completed by the workshop fitter.

A qualified mechanic is required to undertake third party verification of inspection process by signing off on the above form. Network Approval for this rollingstock item cannot be granted unless this section is complete.

4.5 Safety Compliance Service Inspection Process - Road-Rail Vehicles

4.5.1 General

All Road-Rail vehicles are required to undergo Compliance Service Inspection in accordance with section 4.1 and 4.2 above. All compliance inspections must be performed using form SHRI-004-WFQA-01 Compliance Service Record Sheet.

Rail guidance wheels are to be inspected in accordance with instructions as for Track Machines in document SHRI-004-WPQA-04.

Any major Corrective Actions should be recorded on form SHRI-004-WFQA-08 Infrastructure Rollingstock Fault Report Job Sheet to enable repairs to be arranged.

4.5.2 Hy-Rail

The safety compliance inspection regime ensures compliance is achieved and safety critical components are frequently inspected. This inspection is to be completed by a nominated service provider and certified by the service provider as safe for operation on track. The use of a documented inspection schedule and official sign off is a requirement for Network Approval. This inspection schedule may also include static vehicle twist compliance testing. Details of requirements for twist test compliance and certification are noted in Section 6.4.

Typically hy-rail vehicles shall have the rail guidance systems inspected and tested every 6 months or 10,000 on track kilometres whichever occurs first.

4.5.3 Hy-Rail Service Provider

SteamRanger Heritage Railway engages the services of BlueBird Rail Operations, Islington Railway Workshops to undertake all safety compliance inspections and servicing work on hy-rail equipment. Work is performed in accordance with procedure BRO_FOR_TAM_017 Hi Rail Service Checklist. Appendix B details the Hi Rail Maintenance Schedule. SteamRanger as the accredited RTO determines the standards to which Road/Rail vehicles are maintained. It is agreed between both parties that the Maintenance Schedule detailed within Appendix B and additional information contained within this document is the standard required for maintenance inspections.

4.5.4 Hy-Rail Static Vehicle Twist Test

The requirements for performing and achieving compliance with the twist test are detailed in the ARTC rolling stock standard WOS 01.283 Vehicle Compatibility Tests – Static Vehicle Twist Test.

Generally, a twist test will be required in the following circumstances:

- For a new vehicle not previously approved for use on the network
- Following a change in vehicle suspension spring rates (including flexitore change-out)
- Following any change in vehicle torsional stiffness
- Following a change in fitted vehicle equipment and/or mass distribution
- Following a derailment or other impact incident
- At the completion of a routine service inspection

A detailed standardised procedure will be used to administer and record a static vehicle twist tests, as supplied by the nominated service provider and agreed by SteamRanger.

4.5.5 Requirements for Hy-Rail Following Derailment or Incident

In the event of a derailment or other vehicular incident resulting in impact damage to the front or rear rail guidance system, a full inspection and recertification process must be undertaken. This will include inspection and repair/replacement of any damaged components, completion of a rail guidance system inspection and completion of a static vehicle twist test.

Operators should be aware that the rail guidance systems fitted to commercial vehicles can be very susceptible to impact damage. Even minor impacts can alter the rail wheel alignment resulting in poor or unsafe operation on track.

All repairs and recertification work must be completed and signed off prior to resuming use of the vehicle on track. Where required, and safe to do so, the affected vehicle may be operated on road prior to recertification of the rail guidance system.

4.5.6 Design, Construction and Commissioning of Road/Rail Equipment

In the event that SteamRanger has the financial availability to procure and commission a new or used Road/Rail vehicle, the following requirements will apply:

a) Management of Change process will be developed and completed in accordance with document ARHS-SMS-12. This will include a Risk Assessment in relation to the proposed change.
b) As part of the Management of Change, the design, construction and commissioning processes and related standards will be developed, with the following Sections 4.5.6a and 4.5.6b providing guidance of the requirements to be considered.

4.5.6a Engineering Report - NEW Road/Rail Vehicles

The Management of Change process for a NEW Road/Rail should include the following requirements, with a full Engineering Report required for new build / manufactured road-rail vehicles.

The engineering report shall address the following requirements:

- An assessment of the base road vehicle's suitability to meet the proposed on-track task.
    - This should look at such aspects as the rolling stock outline, the vehicle GVM, axle load distribution, tyre configuration and the potential changes in bending moments and shear forces acting on the chassis structure.
- An assessment of the rail equipment and mounting design for its suitability to support and guide the vehicle which shall cover:
    - Structural integrity of the rail equipment for the expected loading
    - Method of attachment and attachment integrity
    - Structural integrity of the vehicle chassis (due to the difference in load paths of the rail guidance gear compared to the standard suspension)
    - System geometry and method of locking (e.g. over centre design)
    - Suspension design adequacy in terms of spring capacity and optimum operating range
    - Rail wheel design for expected loading and load eccentricity, including wheel diameter, tread profile, bearing capacity, etc
- An assessment of ancillary equipment added to the vehicle to produce its on-track functionality.
- Assessment of the integrity of add-ons such as elevated work platforms, securing devices, vehicle stability for elevated and/or eccentric loading, cranes.
- Check rail guidance and ancillary equipment design for relevant standards compliance.
- Confirmation that the relevant components have been designed to an acceptable recognised standard (eg AS, ISO, UIC, AAR or equivalent)
- Inspection of the final road-rail vehicle construction.
    - A visual inspection of the finished vehicle for compliance with the design drawings and structural assessment.
- The report shall clearly state what on-track function/s the vehicle was designed for.
    - Include diagrammatic/photographic evidence of the vehicle and its attachments
    a) Include WorkCover design registration for EWP's, where applicable
- If road/rail guidance equipment is being reused from another vehicle, each component of the guidance equipment shall be crack tested. Any cracked components shall be replaced or repaired.
    - A repaired component integrity assessment shall be included in the Engineering Report
    - The Engineering Report shall contain a signed statement from an Authorised Engineering Organisation (AEO) or equivalent, certifying that the vehicle design and construction has been assessed and is deemed safe to operate on track.

4.5.6b Engineering Report - USED and EXISTING Road/Rail Vehicles

The Management of Change process for a USED Road/Rail Vehicle shall consider the following points in an engineering assessment. In addition all current Road/Rail vehicles must be had an engineering assessment performed but these vehicles are not subject to Management of Change requirements.

The Engineering Report shall be based on a condition inspection as identified in Section 4.5.3 which will be more thorough than the standard inspection carried out during the normal recertification process. This Engineering Report shall include the following:

- An assessment of the base road vehicle's suitability to meet the proposed on-track task. This should look at such aspects as the rolling stock outline, the vehicle GVM, axle load distribution, tyre configuration and the potential changes in bending moments and shear forces acting on the chassis structure.
- An inspection of the vehicle and rail guidance gear as per Section 4.5.3.
- A thorough crack inspection of the rail guidance gear and vehicle chassis connection to a recognised Australian NDT standard. The crack inspection shall include all welds and critical components of the rail guidance gear, its attachment, stub axles and associated bracketry.
- An assessment of bearings used in the rail wheels (fit for application and/or load).
- An assessment of the suspension components used within the rail guidance gear (flexitors, springs, rubber elements, stub axles). Fit for the application and/or load.
- If there is any evidence of failed equipment (such as fracture repairs) or added equipment that was not part of the original design, the vehicle shall be treated as a NEW vehicle, and a design assessment of the rail guidance gear is required.
- The Engineering Report shall contain a signed statement from a SteamRanger Authorised Engineering Organisation (AEO) or equivalent, certifying that the vehicle design and construction has been assessed and is deemed safe to operate on track.

4.5.7 Decommissioning of Road/Rail Equipment

All Road/Rail vehicles disposed must have all rail guidance system equipment removed and the vehicle be returned to as close as practical to the original state prior to disposal in order to prevent unauthorised rail system access.

Decomissioned rail guidance systems must be clearly red tagged and the system fully disassembled and stored if intended for use on another vehicle (see below) or whilst awaiting disposal action. Rail guidance systems owned by SteamRanger can only be disposed of to another Accredited Rail Transport Operator. Alternatively if this does not occur, the system is to be cut up and scrapped.

In order to install rail guidance systems or plant onto a different vehicle from that which it was originally fitted, as a result of vehicle disposal or change in ownership, vehicles will be required to undergo re-assessment by SteamRanger Approved Certifying Company as detailed in Section 4.5.3 to determine its suitability for operation.

4.6 Rollingstock Non-Compliant Event Process

Infrastructure Maintenance Rollingstock will be deemed Non-Compliant under any of the following circumstances. Rollingstock must undergo a Safety Compliance Service Inspection process before the it is again approved for network use.

4.6.1 Inspection overdue

Failure to reinspect rollingstock before the expiry date will result in a Non-Compliance from the SteamRanger register. Rollingstock failing in tests or inspections during the compliance process will result as not approved until corrective actions have been undertaken and the vehicle re-tested to certify compliance to the standards.

4.6.2 Worksite (including track) incidents

Following any worksite incidents such as derailments, collision or heavy impact to the rail guidance system involving a road/rail vehicle, the rollingstock involved will automatically become not approved and will remain with this status until a re-assessment is performed.

4.6.3 Infrastructure Maintenance Rollingstock Modifications

Where the rollingstock is substantially modified (e.g. change in plant mounting, or addition or removal of equipment such as cranes) from its original design, the rollingstock will be automatically be deemed 'not approved' and will remain with that status until such time as the modification is assessed.

Any proposed modifications to rollingstock must first be approved by the Relevant Functional Manager via the SteamRanger Board of Management. This process must occur by use of procedure ARHS-SMS-12 Management of Change and will include a Risk Assessment in relation to the proposed modifications.

Broadly the Management of Change process will encompass the following:
A written proposal to this effect is to be submitted which includes proposed modifications and costing. Further, if engineering approval is required, this will be undertaken by an external mechanical engineer who will review the proposed modifications and make recommendations. Upon the completion of modification work, the rollingstock must be inspected by the mechanical engineer and then undergo a full compliance inspection as detailed in section 4.2. The mechanical engineer must provide certification of their inspection and this information stored with the rollingstock record held at the SteamRanger Track & Infrastructure Library.

4.7 Competence of Infrastructure Maintenance Rollingstock equipment certifiers

Persons/entities who certify Infrastructure Maintenance Rollingstock, must hold relevant competencies to do so. These include:

- Qualified in a relevant trade with knowledge of the purpose and safety requirements.
- Completely familiar with the construction, functionality, maintenance and inspection requirements of rail specific guiding and/ or traction and braking equipment fitted to Infrastructure Maintenance Rollingstock.
- Familiar with all operating controls and safety functions installed on the vehicle.
- Capable of competently checking the operation of the rail equipment.
- Competent as assessed and authorised by SteamRanger in carrying out the testing requirements necessary to establish compliance with the specified acceptance criteria.

5.0 OPERATOR MAINTENANCE PROCESSES

All Infrastructure Maintenance Rollingstock shall be covered by a suitable maintenance regime appropriate to the duty cycle and work environment. Once an item of rollingstock is approved for use it shall undergo a daily pre-work inspection before operation in accordance with the check sheet listed below. All operational defects noted during the pre-work inspection must be recorded, reported and rectified before operation of the vehicle.

5.1 Daily Operator Maintenance

The driver/operator has the prime responsibility to check the basic serviceable features of the rollingstock including completing the daily pre-start check eg fluid levels, tyre pressures and tyre condition, steel rail wheels etc on a regular basis.

A specific record of rail equipment checks must be completed by the operator on a daily basis prior to and following use on track. The requirements for daily inspections are derived from the rollingstock equipment manufacturer's handbook and the Australian Code of Practice – Guideline for the Safe Operation of Road/Rail Vehicles for these vehicle types.

Operator performed daily checks are seen as the forefront in preventative maintenance and provide an opportunity to identify and rectify minor faults and prevent future breakdowns.

Rollingstock operation on the network shall be in accordance with the requirements of the National Code of Practice Railway Safeworking for the DIRN, in conjunction with manufacturer's instruction manuals or SteamRanger manuals for the specific type of rollingstock.

The following daily pre-work checklist forms are to be used:

Track Vehicles: SHRI-004-WFQA-02 Track Vehicle Daily Checklist Form
Track Machines: SHRI-004-WFQA-03 Track Machine Daily Checklist Form
Road-Rail Vehicles: SHRI-004-WFQA-04 Road-Rail Vehicle Daily Checklist Form

5.2 Fault Reporting

In all instances when a driver/operator detects the fault condition either through the daily pre-start checks or other means, they shall complete form SHRI-004-WFQA-08 Infrastructure Rollingstock Plant Fault Report Form, upon which the particulars of the fault are recorded. This form is then forwarded to the Supervisor who will arrange for corrective action to occur.

If the driver/operator deems the fault causes the item of rollingstock to be unsafe and cannot be used, they must immediately place it out of service. This is done by placing an out of order sticker detailing same in a conspicuous location, eg over the ignition key way.

5.3 Approved Drivers

Only drivers/operators who have been have been trained and deemed competent in the use of the rollingstock on track, are approved by the Supervisor and hold the relevant medical assessment may drive or operate SteamRanger Infrastructure Maintenance Rollingstock on track.

6.0 APPENDIX A – BRO Hi Rail Maintenance Schedule

A.C.N. 081 397 131 A.B.N. 17 081 397 131

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HI RAIL MAINTENANCE SCHEDULE

Road Rail Services:

A Service Checklist

Visual inspection of all rail gear components.Rail wheel, flexitors, framework, mountings, solenoids, pump and electrical switch controls. Lube all pivot points. Report on condition and repair as required

"B" Service 10,000km or 6 Monthly As Per Checklist
As per "A" service. Plus – remove rail wheel assemblies, clean inspect and repack wheel bearings. Replace bearings and seals as required. Check and adjust alignment, loading and gauging of rail wheels.

"C" Service Annual As Per Checklist
As per "B" service. Plus – Crack testing of frames, axles and wheels.
Inspection of flexitor suspension unit - rubber deteriation, splines and arms. Derailment damage. Flush and clean pump assemblies.

Legend

V - Visual
S - Service
SI - Service Inspection (C)

Sequence

A, B, A, C.

****Please Note****

ONLY RECOMMENDED LUBRICANT USED

BRO_FOR_TAM_017 (Version 1.2)

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