Researching Traction and Portable Steam Engines: A Practice Note and Finding Aid

By T. J. Sullivan and M. G. Whitmore

April 2026

Prepared for the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts

Contents

Purpose **1**
Designing a research strategy **1**
Boiler and Engine Serial Numbers **2**
What are they? 3
Where are they? 3
Finding information about Steam Engines **3**
Museums, Libraries and Preservation Groups 4
Archival records 5
Manufacturers 5
International Archives 7
Societies, trusts and community organisations 8
Specialist publications and periodicals 8
Australian Government Archives **10**
National Archives of Australia 10
Australian Capital Territory 10
New South Wales 11
Records relating to boiler inspection 11
Colonial Secretary 12
Northern Territory 12
Queensland 12
South Australia 13
Tasmania 13
Victoria 15
Boiler inspections (including portable and traction steam engines) 15
Records of portable, traction and stationary steam engines imported in the colonial period 16
Western Australia 16
Mining Warden Offices 16
Case Study 1 ..... **18**
John Fowler Road Locomotive No. 16161 18
Case study 2 ..... **23**
Richard Garrett & Sons Ltd Traction Engine No. 29788 and associated equipment. 23
Acknowledgement **27**
Authors 27
Citation 28

Purpose

The aims of this Practice Note are to help applicants and assessors design a research strategy for:

1. finding, using, and interpreting engine and boiler serial numbers attached to steam engines covered under Part IV of the Protection of Moveable Cultural Heritage Act (1986) (objects of applied science or technology, including steam-powered and internal combustion engines); and
2. finding relevant archives and other resources to support research on the provenance and working history of steam traction and portable engines, and steam lorries.

The Note may be useful for researching equipment designed to be more permanently installed, such as mill engines and electricity generating sets.

Designing a research strategy

While the serial numbers on an engine provide very useful data for beginning research on its history, getting to a satisfying or comprehensive outcome can be challenging for a number of reasons:

1. the diversity of legislative requirements in documenting a steam engine's operating life across different countries, colonies and states;
2. the changes in the machinery of government that saw alterations in the names, functions, and responsibilities of government agencies which affect the way records are described and collected;
3. the practices of authorities responsible for maintaining and archiving records have generally become more consistent and accessible over time, especially as digitisation leads to more efficient and intuitive searching of online databases;
4. the volume of digitised records and the rates at which records are digitised will vary according to demand and strategy in each jurisdiction;
5. sometimes, in spite of all due care, records can be lost, misplaced, or disassociated from other relevant records, or destroyed in accordance with retention or disposal protocols; and
6. sometimes the serial numbers are missing from the engine and/or the boiler.

Consequently, a successful research strategy will usually include other sources of historical information that will help to establish the history (or provenance) of an engine.

This Practice Note includes a selection of useful references from governmental, institutional, company, community, and media sources that have been useful to researchers tracing the history of steam-driven traction, portable, and some types of stationary engines.

Sometimes, a successful research strategy will have to draw on many sources and kinds of records and information. Having a clear sense of your research objective—what you are trying to find out—will help ensure your search is focused, has a hierarchy of the most appropriate resources to use, and a plan for using them.

Not all resources are of equal reliability or value, so a TRAAP test will help in your assessment of the reliability and value of the information in the sources you choose to rely upon:

- Timeliness: how up-to-date is the information? Does the age of the information affect its accuracy? Have there been relevant updates or more recent versions of the information?
- Relevance: how relevant is the information to your research? Are there other sources that are more relevant or that confirm the relevance of other sources?
- Authority: is the author of the information known and credible on the subject? Is the source used or referenced by others in their research? Is it from a credible, reliable, legitimate source?
- Accuracy: is the information verified by cross-referencing to other reliable sources? Has it been used or reviewed by peers? Is it consistent in its use of technical information? Is it truthful, correct, and supported by evidence?
- Purpose: why was the information created and for what uses? Is there any bias for a partisan or particular viewpoint at the exclusion of others in the author's intention?

Governmental, institutional, and corporate record holders will typically have important contextual information relating to legislation and official inspection or reporting. Expert journals and trade and hobby magazines will typically provide the historical and technical contexts in which the engines were operated and the functions they performed. Digitisation has expanded access for many types of records using Google or customised web-based search tools. Many governmental and institutional agencies have developed catalogues, indexes, guides, and other kinds of finding aids to help researchers refine their search strategies. These search tools and aids typically provide an historical context for records relevant to a particular subject or theme and can be particularly helpful in identifying the diversity of phrases, words, and abbreviations that were used historically to describe similar items and objects. Increasingly, many useful resources are created and exist only on the world-wide web. The reliability of internet resources is a challenge for all researchers, and so a framework for assessing how trustworthy those resources are is particularly important.

Boiler and Engine Serial Numbers

Serial numbers (including boiler numbers, engine numbers, and manufacturer's numbers) are important references in a steam engine's history. They can be used to find information on the item's age, manufacturer, technical specifications, retail distributors, owners, places of use, and other information that will contribute to determining the item's significance. Sometimes, serial numbers will provide a link to records of compliance with regular statutory inspections or registration requirements which will have information about owners or operators, place of operation, and the item's operating life and function.

Although serial numbers are unique identifiers in an engine's history, the records associated with them may be dispersed and hard to find. Consequently, this practice note is an aid to finding and using records in State and Commonwealth archives, in institutions that hold useful information, and a guide to searching online for sources of historical information and records created by (or relating to) manufacturers that may be held overseas.

What are they?

Each steam engine has a unique number that is assigned by the builder to the engine (including the boiler) at its time of manufacture. Engine numbers would normally be displayed on an engraved or cast maker's plate securely attached to the engine and may also be cast or stamped on the engine. Engine numbers were recorded by the manufacturer in registers. The engine numbers would typically be recorded subsequently by vendors at the time of sale, by importers and distributors on arrival or sale in Australia, and sometimes by owners whenever the engine was sold.

Sometimes boilers were assigned a separate boiler inspection number by a government agency and attached to the boiler on an engine. Boiler numbers were securely affixed either by stamping the number on a prominent part of the boiler or by attaching a brass or other metal plate displaying the unique boiler number and other essential information unique to the engine. The engine and boiler numbers are particularly important when they relate to inspection records which provide information on the boiler operator's name and address, the boiler's location, function, and use. If a boiler was worn out or damaged and beyond repair, then a new boiler with a new and unique number would replace it.

The value of the manufacturer's number particularly is that it enables consideration of an engine in the context of different models produced by the maker or those produced at a point in time or location. A record created by inspection under a government inspection act (and acknowledging that not all boilers were inspected) is valuable in providing a record of the owner and the engine's condition at a point in time.

Where are they?

Boiler numbers are typically located on the firebox.

Engine numbers were typically cast into the steam chest cover, or a name plate, and/or on a plate bolted or riveted on the block or elsewhere on the engine, such as on the boiler cladding. Some examples are illustrated in the case studies included in this Note.

Finding information about Steam Engines

Where information about a specific engine is elusive, using sources of information about engines of a similar type and function may help in understanding the history or significance of a particular steam engine. Some of the sources for researching engines owned by private individuals and which may reference the engine and boiler numbers include articles in local newspapers or in machinery magazines on auctions or sales, feature stories about steam engines being used in innovative or interesting ways, articles on the owners or those using the engines, and stories about particular projects or events where the engine has been highlighted.

Museums, Libraries and Preservation Groups

The National Library of Australia's TROVE is invaluable in researching local and community newspapers and other publications (see https://www.library.gov.au/research/guides-and-resources/start-researching/using-trove for a guide on how to use TROVE). State and local community libraries will have people to help online searches in the network of library collection databases around the nation. Local community libraries may also have records and archives relating to local history.

Typing a serial number with any other information you have (including maker, model, year of manufacture, or type of engine) into an online search engine can often produce useful results. There are lots of community groups and networks sharing information online about steam engines including historic information, local exhibitions or displays of working steam machinery, and auctions or other sales.

Through the major mining, forestry, and agricultural areas around Australia, there will likely be historical societies and local museums doing vital work in the preservation of steam plant and technology including portable, traction, and stationary steam engines used in those industries. Likewise, major railway towns, ports (including inland ports along the Murray-Darling river system as well as other large coastal rivers), and industrial processing and manufacturing sites are likely to have specialist mining or agriculture museums, steam preservation societies, and industrial technology collections run by people with extraordinary knowledge who can help. If there is any information about where an engine may have last been held or sold, it is worth searching that area for the local expert institutions.

A small sample of the larger regional and community museums and associations with relevant collections, records, and expertise includes:

The National Steam Centre, Melbourne

The National Historical Machinery Association (a club with affiliates across Australia)

Operating Heritage Australia (with individual and organisational members across Australia)

The Lake Goldsmith Steam Preservation Society, Beaufort, Victoria

Wheatlands Agricultural Machinery Museum, Warracknabeal, Victoria

Booleroo Steam and Tractor Preservation Society, Booleroo, South Australia

Machinery Preservation Club of W.A. Inc.

Pearn's Steamworld, Westbury, Tasmania

Sheffield Steam and Heritage Centre, Sheffield, Tasmania

Queensland Steam and Vintage Machinery Society, Petrie, Queensland

The Melbourne Steam Traction Engine Club

Sydney Antique Machinery Club

Campbelltown Steam and Machinery Museum

Several national and state museums have collections of steam engines and steam technology and records that are digitised and available online. Particularly significant are the collections of:

Museums Victoria

Queensland Museum (incorporating the Queensland Railway Workshops, Ipswich)

The Museum of Applied Arts and Sciences (Sydney)

National Museum of Australia

The major maritime museums in (or nearby to) the major capital cities may also have collections and records relating to the use of steam engines in Australia's maritime industries.

The Australian Museums and Galleries Association (AMAGA) has branches in each state with directories of member institutions and links to them and their collections. This will help in refining search strategies for similar types of engines and their functions and that might lead to identifying a particular engine using its unique serial numbers.

One thing is for sure, you are not alone in your interest—there are plenty of like-minded people sharing useful information online that can help in your research inquiry. Serial numbers may not always be a guarantee of success in finding the history of an engine, but they are important keys to opening a vast world of information that will help in understanding the likely historical context and significance of an engine.

Archival records

There are often several different avenues you might need to consider when seeking more information about engine histories. This section comprises reference to a variety of archival records and sources, including Manufacturers records, specialist publications, and a snapshot of Australian Government Archives and State Archive holdings. These are extensive but not exhaustive and you should use your experience in considering other possible avenues of investigation.

Manufacturers

A search strategy might begin with the records (digitised or referenced online) created by the manufacturers. Prior to the First World War more than a dozen British manufacturers were major exporters of traction engines, steam rollers, portables and steam lorries to Australia. Principal pre-war companies included:

Aveling & Porter Ltd

Brown and May Ltd

Charles Burrell & Sons Ltd

Clayton & Shuttleworth Ltd

Davey Paxman & Co. Ltd

Edwin Foden, Sons & Co. Ltd

John Fowler & Co. Ltd

Marshall, Sons & Co. Ltd

J&H McLaren & Co. Ltd

Ransomes, Sims & Jefferies Ltd

Richard Garrett & Sons Ltd

Richard Hornsby & Sons Ltd

Robey & Co. Ltd

Ruston, Proctor & Co. Ltd

Sentinel Waggon Works Ltd

Wallis & Steevens Ltd

Some helpful websites listing steam machinery manufacturers include:

Leeds Engine Builders

List of Steam Machinery Manufacturers

Richard Carr's Paxman History Pages (focusing on Davey Paxman & Co. engines)

Grace's Guide to British Industrial History, including its categories for:

Traction engines

Portable steam engines

Steam road vehicles

Despite the dominance of British manufacturers supplying these types of engines in Australia, several American manufacturers managed to capture part of the market. These included:

Buffalo Pitts Co.

J.I. Case Co.

Frick & Co.

O.S. Kelly Manufacturing Co.

A small number of traction engines, steam rollers, and portables were built by at least six Australian companies including:

Cliff & Bunting Pty Ltd of North Melbourne

Cowley's Eureka Ironworks Pty Ltd of Ballarat East

Johnson & Co. Ltd, Tyne Foundry of South Melbourne.

In the face of increasing competition from machines and equipment powered by internal combustion engines, the trade in steam-powered engines declined rapidly and many of the British companies disappeared through takeovers, amalgamations, or were wound up. In searching for particular manufacturers you may have to consider searching records in the names of companies that emerged as a result of amalgamations and takeovers in a modern iteration of an older (differently named) manufacturer.

Substantial information is available on British manufacturers of steam equipment and the machinery they produced. Several British archives have large holdings which often include detailed company production records and other information which can include the individual builder's number assigned to each engine, boiler serial numbers, customer details and even detailed engineering drawings. Unfortunately, most of these records have not been digitised and have to be accessed by visiting the archive or requesting copies of material.

International Archives

The National Archives (UK) catalogue (https://www.nationalarchives.gov.uk/explore-the-collection/) is a good starting point for searching holdings across many British archives and indicates where the principal holdings for each of these companies can be found. Some useful archives providing important historical information are held by:

The Museum of English Rural Life holds records from:

- Charles Burrell & Sons Ltd
- Clayton & Shuttleworth Ltd
- John Fowler & Co. Ltd (including records from the Sydney office)
- Marshall, Sons & Co. Ltd
- J & H McLaren & Co. Ltd
- Ransomes, Sims & Jefferies Ltd
- Wallis & Steevens Ltd

Lincolnshire Archives holds records from:

- Aveling & Porter Ltd
- Robey & Co. Ltd
- Ruston, Proctor & Co. Ltd
- Richard Hornsby & Sons Ltd

Cheshire Archives and Local Studies and University of Sheffield Archives hold records from Edwin Foden Sons & Co. Ltd

Essex Records Office holds records from Davey Paxman & Co. Ltd

Shropshire Archives holds records from Sentinel Waggon Works Ltd

Suffolk Archives holds records from Richard Garrett & Sons. Ltd

Records of some of the better-known American companies are held by:

The National Museum of American History holds records from Frick & Co.

Wright State University, Special Collections and Archives hold records from O.S. Kelly Co.

Societies, trusts and community organisations

In addition to websites of museums, historical societies and enthusiast organisations noted above, a range of other websites may hold valuable information. These include:

National Traction Engine Trust

Road Locomotive Society

Smokstak antique engine community, stationary steam engines traction engines

Specialist publications and periodicals

Specialist publications and websites are an invaluable source of information. Given the diversity, scale, and intensity of steam engineering and its uses around the world, there is a correspondingly massive body of research published in books, journals, and websites dedicated to telling the histories of companies and their products, individuals, and the development of steam technology to meet so many different user applications.

Publications on some of the British companies include:

Gilbert, G. F. A. and Osbourne, D. J., *Charles Burrell & Sons Ltd: Steam Engine Builders of Thetford*, Friends of the Charles Burrell Museum, Thetford, 1991.

Hughes, W. J. and Thomas, J. L., *`The Sentinel' An illustrated history of Alley & MacLellan and The Sentinel Waggon Works: Volume I 1875-1930*, David & Charles, Newton Abbot, 1973.

Kennett, P., *The Foden story: From farm machinery to diesel trucks*, P. Stephens, 1978.

Lane, M, R., *The Story of St Nicholas Works: A History of Charles Burrell & Son Ltd 1803-1928*, Grimston, A G M Projects, 1999.

Lane, M, R., *The Story of the Steam Plough Works: Fowlers of Leeds*, Northgate Publishing Company, London, 1980.

Newman, B., *One Hundred Years of Good Company, Ruston & Hornsby*, 1957.

Pease, J., *The History of J. & H. McLaren of Leeds: Steam & Diesel Engine Makers*, Landmark Publishing Ltd, 2003.

Phillips, A., *Steam and the road to glory: the Paxman story*, Hervey Benham Charitable Trust, 2002.

Preston, J. M. *Aveling & Porter, Ltd Rochester*, North Kent Books, 1987.

Preston, J. M., *Aveling & Porter: An Illustrated History*, Amberley Publishing, 2019.

Thexton, M., *The Story of Ruston Traction Engines 1877-1937*, Road Locomotive Society, 2021.

Whitehead, R. A., *Garretts of Leiston*, Percival Marshall, London, 1964.

Whitehead, R. A., *Garrett 200*, Transport Bookman, London, 1978.

Whitehead, R. A., *Wallis and Steevens: A History, Road locomotive Society*, 1983.

Publications on some of the American equipment include:

Clymer, F., *Floyd Clymer's Album of Historical Steam Traction Engines and Threshing Equipment No. 1*, Bonanza Books, 1949.

Erb, D. and Brumbaugh, E., *Full Steam Ahead: J. I. Case Tractors & Equipment 1842-1955*, American Society of Agricultural Engineers, St. Joseph, Michigan, 1994.

Norbeck, J., *Encyclopedia of American Steam Traction Engines*, Crestline Publishing Co., 1984.

Spalding, J. F. and Rhode, R. T., *The Steam Tractor Encyclopedia: Glory Days of the Invention that Changed Farming Forever*, BookFactory Press, Dayton, 2011.

Publications with specific information on equipment used in Australia include:

Arnold, K., *Old Portable Engines*, Crown Castleton, Bendigo, 2015.

Arnold, K., T*ractors and Traction Engines of Early Australian Farming*, Crown Castleton, Bendigo, 2017.

Brooks, R., *Lincolnshire Engines Worldwide*, Department of Recreation Services, Lincolnshire County Council, 1989.

Butrims, R. and Roberts B.C., *The traction engine in Australia*, Magenta Press, Melbourne, 1981.

Simpson, M. and P., *Old Farm Machinery in Australia: a Fieldguide and Sourcebook*, Kangaroo Press, Kenthurst, NSW, 1991.

Specialist book sellers such as Plough Books may be able to advise on relevant titles available in Australia, and online searches can access sales worldwide.

Periodicals can be a rich source of information. In addition to those produced by specialist organisations in Australia and overseas, some very useful periodicals include:

The Old Machinery Magazine

Old Glory

Engineers & Engines

Farm Collector

Australian Government Archives

The following advice on relevant records was obtained directly from each of the listed agencies through a survey conducted in 2025. As at the time of writing, few of these records have been digitised, although each archive will have a helpful online search engine and finding aid to discovery and access to the hard copy records. While an engine or boiler serial number is an advantage in searching an engine's history, it is not a guarantee of success in finding archival records. The records in each state are the product of government agencies that have changed names, areas of responsibility, legislative and regulatory compliance requirements, and approaches to archiving their records. Consequently, a successful research strategy using government archives may depend on finding alternative synonyms or terms for researching records. The staff in each archive agency are invaluable in helping search records. Each state has large collections of records associated with the administration of the government railways and associated locomotives, rolling stock, and infrastructure that are out of the scope of this Practice Note.

National Archives of Australia

The National Archives of Australia holds ten files relating to boiler inspections (enter 'boiler inspections' in the Basic Search keywords box). The most relevant is:

NAA, A292, C887 Boiler inspections - Privately owned steam boilers

Although the file title refers to privately owned boilers it also includes Commonwealth Government owned steam engines used in the construction of the Federal Capital. Content includes a list of Government Owned Pressure Vessels in Service, June 1931. Other files cover the installation and inspection of equipment in Old Parliament House and at RAAF stations.

Australian Capital Territory

The ACT Territory Records Office holds records of the registration of boilers, pressure vessels and other engines as part of its construction licensing function. If an engine is in use and registered, the ACT Government would have details such as design registration, manufacturer, identification numbers such as model and serial numbers and registered location. The register containing this information is not an archival record but a current working document and is not available under the *Territory Records Act 2002*. Registration information exists from around 2013 but may refer to items that were made before that date.

New South Wales

Records relating to boiler inspection

The following is a list of records relating to boiler inspection held by State Records NSW. The scope of the records may include inspection of many types of boilers and pressure vessels.

AGY-413 Department of Labour and Industry [I] (1896-1940) / Department of Labour and Industry and Social Services (1940-1944) / Department of Labour and Industry and Social Welfare (1944-1956) / Department of Industrial Relations [I]

RNCG-1955 Power and Pressure Vessels Section List of boilers in Sydney district, 1 Apr 1959

This list was compiled by Imperial Chemical Industries of Australia and New Zealand Limited from information in the records of the Department of Labour and Industry's Boiler Section. It is arranged by district and boiler size and gives the company name, its address and the make of the boiler. AGY-47 Colonial Architect (1832 - 1833) / Architectural Branch (1833 - 1834) / Colonial Architect (1834 - 1890) / Architectural Division (1890 - 1992) / Architectural Services Division (1999 -)

RNCG-1465 Miscellaneous (boiler inspection) files, 1957-65

From 1956 the Engineering Division of the Government Architects Branch undertook annual inspections of steam and unfired boilers and pressure vessels on behalf of the Government Insurance Office. Inspections were made of a wide range of equipment and plant located in hospitals, colleges, prisons, the State Dockyard, Government Motor Garage, and other Government and local government agencies and premises

Public Works boiler inspectors were required to examine vessels and complete forms on their conditions – their location, date of inspection, name of officer normally in charge of the equipment, the shell furnace, safety valves, gauges, signs of corrosion, leakages, results of steam and air tests etc. The forms were signed and dated by the inspector and the certificate number records. A sample of these files was retained

AGY-1210 Water Supply and Sewerage Branch [II] [Department of Public Works]

NRS-12851 Murray Waters correspondence files [Public Works], 1911-1978.

Enter term 'NRS-12851 boiler' to locate correspondence including, amongst other material, files relating to boiler inspection.

AGY-514 Marine Board of New South Wales

NRS-19547 Copies of Board of Trade and other certificates of engineers and inspections on ship engines and boilers, 1895-1914

This series consists of a volume containing transcribed copies and some original correspondence from the Board of Trade, London regarding reports on and inspections of ships' engines and boilers constructed for steamships registered in New South Wales. The correspondence includes detailed specifications of the machinery, including steam launches, harbour ferries and coastal traders. Most of the specifications are transcripts of those provided by the British manufacturers of the machinery. The manufacturers include Thistleworks Paisley, Pollockshaws Glasgow, Parkhead Boilerworks Glasgow and Whitefield Works in Govan Glasgow.

AGY-519 Maritime Services Board

NRS-4660 | Survey reports [Engineer Surveyor, Newcastle], 1910-1936

> These surveys deal primarily with inspection of machinery, machinery parts, equipment, boilers etc. on vessels, 4 Feb 1910-21 Aug 1913, 15 Jan 1916-10 Sep 1936 (34/2981-87). 7 volumes

AGY-4462 Lunatic/Boorook/Drake (Fairfield) Warden's Office

RNCG-6391 Register of applications to erect machinery [Drake Mining Warden's Office c. 1860-1879

> This volume records number of application, name of applicant, locality, description of machinery required, purpose, extent of site allowed in cases where apportioned, remarks and conditions

RNCG 1465 Miscellaneous (boiler inspection) files, 1957-65

> RNCG-1465-1-[10/48311]

Colonial Secretary

The Colonial Secretary was a central figure in the NSW government during the 19th century. It is possible the Colonial Secretary's Correspondence contains reference to the importation of steam engines by individuals and government agencies during this period. The State Archives Collection provides guides and finding aids to searching the Colonial Secretary's Papers. The Index to the Colonial Secretary's Papers, 1788-1825 can be browsed by name and subject.

Northern Territory

Advice from the Library and Archives NT is that it does not hold material relevant to this Note. It advises that there may be records relevant to NT in National Archives Australia, Canberra.

Queensland

Relevant records held by the Queensland State Archives include:

Series S16563 Registers of Machinery Inspections

> These registers cover the City of Brisbane and country districts throughout Queensland. Machines inspected include boilers, tractors, engines, trucks, roller graders, bulldozers, loaders and lifts. Each entry includes date and number of inspection, name of owner, type and size of machine, fee charged for inspection, and remarks made by inspector. The registers span the various name changes of the Division - namely the Machinery and Scaffolding Department, Machinery Scaffolding and Weights and Measures Sub-Department, Occupational Safety and Weights and Measures Division, Occupational Safety Division and Accident Prevention Division.

Series S14201 Main Roads Department's files of plant acquired and maintained

> Plant files for steam roller, compressor, powered roller, ploughs and scoops, grader, tractor (dozer), angledozer, utility, travelling workshop, tractor (front end loader), and Foden truck. Files include certificates of inspection and inspection reports, drawings, photos and correspondence re specifications, tenders, costs, repairs etc.

Series S8670 Stationary Boiler and Life Record, Railway Department, Chief Mechanical Engineer's Branch, 1900-1914

The QSA has developed two Research Guides relating to its extensive holdings of railway records:

Research Guide to Railway records at Queensland State Archives

Research Guide to railway locomotive and rollingstock drawings records at Queensland State Archives.

Details about items or series listed can be found in QSA's online catalogue Archives Search by entering the identifier into the search box (e.g., S17695 for Series 17695, ITM647657 for Item 647657). For series listings, there will be additional information in the Description section of the listing.

South Australia

According to State Records South Australia, there was no general oversight, inspection, or licencing of steam boilers and engines in South Australia until 1912. At the time South Australia was noted as the only state that did not require a certificate of competency for operators. The-*Steam Boilers and Engine Drivers Act 1911* was assented to on 23 December 1911. It-regulated the operation of steam boilers and provided for the regular inspection of boilers and the licencing of operators.

The lists of records created by agencies with oversight of steam boiler management can be found at:

Steam Boilers Department (GA324, 1917-1923)

Factories and Steam Boilers Department (GA325, 1923-1959)

Before the *Steam Boilers and Engine Drivers Act 1911* the only regulations relating to steam boilers and engines were inspections of steam boilers on ships carried out by surveyors appointed by the Marine Board under the *Marine Board Act 1860* (and subsequent Acts). Records created by the Marine Board are held by State Records of South Australia (SRSA) under GRG51 and GA53, but do not include records that specifically relate to the inspection or management of steam engines or boilers.

Other records that may hold information relating to these inspections:

Marine surveyor's guarantees and ship and cargo surveyors' guarantees from 1860 to 1927 are in GRG51/257.

Marine Board minutes from 1860 – 1925 are in GRG51/4 and predecessor minutes can be found in GRG51/2 (Harbor Trust, 1855 – 1860), GRG51/283 (Local Marine Board, 1853 – 1860) and GRG51/1 (Trinity Board, 1852 – 1858). There are many series of correspondence or letters received under GRG51, which might contain references to steam boiler or engine inspections etc.

Tasmania

The State Library and Archives of Tasmania holds records for the following key government agencies responsible for inspecting factories and equipment and certifying operators to ensure compliance with legislated standards:

Inspection of Machinery Department 1885–1920

Inspection of Machinery Branch 1940-1940

Department of Labour and Industry 1940-1989

The most relevant series of records created by these agencies include:

LID6 District Register of Mine, Mill and Agricultural Boilers—Northern Tasmania, including North-East, North-West and West Coast 1903-1967

Register covering the areas of the North, North East, North West and the West Coast. The register lists the registration number, owner's name and address, description of boiler, horsepower rating and the date of inspections for the years covered by the register.

LID16 District Register of Mine, Mill and Agricultural Boilers—Southern Tasmania 1901-1960

Register provides name and address of boiler owner, description of boiler, dates of inspection and notes about ownership. Includes Hobart, Huon and Channel, Derwent Valley, East Coast, Tasman Peninsula, Apsley and Midlands.

AE524 Exam Questions for Boiler Attendants and Electric Motor Drivers 1900-1930

Exam questions for boiler attendants Grade B and C and electric motor drivers.

AE551 Inspector's Notebook—Lists Boilers North West

Provides boiler number, owner, maker and date of manufacture, horsepower rating, type, size of engine, size of boiler, and lbs pressure rating.

LID19 Inspectors' Record of Marine Steam Boilers. Indexed 1885-1895

Each boiler is described in detail giving the name of the vessel, and occasionally the owner and tonnage. These records were required to be kept by Section 24 of the Inspectors of Machinery Act 1889.

AC150 Inspector's Record of Steam Boilers and Machinery—North West District, including West Coast 1898–1964

Gives owner, description of machinery, and some details of its history.

AE550 Index to Inspector's Records of Steam Boilers—North West District, including West Coast 1898-1964

The index provides a page and book number to the boiler inspector records (AC 150).

LID17 Inspector's Record of Steam Boilers and Machinery 1899-1962

Each piece of machinery is described and includes occasional remarks about its history, ownership, condition or state and diagrams. First two volumes have slightly different format. These records were kept under Section 25 of the Inspectors of Machinery Act 1902.

AC149 District Register of Mine, Mill and Boiler Machinery—North West District, including West Coast 1901-1969

Alphabetical by name of owner. This series provides boiler registration numbers. These numbers are used to search the boiler record books (AC312) for dates of inspections and the inspector's reports (LID17). Inspector's reports for the North West and West Coast are contained in (AC150) and can be located by using (AE550) to identify the relevant book and page number.

AE547 Machinery Register 1902-1975

These volumes provide the owner's name, location of the machinery, and a description of the machinery.

LID14 District Register of Mine, Mill and Manufacturing Machinery—M Series, Tasmania 1903-1967

This series was used for machinery other than pressure vessels, e.g., printing presses. The "M" number was either fixed/stamped on the machine, or a certificate quoting the "M" number issued for it.

LID28 Butts of Certificates issued Certifying to the Safety and Good Condition of Machinery Inspected 1905-1908

This volume also contains blank copies of the certificates.

AC312 Boiler Record Books 1906-1963

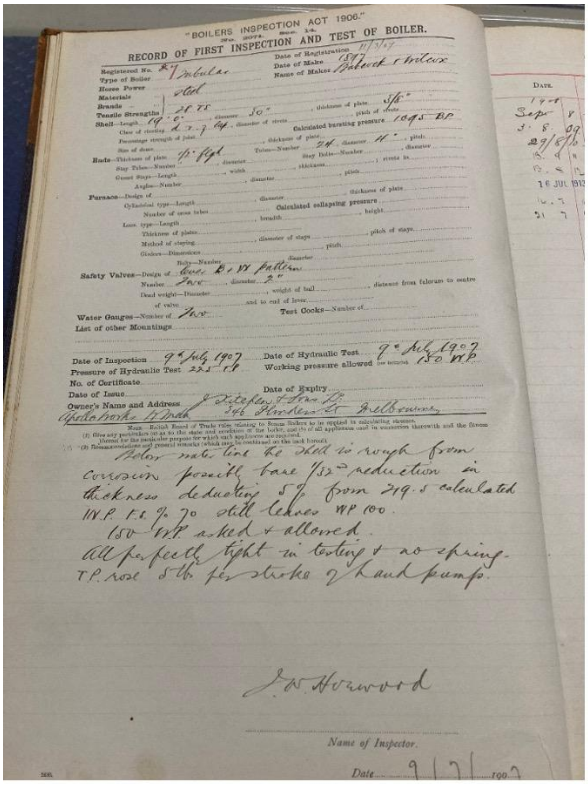
These volumes list the date and year of Inspection. They are arranged by the boiler registration number which is an alpha (A-T) numeric sequence. Partial boiler L registration for 1954 is in AC 312/1/2.

Victoria

The Public Records Office Victoria (PROV) collection does not hold comprehensive technical records covering all iterations of boilers, inspections, and engines for any period. However, there are several areas of the collection which may be relevant and useful:

Boiler inspections (including portable and traction steam engines)

PROV's most substantial record of boiler inspections is VPRS 7854 Register of Boiler Inspection, covering the period 1907–1935. It is unclear whether any formal program of inspections (for either boilers or engines) was in place before 1907, as the supporting documentation cites the Boilers Inspection Act 1906 as the catalyst for the generation of these records, and does not cite any other legislation or records. A cautionary note: sometimes the information in these records is minimal or the engine number may not be recorded, and in more remote areas boilers may not have been formally inspected.


"BOILERS INSPECTION ACT 1906."

RECORD OF FIRST INSPECTION AND TEST OF BOILER.

Registered No.
Type of Boiler: Tubular
Horse Power
Materials: Steel
Brands
Tensile Strengths: 28 TS
Date of Registration
Date of Make: 1897
Name of Maker: Babcock & Wilcox
Shell—Length: 19' 0", diameter: 50", thickness of plate: 5/8"
Calculated bursting pressure: 1095 BP
Tubes—Number: 24, diameter: 4"
Safety Valves—Design of
Water Gauges—Number of: Two
Test Cocks—Number of
List of other Mountings
Date of Inspection: 9th July 1907
Pressure of Hydraulic Test: 225 TP
Date of Hydraulic Test: 9th July 1907
Working pressure allowed: 150 WP
No. of Certificate
Date of Issue
Date of Expiry
Owner's Name and Address: 546 Flinders St Melbourne

Below water line the shell is rough from corrosion possibly bare 1/32nd reduction in thickness deducting 5% from 219.5 calculated W.P. F.S. % 70 still leaves WP 100.
150 W.P. asked & allowed.
All perfectly tight in testing & no spring.
T.P. rose 5 lb per stroke of hand pump.

J. W. Horwood

Name of Inspector.

Date 9/7/1907

A record of first inspection and test of boiler dated 9 July 1907 for a Babcock & Wilcox tubular steel boiler and noting the owner's name and address. The report includes detail of the condition of the boiler and notes some minor deterioration causing the allowable working steam pressure to be reduced (Public Record Office of Victoria PROV).

Records of portable, traction and stationary steam engines imported in the colonial period

The most likely source in PROV's collection is the correspondence of the Chief Secretary, an agency established in 1855 that had a wide range of responsibilities including transport and what we might now call workplace safety.

None of the collection areas listed above have been digitised. Researchers will have to order the records for viewing at PROV's North Melbourne Reading Room at 99 Shiel St, North Melbourne (see https://prov.vic.gov.au/contact-us). Records can be digitised on request, but depending on the quantities or the timeframes, there may be costs.

Western Australia

The State Records Office of Western Australia refers researchers to Rail Heritage WA for locomotives and railway engines; and Machine Preservation WA, a not-for-profit club and member of the National Historic Machinery Association (NHMA), which has a library of manuals, books, magazines, and other relevant material.

Mining Warden Offices

Each colony and/or state appointed Mining Wardens under each jurisdiction's Mining Act to oversee the administration and enforcement duties of mining districts, and to adjudicate civil

disputes over mining matters. Records held by the Mining Warden may hold information on steam engines being used for the variety of mining functions including stationery and portable crushing and milling equipment, pumps, saws, and workshop plant and machinery.
The following is an example from one NSW Mining Warden held in NSW archives:

> RNCG-6391 Register of applications to erect machinery [Drake Mining Warden's Office c. 1860-1879
>
> RNCG-6391-1- [7/233]-7/233
>
> NRS-15079 'Mine Records' comprises records relating to the operations of individual mines across NSW which may include a history of the mine, details of the types of minerals extracted, operational summaries, director's reports, prospectus documents, assays, annual reports, lists of machinery, ownership and shareholder details, and key dates.
>
> NRS-9987 'Mines Special Files 1851-1986' comprises an eclectic mix of all manner of special reports or records relating to mine operations in NSW with descriptions of mines, machinery used, accidents and investigations, inquiries, statistics, maps, and much more.

The Libraries Tasmania website includes these series relevant to mining and milling operations:

> AC149/1/1-8 District Register of Mine, Mill, and Boiler Machinery—North West District, including West Coast (covering the period 1901-1969)
>
> AC 150/1/1-4 Inspectors Record of Steam Boilers & Machinery—North West District, including West Coast (covering the period 1898-1964).

The Australasian Mining History Association (AMHA) website provides a guide (and links) to online 'Research Resources' for researching mining history, including records relating to mining machinery and engines. The resources include links to the digitised records for the geological surveys (or equivalent) in each state and territory of the Commonwealth, and which may include records relating to a diversity of subjects or themes such as exploration, geological mapping, historical reports and memoirs describing the geology and operations in mining areas, mine plans, heritage records, company reports, and much more.

Case Study 1

John Fowler Road Locomotive No. 16161

This case study shows how a range of sources were used to prepare a detailed history of the 1925 eight nominal horsepower (8nhp) John Fowler Road Locomotive (no. 16161) prepared by Rohan Lamb (Lovell Chen Architects and Heritage Consultants) for the ACT Land Development Agency in April 2015. The report was used in acquiring the engine, the development of the engine's conservation management plan, and for its subsequent inclusion on the ACT Heritage Register. The research involved using international, Commonwealth, State and private archives; public and private photographic collections; journal and magazine articles; newspaper reports and advertisements; unpublished manuscripts; and personal communications.

This engine (and its twin, No. 16162), was purchased for use in the construction of Canberra (see National Archives Australia file *NAA, A126/2, Traction Engine Index Card, 1924*.) Tenders for the purchase of the engine were called by the Commonwealth's Department of Works and Railways in 1924, and the response by John Fowler & Co. was handled through its Sydney office. The acceptance of Fowler's price of £3,000 for the two traction engines in November 1924 is recorded in file *NAA, A126/2 Traction Engine Correspondence Index Card*. A duplicate copy of the detailed specification was supplied to the company's Melbourne agent (Welch, Perrin & Co.) and can be found in the *Fowler Engine Registers* held in the archives of the Melbourne Steam Traction Engine Club Inc.

Completion and despatch of No. 16161 from the company's works in Leeds on 24 January 1925 is recorded in archives held by the Museum of English Rural Life at the University of Reading *(MERL, TR FOW MP1/1, General Product Register No.3, John Fowler & Co. (Leeds) Ltd., p.68)*. Recollections of the delivery of the pair of road locomotives in Sydney, and supervision of their transport to Canberra, were recorded in an unpublished paper by John Jaeger, *Fowler Road Locomotive No.16161*, unpub., 2013, p.32. Jaeger's paper records a variety of haulage tasks undertaken by the engines following their arrival in Canberra. The National Archives of Australia (Mildenhall Collection) and National Library of Australia (T. C. G. Weston Photograph Albums) include several photographs of these engines at work around Canberra in the 1925–28 period. National Archives of Australia files *NAA, CP698/11, Bundle 1 Part 3A, Federal Capital Commission, Second Annual Report of the Federal Capital Commission for the period ended 30th June 1926*, p. 33 and records of boiler inspections *NAA, A292, C887, Federal Capital Commission, Privately owned steam boilers* provide some further details of how they were used, initially supporting construction work and subsequently providing steam in a Canberra abattoir before being stored and inactive in Kingston between 1932 and 1947 (see the *Canberra Times* (12 June 1931, p. 3 and 12 July 1932, p. 2) describing their use at the abattoir, and an article by Bruce Macdonald, '…and the Whole Darn Thing was Worked by Steam', *Heritage in Trust*, National Trust, Canberra, Spring 2001, p.8 documenting the period of storage at Kingston).

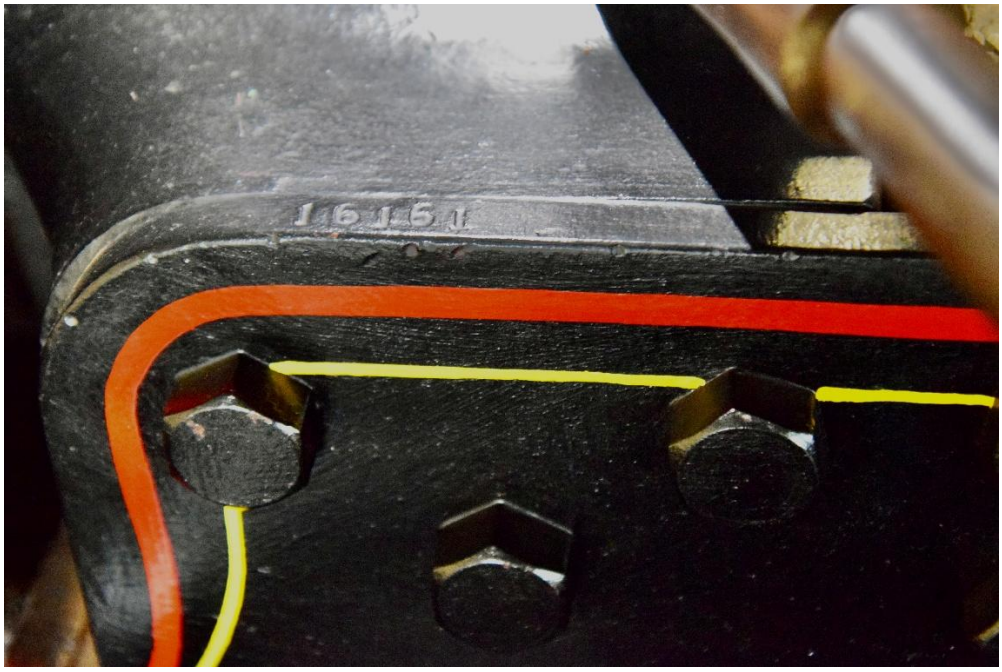
The *Canberra Times*, 18 January 1947, p.3 and 22 January 1947, p. 1 record the sale of No. 16161 for £170. The identity of the new owner (Mr T A Fields of Lanyon Station) is confirmed by *Department of Labour & Industry & Social Welfare, NSW, Certificate of Inspection of Boiler, John Fowler Tractor Boiler, registered no.9B 265, 17 February 1947*. John Jaeger's unpublished paper records how the engine was driven to the property and used to drive a chaff cutter. The use of the engine for clearing trees until replaced by crawler tractors around 1952 is noted in: Marshall, D., Coltheart, L., Butler G., Armes, J. Pearson, M., Taylor, K., 2010, *Lanyon Conservation Management Plan, Volume 1*, Cultural Facilities Corporation, ACT Historic Places, p.92.

Information about the sale of the engine and its subsequent use to power sawmills between Yass and Cowra was provided in personal communication by Mr Charlie Chown, who operated the engine until 1959 when it was replaced by a tractor. Bob McLeod, who purchased the engine for preservation in 1962, described his experience of returning the engine to operational condition, and some early adventures with it in 'That Old Thing Won't Shift It', *The Old Machinery Magazine*, December 2003–January 2004, pp.44-47. Photographs from private collectors Bob McLeod and Bruce Macdonald record events when the engine was used, including the recovery of a railway locomotive from the turntable pit at Cowra.

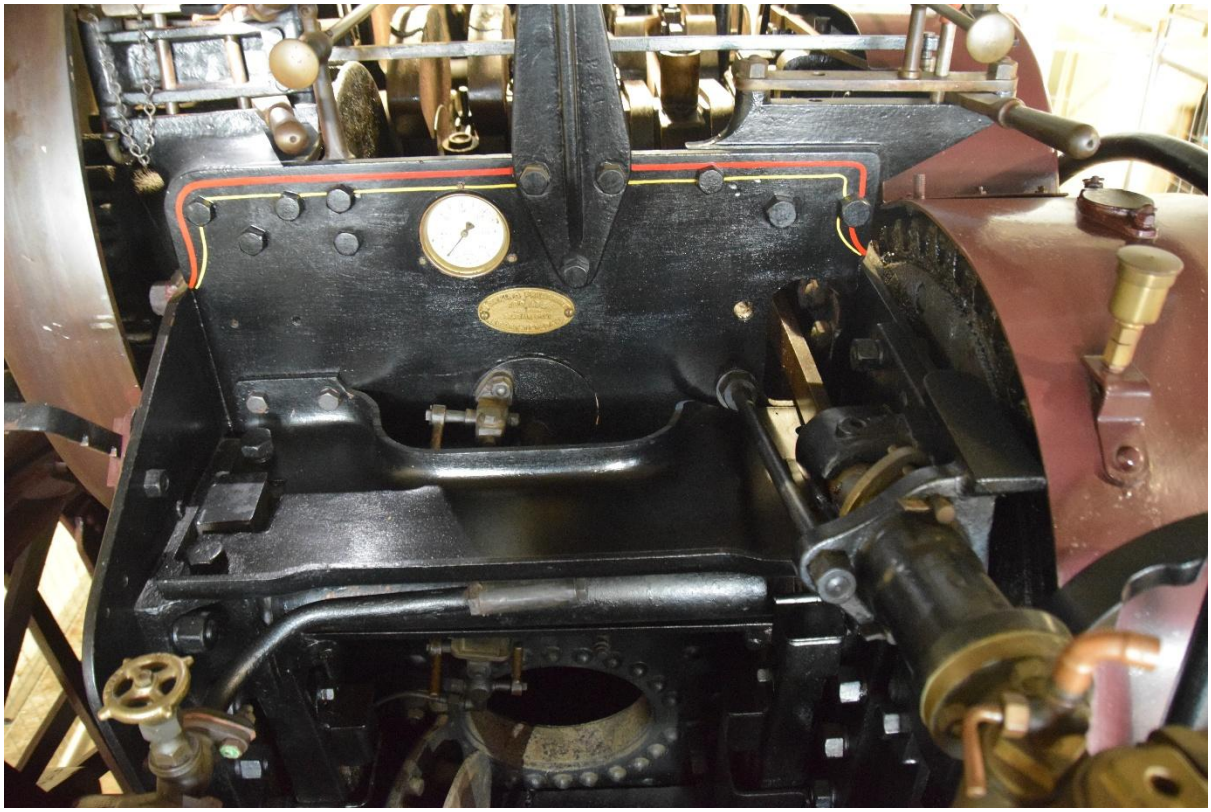
An advertisement to sell No. 16161 appeared in *Model Engineer*, 3 March 1972, p.252. Doug Wallis purchased No. 16161 and it remained in covered storage until 2014 when an ACT Government press release, *Historic engine coming home to Canberra*, 27 June 2014, announced the purchase of the road locomotive. Restoration was undertaken by K & H Ainsworth Engineering Pty Ltd following preparation of a Repair and Condition report for the Land Development Agency in 2015. Its inclusion on the Heritage Register, was recorded by the ACT Heritage Council, Heritage (Decision about Registration of the John Fowler Road Locomotive 16161) Notice 2016, Notifiable Instrument NI2016—546, made under the Heritage Act 2004, s40 (Decision about registration), Canberra, 2016.

The restored John Fowler Road Locomotive No. 16161 on display at Lanyon Homestead, ACT, 2016.

The manufacturer's plate, showing the engine's number, attached to the side of the boiler above the belly tank. The separate boiler number is too obscured by wear to photograph effectively.

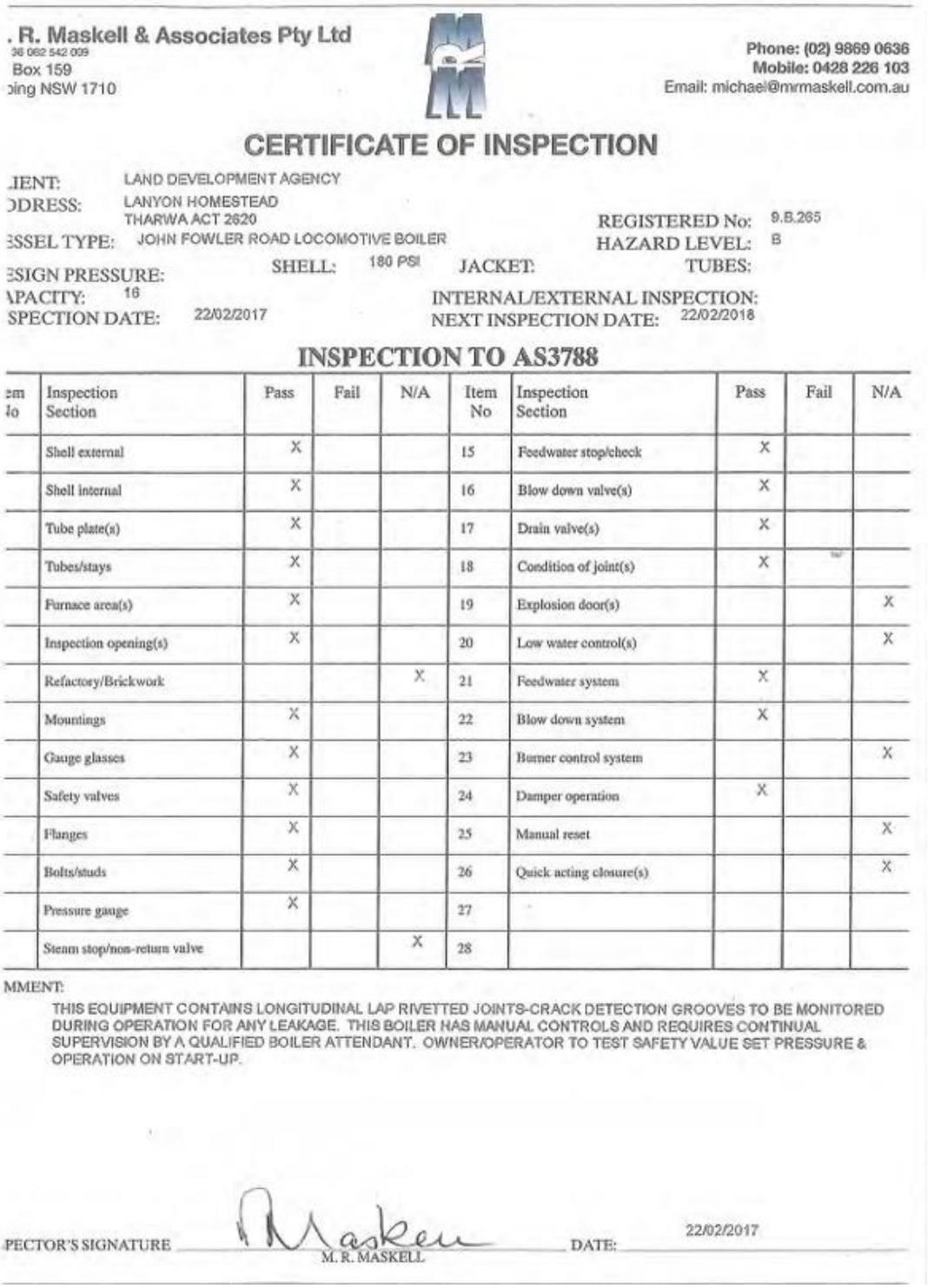


The engine number (16161) embossed on the spectacle plate.



A view from the footplate looking towards the front of the engine. The engine number is embossed on the top left corner of the spectacle plate above the red and yellow lining paintwork.

Pictures from the 'John Fowler Road Locomotive No. 16161 Conservation Management Plan', August 2020, Appendix A: Condition Assessment of John Fowler & Co. (Leeds) Ltd, Road Locomotive No. 16161, prepared by Rohan Lamb MIEAust, for Lovell Chen for the ACT Suburban Land Agency.



. R. Maskell & Associates Pty Ltd
36 062 542 009
Box 159
oing NSW 1710

Phone: (02) 9869 0636
Mobile: 0428 226 103
Email: michael@mrmaskell.com.au

CERTIFICATE OF INSPECTION

LIENT: LAND DEVELOPMENT AGENCY
DDRESS: LANYON HOMESTEAD
THARWA ACT 2620
ESSEL TYPE: JOHN FOWLER ROAD LOCOMOTIVE BOILER
REGISTERED No: 9.B.265
HAZARD LEVEL: B
ESIGN PRESSURE: SHELL: 180 PSI JACKET: TUBES:
APACITY: 16
SPECTION DATE: 22/02/2017
INTERNAL/EXTERNAL INSPECTION:
NEXT INSPECTION DATE: 22/02/2018

INSPECTION TO AS3788

em lo	Inspection Section	Pass	Fail	N/A	Item No	Inspection Section	Pass	Fail	N/A
	Shell external	X			15	Feedwater stop/check	X		
	Shell internal	X			16	Blow down valve(s)	X		
	Tube plate(s)	X			17	Drain valve(s)	X		
	Tubes/stays	X			18	Condition of joint(s)	X		
	Furnace area(s)	X			19	Explosion door(s)			X
	Inspection opening(s)	X			20	Low water control(s)			X
	Refactory/Brickwork			X	21	Feedwater system	X		
	Mountings	X			22	Blow down system	X		
	Gauge glasses	X			23	Burner control system			X
	Safety valves	X			24	Damper operation	X		
	Flanges	X			25	Manual reset			X
	Bolts/studs	X			26	Quick acting closure(s)			X
	Pressure gauge	X			27				
	Steam stop/non-return valve			X	28				

MMENT:
THIS EQUIPMENT CONTAINS LONGITUDINAL LAP RIVETTED JOINTS-CRACK DETECTION GROOVES TO BE MONITORED DURING OPERATION FOR ANY LEAKAGE. THIS BOILER HAS MANUAL CONTROLS AND REQUIRES CONTINUAL SUPERVISION BY A QUALIFIED BOILER ATTENDANT. OWNER/OPERATOR TO TEST SAFETY VALUE SET PRESSURE & OPERATION ON START-UP.

PECTOR'S SIGNATURE Maskell M. R. MASKELL DATE: 22/02/2017

Detail of boiler inspection report for engine no. 16161 (from the 'John Fowler Road Locomotive No. 16161 Conservation Management Plan, August 2020, Appendix D, prepared by Lovell Chen for the ACT Suburban Land Agency, p. 139).

Case study 2

Richard Garrett & Sons Ltd Traction Engine No. 29788 and associated equipment.

This case study outlines the information used by the Queensland Museum (QM) in the acquisition, restoration and interpretation of 1911 six nominal horsepower (6nhp) Garrett compound traction engine No. 29788. Acquiring a traction engine with strong associations with Queensland was an important priority for the Museum's History and Technology collection in the 1970s and many engines were considered by Museum staff before selecting the Garrett. While some of the history of the engine was known at the time of acquisition – and the plate on the smokebox door clearly showed that it was produced for a Queensland agent – considerable additional research subsequently revealed far more about its provenance.

Queensland Museum files record the circumstances leading to the acquisition of this engine from Mr I. A. McDiarmid of Crows Nest (Qld) in 1979. The *Courier Mail*,1 June 1979, reported the recovery of the engine and its delivery at the museum, with assistance from the Army.

Initial research following the acquisition included seeking information about the original order and manufacture of the engine. The relevant Richard Garrett & Sons Ltd records are held by Suffolk Archives, which provided photocopies of *Specification No. 110*, dated 30 September 1911. These provided extensive details of traction engine No. 29788, and itemised features that were specifically tailored to Queensland conditions, such as a 'colonial' ashpan and grate, and a rack for assisting storage of timber fuel. The records also confirm that it was ordered by Brisbane based company Clark and Fauset, engineers and machinery importers.

Information was also sought from Mr McDiarmid about his ownership of the engine, which led to the identification of a sequence of several previous owners. Interviews with these past owners or relevant family members documented the history of the engine's use for nearly 30 years in the timber industry, where it powered sawmills, winched and snigged timber and helped to clear land. In turn, this led back to confirmation that the engine had been sold by the Normanby Shire Council to its first private owner in the 1930s.

Normanby Shire Council was located south of Ipswich but disappeared when a local government reorganisation was undertaken in 1948. However, the Council's records were held by Moreton Shire Council, and the minutes of meetings were made available. These recorded the decision to call tenders for a traction engine and crushing equipment (29 August 1914) and receipt of tenders (26 September 1914). Acceptance of the Clark and Fauset tender was recorded on 31 October and the engine is noted as being loaded in Brisbane on 28 November 1914 following confirmation of a boiler test certificate on 24 November. Council minutes also recorded the acquisition of a Mason rock crusher and a pair of wagons derived from a Reynard Road Train. Subsequent minutes in 1915–17 provide information on the use of the equipment for road construction, as well as some details of drivers and operational issues with the engine and crusher. These records are now held by Queensland State Archives, ID S6103.

Interviews by Museum staff with local residents and people who worked with the equipment or knew of it while it was owned by Normanby Shire were a valuable source of more information on the use of the engine and associated equipment for road construction and repair work.

These enquiries helped staff locate the rock crusher and remains of the wagons that had been operated in conjunction with the traction engine, and to their subsequent acquisition. The recovery of rock crusher was reported by *The Queensland Times*, 1 December 1980. Normanby Shire offices were located at Harrisville, and enquiries with the local Historical Society resulted in the acquisition of photographs of the engine and its equipment.

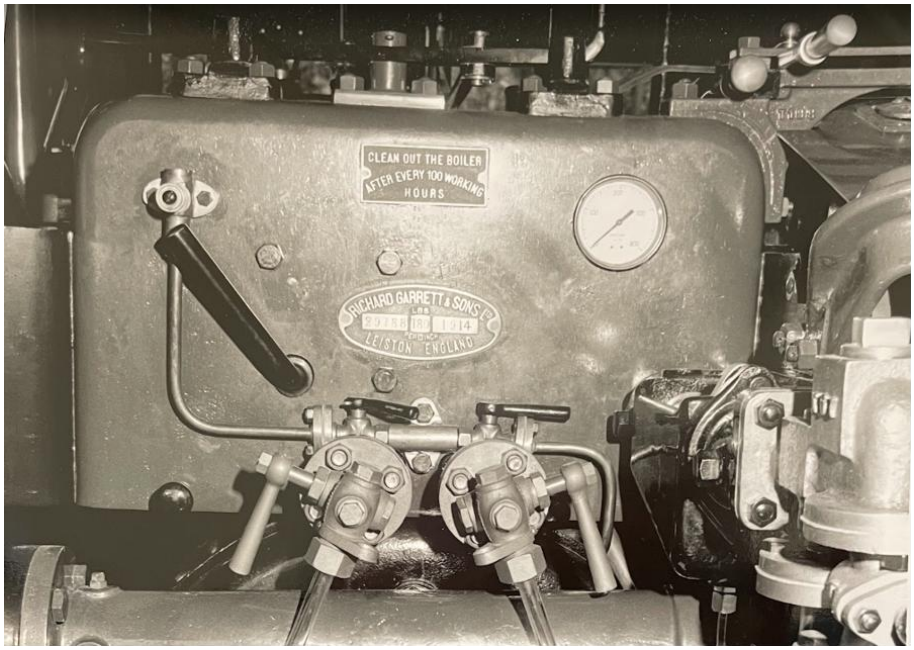
In addition to historical information, enquiries with previous owners and their families allowed the Museum to locate parts which had been removed from the engine and discarded at various times. These were recovered to assist the Museum's restoration of the engine.

Information on the restoration of the engine (Museum registration number H14307.1) is contained in museum files and is noted in journals such as *Steaming*, Vol. 26 No. 1, Winter 1982–83, p. 45. The first public steaming on 18 May 1982 is also reported in *Steaming*, Vol. 27 No. 2, Spring 1984 pp. 80–1. Museum files include information on boiler inspections and certificates, and other aspects of the ongoing care and display of the engine.

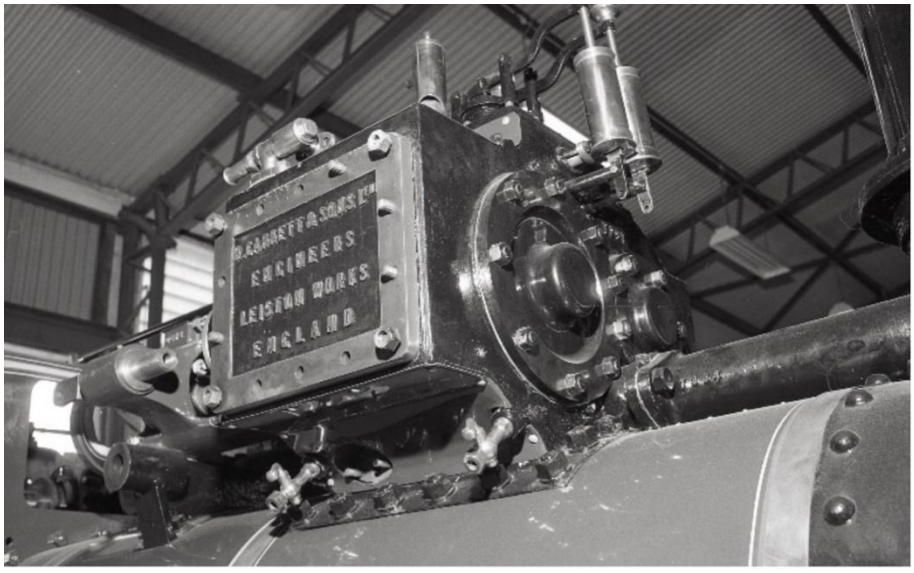
The display of the engine at various shows was sometimes featured in local media such as the Yesteryear Rally, Gympie, 2–3 June 1990, in *Leisure Time*, 18-31 May 1990. The engine was displayed in Japan in 1989 and featured in the publication Bartlett, J., and Whitmore, M., *Cultural Exhibition of Queensland*, The Saitama Prefectural Museum, Saitama 1989, p. 95.

The combination of analysis of the object itself, together with research of a range of archival and published records, as well as extensive enquires with relevant owners, their families and other people interested in local history allowed the Museum to understand the provenance of their traction engine and to restore it accurately.

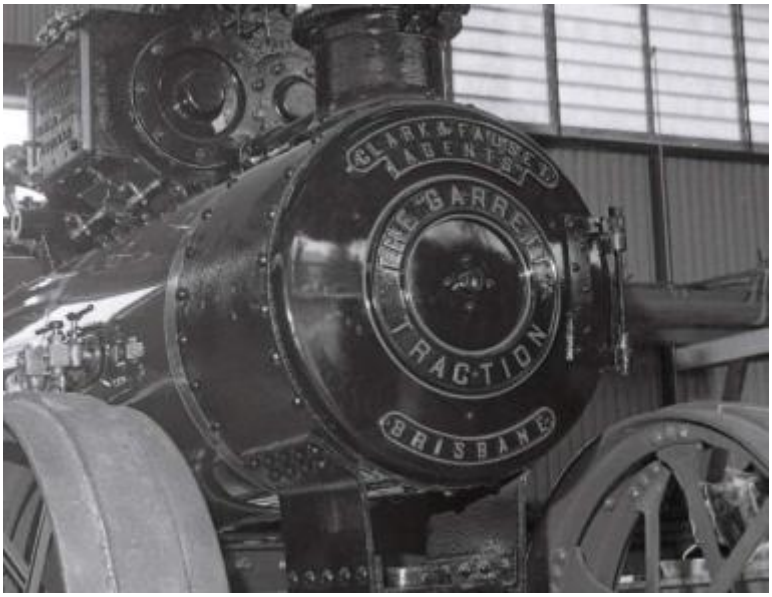
The Queensland Museum's restored Garratt Traction Engine at the Queensland Museum (photo Queensland Museum).



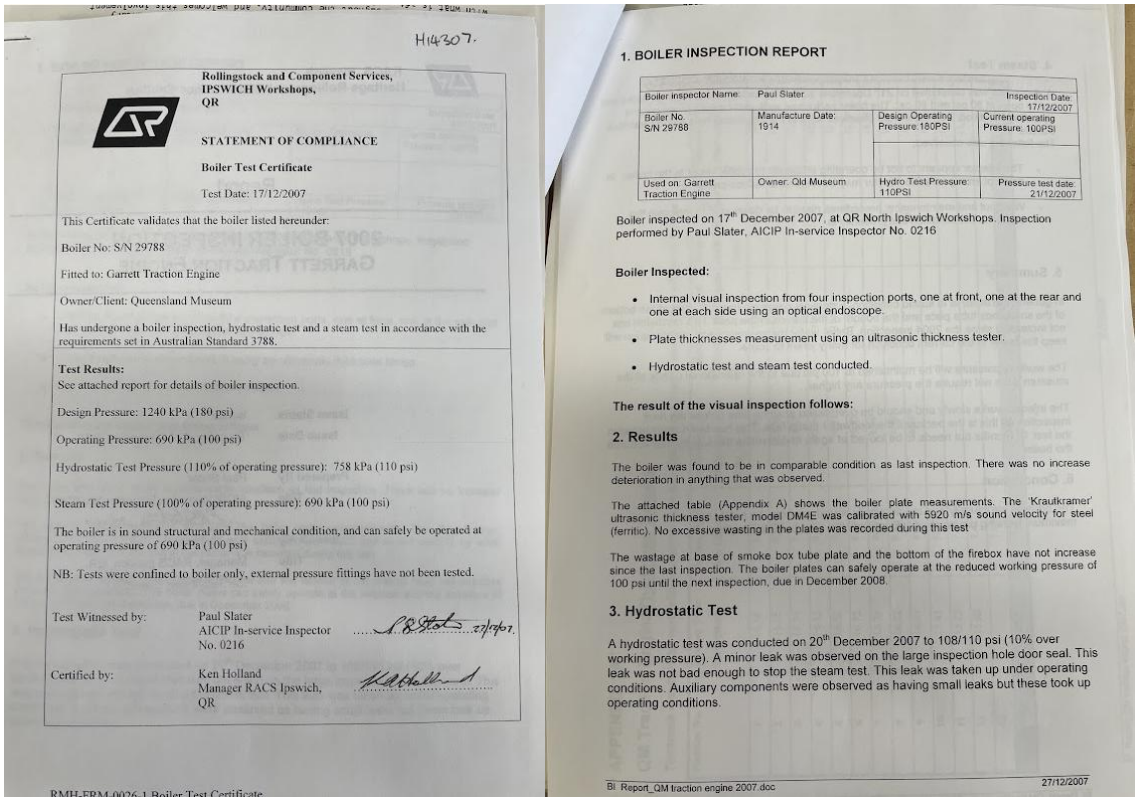
Maker's number No. 29788 is stamped on a brass plate attached to the firebox with the pressure rating (180 lbs per inch) and '1914', which is the year of the first inspection and boiler test conducted prior to acceptance by the Normanby Shire Council (photo Queensland Museum).



Details of the maker cast on the steam chest cover (photo Queensland Museum).



A front-quarter view of the Garrett traction engine showing the name of the local agent in Brisbane, Clark & Fauset (photo Queensland Museum).



H14307.

Rollingstock and Component Services,
IPSWICH Workshops,
QR

STATEMENT OF COMPLIANCE

Boiler Test Certificate

Test Date: 17/12/2007

This Certificate validates that the boiler listed hereunder:

Boiler No: S/N 29788

Fitted to: Garrett Traction Engine

Owner/Client: Queensland Museum

Has undergone a boiler inspection, hydrostatic test and a steam test in accordance with the requirements set in Australian Standard 3788.

Test Results:
See attached report for details of boiler inspection.

Design Pressure: 1240 kPa (180 psi)

Operating Pressure: 690 kPa (100 psi)

Hydrostatic Test Pressure (110% of operating pressure): 758 kPa (110 psi)

Steam Test Pressure (100% of operating pressure): 690 kPa (100 psi)

The boiler is in sound structural and mechanical condition, and can safely be operated at operating pressure of 690 kPa (100 psi)

NB: Tests were confined to boiler only, external pressure fittings have not been tested.

Test Witnessed by: Paul Slater, AICIP In-service Inspector No. 0216 ..... 27/12/07

Certified by: Ken Holland, Manager RACS Ipswich, QR .....

RMH-FRM-0026-1 Boiler Test Certificate

1. BOILER INSPECTION REPORT

Boiler inspector Name: Paul Slater			Inspection Date: 17/12/2007
Boiler No. S/N 29788	Manufacture Date: 1914	Design Operating Pressure 180PSI	Current operating Pressure: 100PSI
Used on: Garrett Traction Engine	Owner: Qld Museum	Hydro Test Pressure: 110PSI	Pressure test date: 21/12/2007

Boiler inspected on 17th December 2007, at QR North Ipswich Workshops. Inspection performed by Paul Slater, AICIP In-service Inspector No. 0216

Boiler Inspected:

- Internal visual inspection from four inspection ports, one at front, one at the rear and one at each side using an optical endoscope.
- Plate thicknesses measurement using an ultrasonic thickness tester.
- Hydrostatic test and steam test conducted.

The result of the visual inspection follows:

2. Results

The boiler was found to be in comparable condition as last inspection. There was no increase deterioration in anything that was observed.

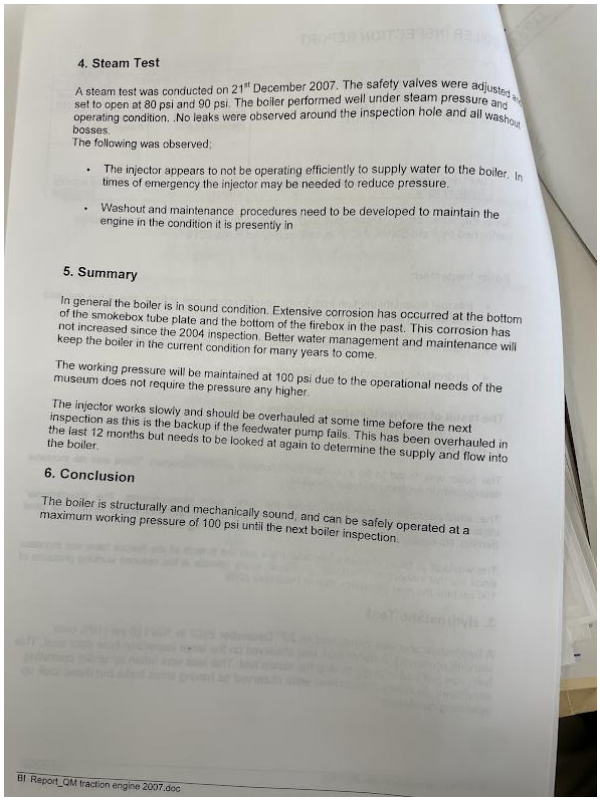
The attached table (Appendix A) shows the boiler plate measurements. The 'Krautkramer' ultrasonic thickness tester, model DM4E was calibrated with 5920 m/s sound velocity for steel (ferritic). No excessive wasting in the plates was recorded during this test

The wastage at base of smoke box tube plate and the bottom of the firebox have not increase since the last inspection. The boiler plates can safely operate at the reduced working pressure of 100 psi until the next inspection, due in December 2008.

3. Hydrostatic Test

A hydrostatic test was conducted on 20th December 2007 to 108/110 psi (10% over working pressure). A minor leak was observed on the large inspection hole door seal. This leak was not bad enough to stop the steam test. This leak was taken up under operating conditions. Auxiliary components were observed as having small leaks but these took up operating conditions.

BI Report_QM traction engine 2007.doc 27/12/2007



4. Steam Test

A steam test was conducted on 21st December 2007. The safety valves were adjusted and set to open at 80 psi and 90 psi. The boiler performed well under steam pressure and operating condition. .No leaks were observed around the inspection hole and all washout bosses.
The following was observed;

- The injector appears to not be operating efficiently to supply water to the boiler. In times of emergency the injector may be needed to reduce pressure.
- Washout and maintenance procedures need to be developed to maintain the engine in the condition it is presently in

5. Summary

In general the boiler is in sound condition. Extensive corrosion has occurred at the bottom of the smokebox tube plate and the bottom of the firebox in the past. This corrosion has not increased since the 2004 inspection. Better water management and maintenance will keep the boiler in the current condition for many years to come.

The working pressure will be maintained at 100 psi due to the operational needs of the museum does not require the pressure any higher.

The injector works slowly and should be overhauled at some time before the next inspection as this is the backup if the feedwater pump fails. This has been overhauled in the last 12 months but needs to be looked at again to determine the supply and flow into the boiler.

6. Conclusion

The boiler is structurally and mechanically sound, and can be safely operated at a maximum working pressure of 100 psi until the next boiler inspection.

BI Report_QM traction engine 2007.doc

Pages from the boiler inspection report in the Queensland Museum collection for the Garrett Traction Engine No. 29788 (photo Mark Whitmore).

Acknowledgement

The authors acknowledge the contribution of Mr Rohan Lamb MIEAust and Dr Geraldine Mate to the development of this Note.

Authors

Dr Tim Sullivan M.ICOMOS

Dr Tim Sullivan is an independent consultant in the museums and heritage management sectors. He has more than 35 years' experience in executive leadership and governance roles in local, state and national museums with extensive collections of mining, industrial, and military heritage technology, and on a diversity of heritage advisory groups including membership of the National Cultural Heritage Committee.

Mr Mark Whitmore

Mark Whitmore learned to operate traction engines and other steam equipment while working as a senior curator at the Queensland Museum. During his subsequent museum career, he also worked as a volunteer, operating traction engines, narrow gauge locomotives, beam engines and other steam machinery in Australia and Britain. His interest in historical technology has continued in retirement and he is currently completing a history of Australian railway operating units in the First World War.

Citation

Sullivan, T. J., Whitmore, M. G., *Researching Traction and Portable Steam Engines: A Practice Note and Finding Aid*, Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts, Canberra, 2026.

Cover image: 1911 six horsepower (6nhp) Garrett compound traction engine No. 29788, restored and displayed by the Queensland Museum (photo by Queensland Museum).