



Practice Note No 9

GUIDELINES FOR THE CONSERVATION OF STEAM LOCOMOTIVES

Preamble

The conservation of locomotives, in addition to Heritage criteria, is required to meet engineering parameters for safety, structural adequacy, serviceability and durability as defined by present day standards which were unknown at the time of original construction.

These guidelines have been prepared to assist designers and constructors to obtain the desired result of compliance with cultural heritage needs consistent with meeting engineering requirements for an operating railway.

The approach states basic principles against which all proposed processes are to be evaluated. Specific examples are used as an aid in understanding the process.

Basic principles

- All work is to be to the principles of the Burra Charter.
- Conservation shall be to the original design with adaptation only as needed to comply with present day engineering standards, practices and legislative requirements.

The Burra Charter

The *Burra Charter* provides a rational basis for the conservation of Heritage material and is a basis for the understanding of conservation principles, processes and practice.

An understanding of The Charter definitions of conservation processes is important to this project.

Conservation is defined as all of the processes needed to retain cultural significance.

It includes maintenance and may include preservation, restoration, reconstruction and adaptation dependent upon specific circumstances. It commonly involves a combination of more than one of these.

Conservation is not concerned with making things new again, but with giving them a use compatible with the retention of their cultural significance and of their long-term survival.

Maintenance is continuous protective care. It is different to repair which involves reconstruction or restoration.

Preservation is the process of maintaining the fabric in its existing state and retarding deterioration.

Restoration means returning a locomotive to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

Reconstruction means returning a locomotive to a known earlier state and is distinguished by the introduction of new materials.

Adaptation means modifying to suit proposed compatible uses.

For the locomotives, **preservation** means keeping their fabric in its present condition with no action except maintenance. **Restoration** would require finding and replacing original parts to replace alterations and the removal of non-original additions. **Reconstruction** allows the use of new parts or old parts from other locomotives. It involves returning to a known earlier form.

For further information contact

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Adaptation may involve changing parts to meet the requirements of a new usage whilst keeping the significant features.

Considerations

- The original configuration will be taken as the configuration at the time of removal from service in 1963.
- All proposals for departure from the original are to be justified against the criteria of current Engineering Standards using the performance requirements of strength, serviceability and durability. Safety is part of the serviceability assessment.
- Significance ratings are to be taken as detailed in the table below.

Application of principles - some examples

Design and dimensions: Where practical and desirable, standardisation of design and dimensions of components, eg shafts, piston rods and bushes, is acceptable provided that the external appearance and heritage significance is not impacted.

Materials: Adaptation to comply with present day engineering standards or practices is acceptable provided that external appearance, design intent and heritage significance is not impacted.

Vacuum brakes, pin couplings and buffers: Reuse of existing systems is preferred.

Injectors: The installation of one flooded suction injector as specified in the contract is acceptable provided that it is installed out of direct sight and the disused manual injector is retained as a dummy.

Boiler: The use of a present day welded boiler design using the original dimensions, cladding, fittings, external pipe work and oil firing but without superheating is acceptable. Dummy rivets and bolts are to be provided in exposed locations in accordance with the original design.

Departures from the original design

All departures are to be documented and justified against the Principles and where cultural heritage significance is or is likely to be impacted, approval must be given by the Tasmanian Heritage Council and the TMAG.

ASPECT	CULTURAL HERITAGE ASSESSMENT				
	To the Public	To Engineering	To Train Enthusiasts	To Heritage	Overall Assessment
External appearance Physical, paint colour, paint lining, nameplates, lights, whistle, chimney	low	high	high	high	High ¹
Couplings & Buffers	low	medium	high	high	High ¹
Vacuum brakes	low	low	high	high	High ^{1,2}
Connecting rods and external bearings	low	low	high	high	High ¹
Internal gear (Unseen)	low	low	low	medium	low
Rack drive gear	high	high	high	high	High ³
Cab layout	low	low	high	high	High ²
Smell/sound/speed	medium	medium	high	high	High ¹

NOTES: ¹High significance to most; thus no departure from original design is desirable; ²High significance to most; but acceptable if changes are essential to comply with engineering standards or safety; no external changes should be obvious; ³High significance to all; no departure is permissible.