



National Railway Museum



Exhibits Guide

Chris Drymalik, NRM Collection Manager Rollingstock

This document contains detailed information about the rolling stock and exhibits at the National Railway Museum, Port Adelaide, South Australia.

The subject material is Australian Railways.

The NRM web site can be found at <http://www.natrailmuseum.org.au>



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ABOUT US

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Who we are - a brief history of the museum

In 1963 a group of rail preservationists, alarmed at the scrapping of steam locomotives which had served South Australia for many decades, set about saving, restoring and maintaining many of the historic vehicles in the museum today.



The original museum at Mile End (*NRM Collection*)

The first railway museum was located on Railway Terrace at Mile End, operated on a completely voluntary basis and opened on only two afternoons each month. Prior to 1988 museum members restored many locomotives and carriages, designed and built our steam engine *Bub*, and completely restored narrow gauge steam engine *Peronne* to operational condition. They also published several railway books.



The current museum under construction (*NRM Collection*)

The exposure of the exhibits to the weather was a cause for great concern and an undercover venue was sought. In 1988 the museum was fortunate enough, with the involvement of the History Trust of SA, to obtain a \$2m Australian Bicentennial Commemorative Grant to relocate to our current site and to provide covered accommodation for the exhibits.

On the 2nd of January 1988 the gates at the Mile End Railway Museum closed for the last time and on the 10th December 1988, after a year of frantic activity, the Port Dock Station Railway Museum Port Adelaide was officially opened by the Premier of South Australia, The Honorable John Bannon.

In 1999, special funding was received as part of Australia's Centenary of Federation to construct the 'Commonwealth Railways Museum' within the museum's precinct. This new facility was opened on the 21st of October 2001 to house the expanding collection of exhibits from the Commonwealth Railways and Australian National. On the 31st of May 2009, the Commonwealth Railways Museum was re-named after National Railway Museum founder Ron Fluck.



The Museum can be hired for special night functions - this photo was taken at the rear of the Fitch Pavilion under natural light - 23rd March 2007 (*Chris Drymalik*)

At the opening of the Commonwealth Railway Museum the Port Dock Station Railway Museum was renamed the National Railway Museum Port Adelaide. The name change is a response to the Commonwealth Railway's operations being integrated into a National Transport Network that spanned the whole of the Australian continent.

The Museum is a self-supporting, non-profit enterprise which only occasionally receives government grants for special projects. Apart from the duties of two paid staff members, all of its activities are conducted by volunteers.



'Ghan' statue and Commonwealth Railways Rollingstock - 21st October 2008 (*Chris Drymalik*)



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Australian Railways

Rail transport in Australia

In the early years of Australia history, rail transport was largely a state-based operation. Each of the states operated semi-isolate state owned rail systems that exchanged goods and wagons at a limited number of border interconnections. When the states Federated in 1901, forming the *Commonwealth of Australia*, the individual state based system were retained. As part of the Federation Deal, the new Commonwealth government was obligated to link Western Australia's rail system with that of the eastern based states. The project commenced in 1912, with the formation of the *Commonwealth Railways*, and commencement of construction the *Trans-Australian Railway* linking Kalgoorlie in Western Australia with Port Augusta in South Australia. The *Commonwealth Railways* later took over the operation of the railways in the Northern Territory from South Australia.



Flinders St Station Building (*Victorian Railways*)

The system of Commonwealth and state based railways remained largely unchanged until 1975 when the Commonwealth offered to take over ownership, debt and operation the state based systems. Only South Australia and Tasmania accepted the offer. So on 1st July 1975 the *Australian National Railways Commission* was established. During the next two years discussions with those two States resulted in an agreement being made for the Commonwealth to take over the whole of the Tasmanian Government Railways, and the freight business and non-urban railways of South Australia from 1st March 1978. The metropolitan Adelaide railway lines remained with the South Australian state government.

The next major change occurred during the 1990s, when the various Australian governments sold or leased many of their rail operations and lines to private companies. In Australia today, the rail system is made up from many diverse private freight operators, with the state owned operations predominately being limited to public passenger transport infrastructure in the major urban areas.

Gauges used in Australia

Rail gauge differences have historically been a major problem in Australia, though significant effort over the last 100 years has resulted in the major Interstate routes being converted to uniform *Australian*

Standard Gauge of 1,435 mm (4'8½').

The most frequently used Australian rail gauges are:

- Standard gauge 1,435 mm (4 feet 8½ inches) - mainly New South Wales and the interstate rail network
- Narrow gauge 1,067 mm (3 feet 6 inches) - mainly Queensland, Western Australia and Tasmania as well as some of country South Australia
- Irish broad gauge 1,600 mm (5 feet 3 inches) - mainly Victoria, some South Australia.

While Irish broad gauge was the original standard agreed to amongst the colonies, prior to Federation, standard gauge eventually won out, and many sections of broad gauge have now been converted to standard gauge.

First lines

In 1848 the Governor of New South Wales was advised by Secretary of State for the Colonies in London, that one uniform gauge should be adopted in Australia, this being 1,435 mm standard gauge. This was adopted by the then three colonies of New South Wales, Victoria and South Australia, who were all in the process of planning railway constructions. At the time the private Sydney Railway Company was building a railway line to Parramatta. The chief engineer of the company, who was Irish-born, persuaded the company and the NSW legislature to adopt the 1,600 mm Irish standard gauge instead. This decision was endorsed by the NSW Governor and Secretary Earl Grey in London agreed in 1851.

The other two colonies also adopted this gauge, with the Victorian Railways opening a line in 1854, and the South Australians using it on their first steam hauled railway in 1856. Meanwhile, the Sydney Railway Company decided they preferred standard gauge, as they now had a different chief engineer. The Sydney to Parramatta railway opened in September 1855 built using standard gauge. It was much too late for the other colonies to change as they had already order broad gauge rolling stock.

Gauge conversion of this orphaned NSW railway was brought up as early as 1857, when the NSW railway engineer John Whitton suggested that the railway be altered from 1435 mm gauge to 1600 mm to conform with Victoria. Despite being supported by the NSW Railway Administration nothing was actually done. At the time there was only 37 km of track, 4 engines and a few assorted cars and wagons on the railway.

Narrow gauge was introduced to Australia in 1865, when Queensland opened their first railway from Ipswich to Grandchester. South Australia also adopted this gauge when, in 1870, new lines were built to Port Wakefield, Hoyleton, Broken Hill and Oodnadatta. Western Australia adopted it in 1879 with their lines from Geraldton to Northampton.

The island state of Tasmania opened their first railway from Launceston to Deloraine in 1871 using broad gauge, but converted to narrow gauge in 1888

Gauge Problems

Until this time the gauge issue was not a major problem, as there were no connections between the separate systems. The governments of the 1850s did not envisage the need for either inter-state passenger or freight operations. When the broad and standard gauge lines from Melbourne and Sydney met at Albury, in 1883, it became apparent that a problem existed. Made worse in 1888 with the narrow and standard gauge from Brisbane and Sydney met at Wallangarra. South Australia and Victoria joined lines at Serviceton in 1887, but fortunately both had constructed their lines using broad gauge.

The issue of rail gauge change was highlighted in an 1889 military defence report authored by English army officer Major General James Bevan Edwards, but was ignored by the states who needed all passengers and goods to pass through customs and immigration at the inter-colonial border anyway. Federations changed this attitude. Customs and immigration disappeared and free trade between the

states was universal. The impediment of different gauges now became more apparent that it had previously.

At the time of Federation, standard gauge was only used in NSW, but was favoured due to it being the winner in amount that had actually been constructed. In 1921 a Royal Commission into rail gauge recommended gauge conversion of large areas of the country. Following the Royal Commission, agreements were made for a standard gauge line from Kyogle to South Brisbane (completed in 1930) and from Port Augusta to Port Pirie in 1937.

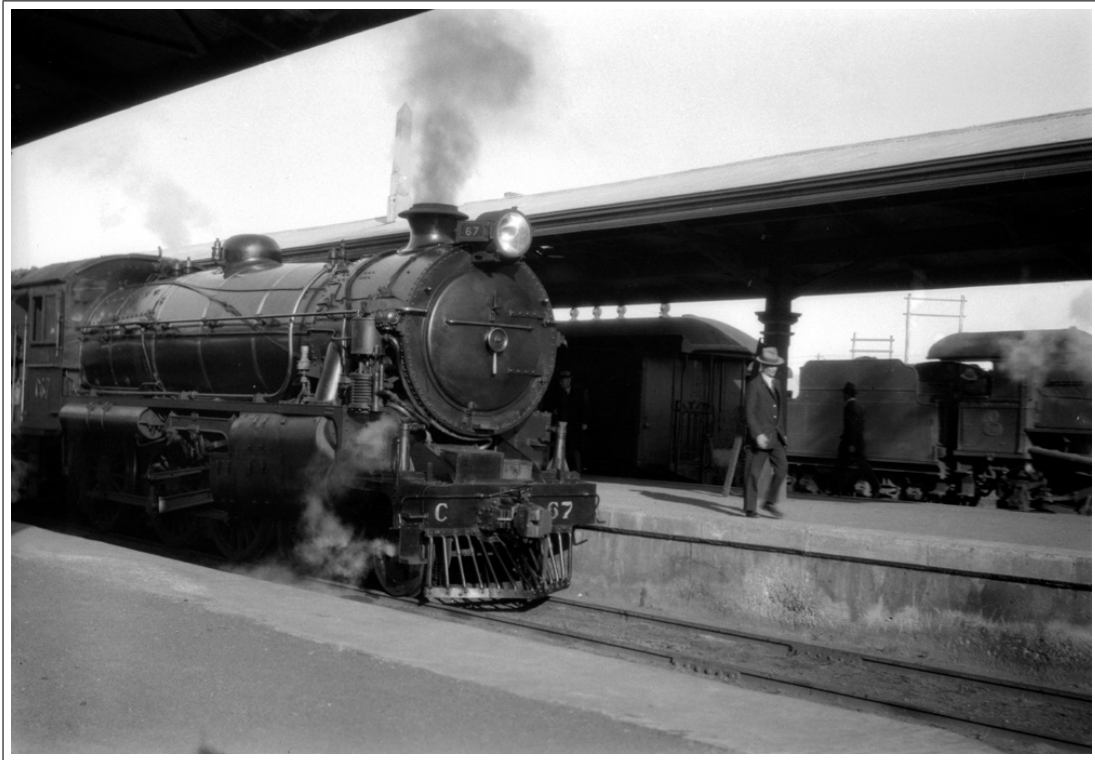
By World War II there were 12 breaks of gauge which great hampered the movement troops and goods. Break of Gauge stations in Australia have been located at:

- Kalgoorlie - standard, narrow
- Port Augusta - standard, narrow
- Port Pirie - standard, narrow, broad
- Gladstone - narrow, broad
- Terowie - narrow, broad
- Wolseley - narrow, broad
- Mount Gambier - narrow, broad
- Broken Hill - standard, narrow
- Tocumwal - standard, broad
- Oaklands - standard, broad
- Albury - standard, broad
- Wallangarra - narrow, standard
- Roma Street (Brisbane South), Fishermans Island (Sea Port) - narrow, standard
- Hamley Bridge had ceased to be a break of gauge in the 1920s, narrow, broad.
- Acacia Ridge - standard, narrow - was developed as a break-of-gauge in the 1970s to relieve overcrowding at Clapham.
- Bromelton - standard, narrow - is being developed in 2010 to relieve overcrowding at Acacia Ridge.

The Clapp Report

After the railways poor wartime performance, a report into the Standardisation of Australia's rail gauges was completed by former Victorian Railways Chief Commissioner Sir Harold Clapp for the Commonwealth Land Transport Board. It had three main proposals:

- Gauge standardisation from Fremantle and Perth to Kalgoorlie, all of South Australian and Victorian broad gauge lines, all of the South Australian south east and Peterborough division narrow gauge lines, and acquisition and conversion of the Silverton Tramway.
- New standard gauge 'strategic and developmental railway' from Bourke, New South Wales to Townsville, Queensland and Dajarra (near Mount Isa) with new branch lines from Bourke via Barrington, Cunnamulla, Charleville, Blackall to Longreach. Existing narrow gauge lines Queensland would also be gauge converted, including Longreach, Linton, Hughenden, Townsville Dajarra and associated branches.
- New standard gauge line to Darwin, including new line from Dajarra, Queensland to Birdum, Northern Territory, and gauge conversion of the Birdum to Darwin narrow gauge line.



Kalgoorlie - Commonwealth Railways C67 in station with WAGR train in other platform (*NRM Collection*)

The report also highlighted that if only main trunk lines were converted, a multitude of break of gauge terminals would be created resulting in greatly increased costs. It also recommended abandoning part of the existing Perth to Kalgoorlie narrow gauge line, and build a flatter and straighter route using 3rd rail dual gauge.

Effectively the report went nowhere. South Australia didn't like it, as the link to the Northern Territory bypassed them. Western Australia and Queensland both saw no advantage, as they already had a common gauge in their states, and only one main break of gauge. NSW agreed to the agreement to advance gauge standardisation in Victoria and South Australia, but did not ratify it.

Despite disagreements, some gauge conversion did continue. The South Australian Railways south east division from Wolseley to Mount Gambier and associated branches converted to broad gauge in the 1950s, in preparation for later conversion to standard gauge, and a new standard gauge between Stirling North and Maree opened in July 1957.

The Wentworth Committee

In 1956 a Government Members Rail Standardisation Committee, chaired by William Wentworth, was established. It concluded that while there was still considerable doubt as to the justification for large scale gauge conversion, but there was no doubt that work on some main trunk lines was long overdue. The committee supported three standardisation projects:

- Wodonga to Melbourne.
- Broken Hill to Adelaide via Port Pirie.
- Kalgoorlie to Perth and Fremantle

The Commonwealth, NSW and Victorian governments were first to start work, with the first through goods train to Melbourne operating on January 1962 and the first passenger train in April 1962. The work in Western Australia was done in conjunction with a new iron ore mine at Koolyanobbing and an accompanying steel mill at Kwinana. A new dual gauge line was built through the Avon Valley from

Midland to Northam, and a new line was built from Southern Cross to Kalgoorlie though Koolyanobbing. Officially opened in August 1969. In South Australia work on Port Pirie to Broken Hill standardisation did not start until 1963. Isolated narrow gauge lines at Gladstone and Peterborough resulted. From Cockburn to Broken Hill a new railway was built on an improved alignment, avoiding the privately owned Silverton Tramway route. The completion of this link enabled the first Indian Pacific passenger train to run across the nation in March 1970 from Sydney to Perth.

Whitlam Government

Work on a replacement for the narrow gauge Central Australia Railway, running from Marree to Alice Springs, was approved by the Whitlam Government in 1974. The new standard gauge route branched off the Trans-Australian Railway at Tarcoola and was completed by 1980, well ahead of schedule.

Work on standard gauge access to Adelaide started in 1982, with a new line from Crystal Brook near Port Pirie, and the remainder of the existing broad gauge route being converted to standard gauge. Freight trains began using the line in 1983, followed by passenger trains in 1984.

One Nation project

The *One Nation* project was carried out from 1991 to 1996 and involved a number of rail conversion projects. The Melbourne to Adelaide railway corridor was converted to standard gauge in 1995, A standard gauge/dual gauge link was also opened to the Port of Brisbane in 1997.

Australian Railway History

The first line opened in Australia was in South Australia in 1854, a horse-drawn line from Goolwa to Port Elliot. The first steam-powered line opened in Victoria in 1854, when the 4 km long Flinders Street to Sandridge (now Port Melbourne) line was opened by the Hobsons Bay Railway Company at the height of the Victorian gold rush. Following on from this each of the states started a major government funded building of railways to help expand the colonies and facilitate exporting of goods.

- 1854 - South Australia - (horse-drawn line) Goolwa to Port Elliot
- 1854 - Victoria - First steam powered railway from Melbourne to Hobson's Bay.
- 1856 - South Australia - Adelaide to Port Adelaide railway opened - 5' 3" (1,600 mm)
- 1865 - Queensland - Ipswich to Bigges Camp (renamed Grandchester in honour of occasion) on the way to Toowoomba railway opened - 3' 6" (1,067 mm)
- 1871 - Tasmania - Deloraine to Launceston railway opened - 5' 3" (1,600 mm), converted to 3' 6" (1,067 mm) in 1888
- 1879 - Western Australia - Geraldton and Northampton railway opened - 3' 6" (1,067 mm)
- 1883 - Railways of New South Wales and Victoria meet at Albury
- 1887 - Railways of Victoria and South Australia meet at Serviceton
- 1888 - Railways of New South Wales and Queensland meet at Wallangara
- 1889 - Northern Territory - Darwin to Pine Creek railway opened - 3' 6" (1,067 mm)
- 1915 - Canberra to Queanbeyan railway opened - 4' 8½" (1,435 mm)
- 1917 - 4' 8½" in (1,435 mm) (Standard gauge) Trans-Australian Railway completed between Kalgoorlie, Western Australia and Port Augusta, South Australia
- 1919 - Railways of New South Wales and South Australia meet at Broken Hill, New South Wales with break-of-gauge
- 1919 - first electric suburban trains run in Melbourne

- 1932 - 4' 8½" (1,435 mm) (Standard gauge) Sydney-Brisbane railway completed with the opening of bridge at Grafton
- 1937 - Trans-Australian Railway extended to Port Pirie and the 5' 3" (1,600 mm) (broad gauge) railway from Adelaide to Redhill extended to Port Pirie
- 1954 - first main line electrification, from Dandenong to Traralgon in Victoria
- 1962 - Albury to Melbourne 4' 8½" (1,435 mm) (standard gauge) railway gauge conversion opened, completing the Sydney-Melbourne railway
- 1968 - Kalgoorlie to Perth 4' 8½" (1,435 mm) (standard gauge) railway gauge conversion opened
- 1969 - Broken Hill to Port Pirie 4' 8½" (1,435 mm) (standard gauge) railway gauge conversion opened, completing the Sydney-Perth railway
- 1980 - Tarcoola, South Australia to Alice Springs 1,435 mm (standard gauge) railway opened
- 1982 - Adelaide to Crystal Brook, South Australia 1,435 mm (standard gauge) railway gauge conversion completed
- 1995 - Melbourne-Adelaide railway 1,435 mm (standard gauge) railway gauge conversion completed
- 2004 - Adelaide-Darwin railway 1,435 mm (standard gauge) railway completed

Funding

The Australian Federal Government have not regularly funded investment in railways except for its own railway operations, the Commonwealth Railways and the Australian National Railways Commission, which was privatised in 1997. They have considered the funding of railways owned by State Government to be a State responsibility. Nevertheless, loans to the States for gauge standardisation projects from the 1920s to the 1970s had been made available. From the 1970s to 1996, the Federal Government provided some grant funding to the States for rail projects, particularly under the One Nation program, announced in 1992, which was notable for the standardisation of the Adelaide to Melbourne line in 1995. Significant Federal Government funding was also made available for the Alice Springs to Darwin Railway, opened in 2004.

Substantial ongoing funding is now made available for freight railways through the Australian Rail Track Corporation and the AusLink land transport funding program. The Australian Rail Track Corporation (ARTC) is a Federal Government owned corporation established in 1997 that owns, leases, maintains and controls the majority of main line standard gauge railway lines on the mainland of Australia, known as the Designated Interstate Rail Network (DIRN).

AusLink and Infrastructure Australia

Under the AusLink program, introduced in July 2004, the Australian Federal Government introduced the opportunity for rail to gain access to funds on a similar basis to that of roads. AusLink established a defined national network (superseding the former National Highway system) of important road and rail infrastructure links and their intermodal connections. Rail funding has been given for signalling upgrades to numerous railway lines, gauge conversion of existing broad gauge lines in Victoria to standard gauge, new rail links to intermodal freight precincts, and extensions to existing crossing loops to permit longer trains to operate. Funding is focused on the National Network, including the rail corridors, connecting at one or both ends to State Capital Cities:

In 2008 Infrastructure Australia was created by the Australian Federal Government to oversee all rail, road, airports and other infrastructure at a national level.

South Australia Railway History

The Formation of the South Australian Railways (SAR)

Our State owned railways began with the opening, on 19th April 1856, of the 12 km broad gauge railway between Adelaide and Port Adelaide. This was the first Government built and owned steam railway in the British Empire. By 1860 a railway had been built to Kapunda where copper was first discovered in 1843 - and soon became the State's largest wheat receiving station. An extension, branching off at Roseworthy, was completed in 1870 to serve the mines at Burra. The Kapunda line was then pushed through to Morgan to capture Murray River paddle steamer trade from up-stream.



South Australian Railways Locomotive No. 1, built in 1856 for use on the Adelaide to Port Adelaide railway (*NRM Collection*)

The early lines were short, disconnected lines built in the direction of the nearest port such as Port Broughton - Mundoora (horse drawn), Port Pirie - Crystal Brook and Port Wakefield - Balaklava. Later, during the 1880's, efforts were made to centralise the system and eventually all lines, except for those on Eyre Peninsula, were linked to Adelaide.

To serve the mining and pastoral industries in the far north of the state, the Great Northern Railway was built from Port Augusta to Quorn in 1879, with the line reaching Marree in 1883, and Oodnadatta in 1891. In 1865 South Australia's Surveyor General, George Goyder, established a 'Line of Rainfall', past which rainfall was not reliable enough to support cropping. However good crops led many to ignore Goyder's advice and settlement occurred beyond Goyder's line, and for a few years there were even thoughts of farming the desert with a catch cry of *rainfall follows the plough!* Unfortunately Goyder's warnings were realised and poor return from many farms resulted in some lines being placed under threat of closure - even in the mid-1900's.

The Gauge Problem

A notorious hindrance to the economic development of Australia was each State operating its railways to different gauges - a problem no better illustrated than in SA, which by 1917, had lines built

in three different gauges. The problem greatly reduced in 1995 with the *One Nation* project ensuring each Australian mainland capital city was connected with uninterrupted standard gauge lines.



South Australian Railways Broad Gauge locomotive 620 on public display at the Centenary Exhibition at the Wayville showgrounds shortly before being introduced to service in 1936. (*NRM Collection*)

Broad gauge (1600mm or 5' 3")

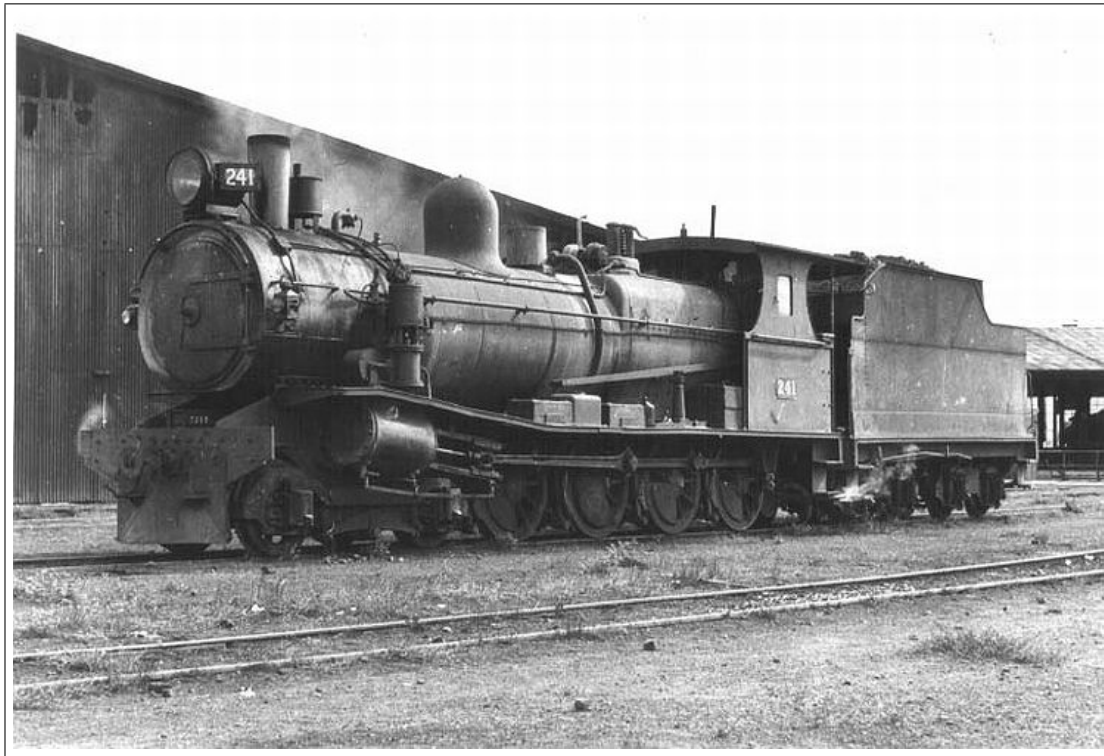
Initially adopted by New South Wales, Victoria, South Australia and Tasmania, these tracks could carry trains at higher speeds and passengers in greater comfort than narrower gauges but it was much more expensive to build. Its use was therefore initially restricted to the lines around Adelaide and to the Intercolonial railway between Adelaide and Melbourne which was completed in 1887. Despite the obvious problems created when NSW changed its mind to use standard gauge (a decision also made by the Federally owned Commonwealth Railways), South Australia continued to extend or convert lines to broad gauge. The Murray Mallee lines were built to broad gauge, and the mid-north lines were converted in the 1920's from narrow to broad, and all of the lines south of Wolseley (apart from Glencoe) were broadened during the 1950's.

Narrow gauge (1067mm or 3' 6")

Railways built primarily for the transport of grain to the nearest port did not require the speed or comfort provided by broader gauges. Narrow gauge was chosen for faster, less expensive construction throughout the mid-north, south-east and Eyre Peninsula. Longer lines to Cockburn (on the SA/NSW border) and Alice Springs were also built to this gauge. Today only the isolated grain lines of Eyre Peninsula remind us of the importance of 1067 mm gauge to the economic development of SA. Few realised that these lightly laid lines could not support the tonnages required to turn a profit in the future.

Standard gauge (1435mm or 4' 8½")

The first standard gauge line in SA was the Trans-Australian Railway running between Port Augusta and Kooragang Island in WA, built by the Commonwealth Railways, and opened in 1917. In 1937, standard



South Australian Railways Narrow Gauge locomotive T241 (*NRM Collection*)

gauge stretched to Port Pirie from Port Augusta, and to Marree in 1955. In 1970, the narrow gauge Port Pirie to Cockburn line, and the 56km privately run link through to Broken Hill was replaced by a standard gauge line, for the first time linking the East and West coasts of Australia - Sydney and Perth - with a single un-interrupted standard gauge line.

Break of Gauge Stations

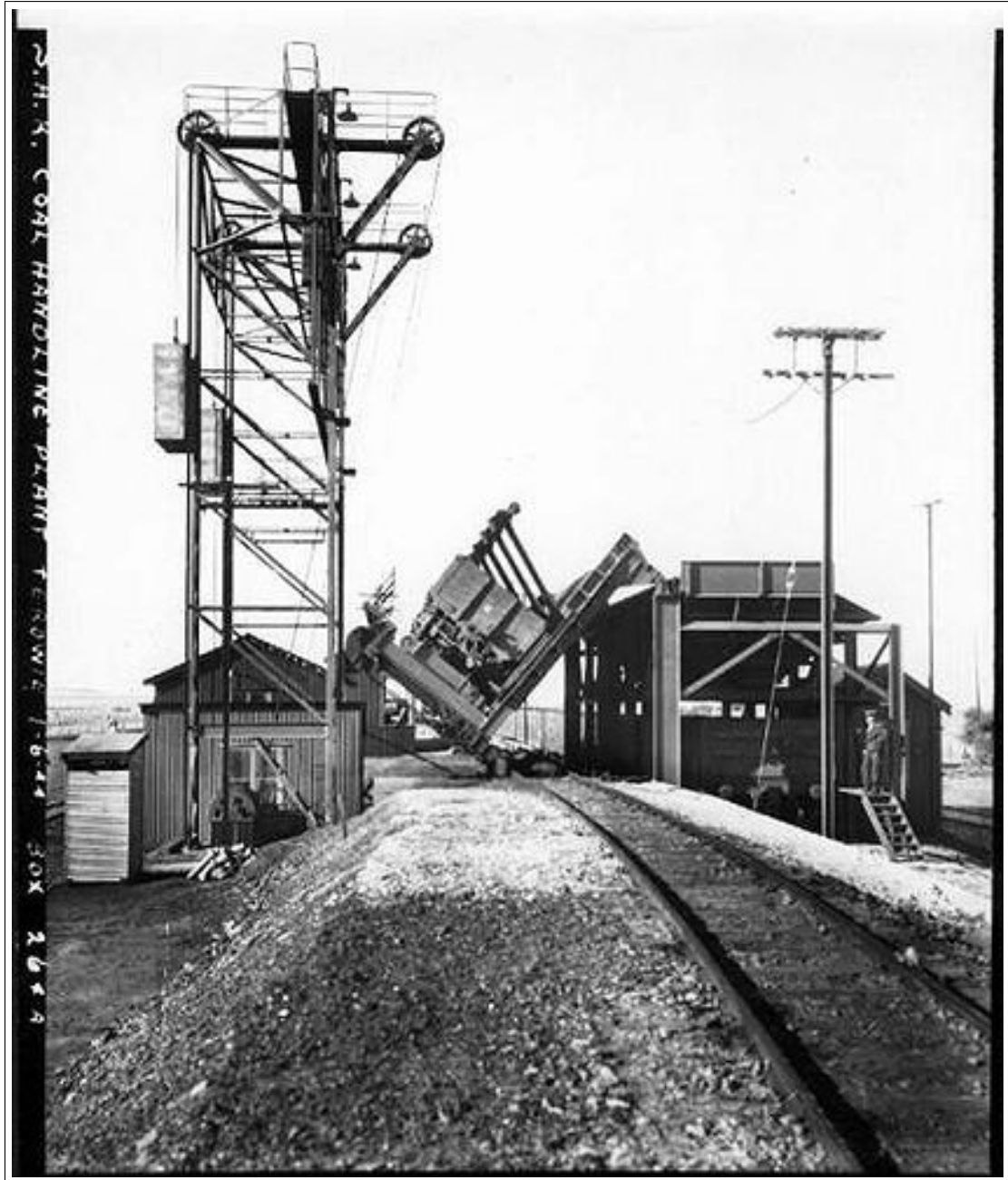
Terowie, in the state's mid-north, was the first site selected to become a 'break of gauge' station on the basis that wool from the north and east could be carried via broad gauge to the processing and marketing facilities at Port Adelaide, whilst grain could be carted on the narrow gauge to Port Pirie, the nearest coastal port.

As the rail network consolidated breaks of gauge also occurred at Hamley Bridge, Wolseley, Gladstone, Port Pirie, Port Augusta and Marree. When standard gauge connected Port Pirie with Broken Hill in 1970, triple gauge stations were created at Peterborough and Gladstone. Whilst travel for passengers was inconvenient, long distance freight traffic was onerously inefficient and this may help to explain why the road industry came to dominate transport.

It is part of SA's heritage that the Government has always determined the direction and nature of economic policy and infrastructure development. From 1906, cheaply constructed rail lines were pushed throughout the Murray Lands and from 1907 on Eyre Peninsula, purely to encourage agricultural settlement. By 1917, the South Australian Railways system comprised nearly 5,300 km of railways and would only grow a few hundred more.

The Webb Legacy

By 1922, through wear and tear, lack of maintenance, an ageing fleet of small locomotives and rollingstock, lightweight rail, declining revenues due to mine closures, the drain on the economy caused by the Great War, and because of many other problems, the entire South Australian Railways had decayed to the point of collapse. William Alfred Webb was appointed Commissioner for Railways that year following a proud record of achievement with several railroads in the USA. In his seven and a half years, he rebuilt the South Australian Railways to the pre-eminent position in Australia with his motto:



Transferring coal from narrow gauge wagons to broad gauge wagons at Terowie (*NRM Collection*)



The South Australian Railways 500 class was the biggest of the big power locomotives introduced by Commissioner Webb in the 1920's (*NRM Collection*)

“The only basis of economy in railway operation is the reduction of train miles by the use of large capacity cars and the largest possible locomotives.”

So began the big power era, and within ten years, a fleet of large modern locomotives had been purchased or built at the South Australian Railways Islington Workshops. Webb's program also included larger freight vehicles, new and stronger bridges, diesel railcars, expansion of Islington Workshops, track duplication and modern depots. Conversion of narrow gauge lines to broad gauge soon began throughout the mid-north in the 1920's, to allow the carrying of the much larger trains. Also accomplished in the Webb era was the rebuilding of Adelaide Railway Station, road delivery vans and trucks to compete with the private sector, new administrative procedures, refreshment services, train control, the South Australian Railways Institute and introduction of electric signalling.

South Australia's Passenger Services

From the early days South Australian Railways metropolitan and country passenger services were almost exclusively steam hauled. In 1924 Commissioner Webb introduced Model 55 rail cars, which became known as '*tinhares*', built by the Brill Company in the US for country services where passenger numbers were too low to justify steam trains. They were later relegated to suburban duties until their demise in 1968. A single Model 75 rail car arrived from the Brill Co. in 1926 and numerous others were built at Islington. The '*Barwell Bulls*', as they were quickly nicknamed, mostly operated over country branch lines until October 1971. To stem declining passenger numbers in the 1950's and 60's, modern air-conditioned *Bluebird* rail cars were introduced on country services in 1954 and the following year, *Red Hen* rail cars began operating on suburban lines. Steam engines last ran in SA in 1970 ending a remarkable history which began in 1856 at the Port Dock Station.

Passenger numbers continued to decline, but the closure of the remaining country passenger services in SA was left to Australian National Railways - even though South Australian Railways Commissioner Ron Fitch had been warning the Government for many years of the consequences of mounting financial losses. This was perhaps inevitable once the Government repealed in 1963 the Road and Railways Transport Act of 1930, thus exposing the railways to intense competition from road transport.



South Australian and Victorian Railways Joint Stock Car 'Weroni' (NRM Collection)

Interstate Passenger Services

The Intercolonial Express, later known as the Melbourne Express, became *The Overland* in 1936 and still carries that name today. It was the first direct passenger service between two states without a break of gauge. When opened in 1917, the Trans-Australian Railway carried passenger services, but to travel from coast to coast meant a route via Melbourne, and included about six train changes. With completion of the east-west standard gauge project in 1970, a new direct service became known as the *Indian Pacific*, but it took until 1986 before the *Indian Pacific* operated via Adelaide.

The Ghan to Alice Springs, affectionately named after the Afghan (actually Pakistani) cameleers who provided much of the early transport throughout the arid interior, began on the old narrow gauge line to Oodnadatta in 1929. It still runs today, travelling all the way to Darwin on the new standard gauge route to Alice Springs which opened in 1980, and on the extension to Darwin which opened in 2004.

Other Railway Operators in South Australia

Commonwealth Railways (CR)

The Commonwealth Government entered the world of railways when in 1911 it acquired the narrow gauge Pt Augusta to Oodnadatta line - operated by the South Australian Railways until 1926. The Commonwealth Railways completed the line to Alice Springs in 1929. The Commonwealth was also responsible for the building of the Trans-Australian Railway, opened in 1917 between Port Augusta and Kalgoorlie, and for the North Australian Railway extension, from Pine Creek to Birdum in the Northern Territory.

Silverton Tramway Company (STC)

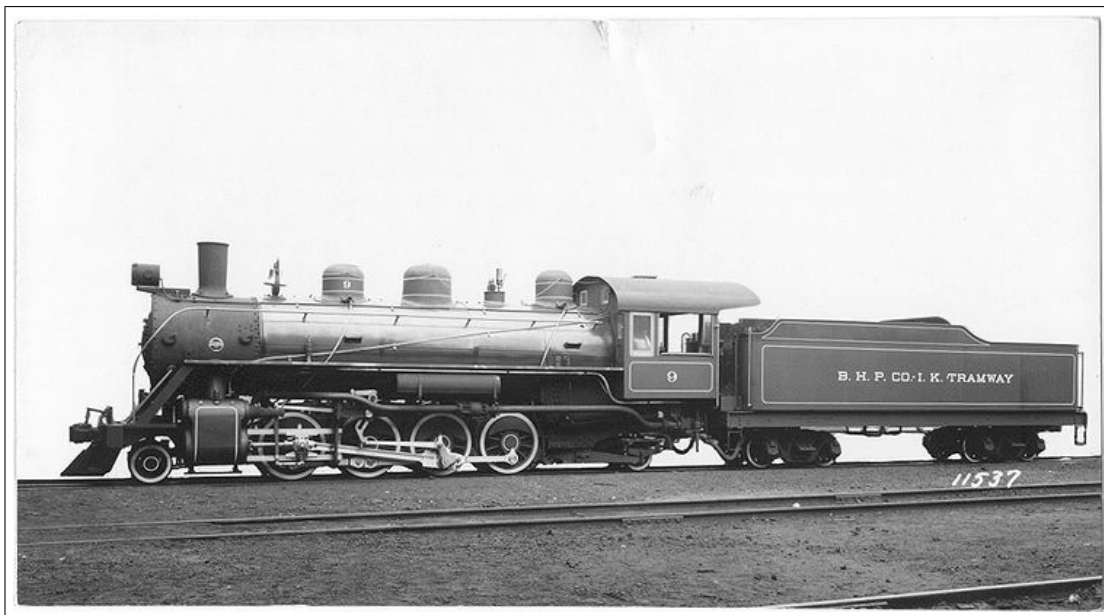
The NSW Government refused to allow the South Australian Railways to complete the narrow gauge link across the border to enable the transport of ore from the Broken Hill mines to the smelters at Port Pirie. This led to the formation of the privately owned Silverton Tramway Company, which from 1888 to 1970 operated the 56 km link from Cockburn in SA to Broken Hill. Until recently the company still existed as a major contractor to the national freight industry, though the Silverton tramway was closed following the linking of Broken Hill and Port Pirie by standard gauge in 1970.

BHP and other private operators

In 1902 the Broken Hill Proprietary Company (BHP) opened a private tramway between its iron ore mine at Iron Knob and its jetty at Hummock Hill (now known as Whyalla). Over time the narrow gauge line was diverted and extended to mines at Iron Baron and Iron Duke, both of which still operate today, supplying iron ore to the furnaces at Whyalla - now owned by the OneSteel company, with the rail operations run by Genesee & Wyoming Australia. BHP also operated a standard gauge



Commonwealth Railways standard gauge locomotive GM1 at Port Augusta (*NRM Collection*)



BHP's Baldwin Steam Locomotive No. 9 (*NRM Collection*)

line from Coffin Bay, on the lower Eyre Peninsula, to Proper Bay (near Port Lincoln) for the transportation of mineral sand until 1989. In addition to these lines, BHP also operated a small number of locomotives for shunting operations at its Port Pirie smelter, with the Electricity Trust of South Australia doing similar at the Stirling North Power Station.

Rail Standardisation

The only way for South Australia's railways to participate in the movement of freight nationally was to standardise all main through lines to 1435mm. The South Australian Railways and Commonwealth Railways mutually agreed to link Pt Augusta and Adelaide, via Pt Pirie, by the construction of a new



Building the Tarcoola to Alice Springs line (*NRM Collection*)

standard gauge line between Pt Pirie and Pt Augusta, and a new broad gauge line between Redhill and Pt Pirie, both completed in 1937. In 1955 the Commonwealth Railways built a new standard gauge line from Stirling North to Marree, primarily for the transport of Leigh Creek coal to the Stirling North power station (located near Port Augusta). Another major standardisation task, to link Sydney and Perth, was opened between Broken Hill and Pt Pirie by the South Australian Railways in 1970. Once plagued by floods and derailments, the narrow gauge from Marree to Alice Springs was finally replaced in 1980 by a new standard gauge route, branching off at Tarcoola on the Trans-Australian line. The broad gauge between Adelaide and Pt Pirie was replaced by standard gauge, linking at Crystal Brook, in 1982. The Federal Government's 'One Nation' project resulted in the broad gauge between Melbourne and Adelaide being standardised in June 1995. All mainland State capitals were directly connected by standard gauge! Ironically, this section was the first with a common gauge across a State border - opened in 1887!

Amalgamation & Privatisation

In 1978 the Commonwealth Railways, South Australian Railways and Tasmanian Government Railways were amalgamated to form Australian National Railways - and it took over the operation of all Commonwealth and non-urban South Australian lines (and the railways of Tasmania). At the same time, the State Transport Authority of South Australia (which was to become TransAdelaide) was created to operate all the Adelaide suburban rail lines.

With the Federal Government move towards microeconomic reform, it decided to privatise the railways. One of the steps towards that goal was the creation of National Rail in the early 1990's, which then eventually led to the sale of Australian National in November 1997. Great Southern Railways took charge of the ex-Australian National passenger services, while Australia Southern Railroad (now Genesee & Wyoming Australia) took control of the remaining functions - ownership of ex-Australian National locomotives, wagons and branch lines. Enter the era of private rail companies running their own trains over a combination of Commercial, State and Commonwealth Government owned tracks.



Australian National's BL33 helps shunt a train at Mile End (*NRM Collection*)

New South Wales Railway History

The Formation of the New South Wales Railways (NSWR)

Construction of railways in the colony of New South Wales' began in 1854, when the first line, from Sydney to Parramatta Junction, was built. After two decisions to change the rail gauge (see on page 9) the decision was made to construct all lines in New South Wales in uniform *Australian Standard Gauge* of 1,435 mm (4'8½"). The Southern line, connecting with the state of Victoria, was built in stages from Parramatta Junction to the border at Albury, connecting to the Victorian Railways at a break-of-gauge in 1883. The break-of-gauge was removed in 1962 with a new standard gauge line from Albury to Melbourne was completed.

During the late 1800's various country lines were built to connect the ports of Sydney and Newcastle to the rural interior. The Main North line, from Newcastle to Wallangarra, then on to the Queensland border was constructed between 1857 and 1888, with a break-of-gauge at the border. Sydney and Newcastle was finally connected in 1889.

Construction of the shorter, single-gauge, North Coast railway line between Sydney and Brisbane commenced in 1905, being completed by the opening of the Grafton Bridge in 1932. The main line to Broken Hill, along with the break-of-gauge connection with South Australia, was completed in 1927. In 1969 the South Australian break-of-gauge was removed as part of the Sydney to Perth rail standardisation project.

In 1926 work began on electrifying Sydney's urban railways and connecting them together via new lines.

Sydney Suburban Network

The first company to start rail transport in New South Wales was the *Sydney Railway Company* which was incorporated in 1849. Its aim was to building a railway from Sydney to Parramatta. The company encountered many troubles and was eventually transferred to the government of New South Wales

September 1855. The line from Sydney to Parramatta Junction (near Granville Station), opened on 26 September 1855, with stations at Newtown, Ashfield, Burwood and Homebush.

Construction of the what are today the main parts of the Sydney's suburban rail network where mainly undertaken during the late 19th and early 20th century, with 1500 V DC electrification being introduced from 1926. In 1932, the Sydney Harbour Bridge was completed and the inner city line from Central to Town Hall, Wynyard, Milsons Point and North Sydney was opened. In 1956, the Circular Quay station opened. The underground Eastern Suburbs railway was completed to Bondi Junction in 1979. In 2000, the line to Sydney Airport and Wolli Creek was opened, and more recently the Epping to Chatswood Rail Link, opened in 2009.

Private Railways

A number of private lines were built to connect the South Maitland coalfields (discovered in 1886) with the Great Northern Railway at East Greta Junction near Maitland. By 1918 most of these had been merged into the South Maitland Railway.

A narrow gauge railway was built by South Australian Railways from Port Pirie, South Australia to Broken Hill, in 1888 to serve its silver and lead mine, which was becoming the largest and richest of its kind in the world. Since the New South Wales Government would not allow the South Australia Railways to cross the border, the last 30 km was built by the private Silverton Tramway Company. The line ran from Cockburn in South Australia to Broken Hill via Silverton. The line was replaced, in 1970, by the opening of the new standard gauge line from Sydney to Perth.

A number of other private railways have been built in New South Wales to serve coal mines, steel works (notably the Port Kembla steel works) and quarries, especially in the first half of the 20th century.

Foreign railways

Because isolated parts of New South Wales are closer to adjacent states rail systems than the NSW state owned system, foreign lines of different gauges have extended short distances into New South Wales.

These include:

- Silverton Tramway from Cockburn, South Australia to Broken Hill via Silverton - 3 ft 6 in (1,067 mm) gauge.
- Queensland Rail from Queensland to Tweed Heads - 3 ft 6 in (1,067 mm) gauge.
- Deniliquin and Moama Railway Company from Moama to Deniliquin, connecting with the Victorian system at Echuca - 5 ft 3 in (1,600 mm) gauge.
- The Victorian Railways Goulburn Valley line being extended north into Tocumwal - 5 ft 3 in (1,600 mm) gauge.
- The 1922 Border Railways Acts authorised the construction of lines from Victoria to Balranald, Oaklands, Stony Crossing, and Lette - 5 ft 3 in (1,600 mm) gauge.

Queensland Railway History

February 25, 1864, saw the turning the sod of the first Queensland railway, performed at Ipswich. After a long Parliamentary fight, the battle of the gauges in Queensland had been settled in favour of the 1067mm (3'6") gauge. The new narrow gauge railway would link Ipswich with Toowoomba, with the first section to Bigges Camp (later renamed Grandchester) opening on 31st July 1865. The line quickly proves to be problematic. The light weight rail, sharp curves, steep grades and tight tunnels, severely limited the size of the locomotives that could be used. Toowoomba was reached by rail in 1867, and the line was extended to Dalby in 1868. By 1876 it had reached Brisbane.

Over the next few decades the reach of the lines was extended reaching Cunnamulla in 1898, Tara in 1914, Meandarra in 1927 and Glenmorgan in 1931. Other branches connected Oakey to Cooyar in 1913, Miles to Wandoo in 1914 and Roma to Orroroo in 1916 and Injune in 1920.

Historically construction of lines in Queensland was exclusively restricted to narrow gauge, except for the standard gauge link from New South Wales into Brisbane, completed in 1930. Operationally a part of the New South Wales system and run by their government owned railways, even though the line itself was owned by Queensland. From 1994 National Rail took over the operation of virtually all standard gauge freight services to and from Brisbane, as part of a reorganisation of interstate freight in Australia.

On the narrow gauge, Queensland Rail operates all passenger services and hauled the majority of freight. In 2005 the first non-Queensland Rail narrow gauge commercial rail operation started when Pacific National Queensland (a subsidiary of Pacific National) commencing operation of container services between Brisbane and Cairns. This was followed in 2009 by their entry into the export coal market. Standard gauge passenger services are provided by the New South Wales based CountryLink using their XPT.

Private Railways - Sugar Cane Tramways

A number of tramways of 610 mm gauge for the transport of sugar cane have operated in Queensland as private concerns, associated with the relevant sugar cane mill. These tramways are quite advanced technically, with hand-me-down rails cascaded from the normal rails, remote-controlled brake vans, concrete sleepers in places, and tamping machines in miniature. The twenty or so separate tramways cooperate in research and development.

Tasmania Railway History

The Formation of the Tasmania Government Railways (TGR)

Railway construction in Tasmania began when a private broad gauge railway (1600 mm), between Deloraine and Launceston, was constructed in 1871 by the *Launceston and Western Railway* company. It was initially funded by debt guarantees from landowners who stood to benefit from the railway, but quickly went bankrupt, and had to be taken over by the Tasmanian Government in 1872.

Despite the failure of the first private railway venture, the Tasmanian Government agreed to act as guarantee to another company, the *Tasmanian Main Line Company*, who intended to build a narrow gauge (1067 mm) line from Hobart to Evandale, near Launceston. The new line opened on 1st March 1876, and was extended to connect with the *Launceston and Western Railway* at the Western Junction break-of-gauge station, opening on 1st November, 1876.

To alleviate tranship of cargos, the line between Western Junction and Deloraine was converted to dual gauge on 17th March, 1885. On 30th May, 1885, the line was extended to Devonport, followed by the removal of all broad gauge in 1888 when Tasmania officially became a solely narrow gauge (1067 mm) network on 18th August 1888.

The Tasmanian Government bought the *Tasmanian Main Line Company* on 1st October 1890 and created the *Tasmanian Government Railways* to operate all the Government owned railway lines.

The Devonport line was extended to Burnie in 1901, connecting with the private *Emu Bay Railway* line to Zeehan, which had been completed the previous year. The government railway was extended to Wynyard in 1913 and to Wiltshire Junction in 1922, connecting with the already existing line between Stanley and Smithton.

Other significant construction included

- Mole Creek Line - A branch line was opened from Deloraine (Lemana Junction) to Mole Creek in 1890. This line closed in 1985.
- Scottsdale Line - Opened from Launceston to Scottsdale in 1889, and extended to Branxholm in 1911, and Herrick in 1919.

- Fingal Line - Opened from Conara Junction (on the Hobart - Launceston line) to St Marys in 1886.
- Oatlands Line - Opened from Parattah to Oatlands on 13th May, 1885. The line closed in 1949.
- Derwent Valley Line - Opened from Bridgewater to New Norfolk in 1887, and was extended to Glenora in 1888. The ultimate terminus of Derwent Valley line was Kallista which was reached on 6th July, 1936.
- Bellerive-Sorell Line - This isolated line was built between Bellerive and Sorell on the northern shore of the Derwent River in 1892. It closed on 30 June, 1926.
- Strahan-Zeehan Line - This isolated line was built between Zeehan and Regatta Point and opened in 1892. The line was fully closed on 25th January, 1963.
- Don River Line - Opened between Don Junction and Paloona in 1916, and extended to Barrington in 1923. The line was completely closed back to the junction in 1963, but the section from Don Junction to Don Township was reopened on 20th November, 1976 by the *Don River Railway*.
- Bell Bay Line - Built between Launceston and Bell Bay in 1974, to access the industries established there, including shipping.

Emu Bay Railway

When built, the earlier lines of the West Coast, Tasmania were independent of the main Tasmanian Railway system, but most connected to the privately operated *Emu Bay Railway*. The *North Mount Lyell Railway* and a few other smaller lines were not connected to the Emu Bay line.

The *Emu Bay Railway* was purchased by the *Australian Transport Network* on May 22 1998, thus merging that line with the remainder of the Tasmanian system. Today Emu Bay is known as the Melba line.

Operators

Historically the mainline railways were operated by the *Tasmanian Government Railways*, which was absorbed into the *Australian National Railways Commission* in 1978 and renamed *TasRail*. In November 1997, *TasRail* was sold to the *Australian Transport Network*, a partnership of New Zealand based *Tranz Rail* and United States railroad *Wisconsin Central*. The sale also included a 50 year lease of the Crown land on which the Tasmanian railway network was situated.

In 2004 the railway was purchased by *Pacific National* following the purchase of *Tranz Rail* by *Toll Holdings*, and the sale of *Wisconsin Central's* overseas investments as a result of that railroads takeover by *Canadian National*.

In September, 2005 *Pacific National* threatened to 'withdraw all services' unless the governments paid a \$100 million subsidy. In May 2007 the Tasmanian Government, the Federal Government and *Pacific National* came to an agreement regarding the funding, ownership and operation of the Tasmanian railway network; with the State of Tasmania acquired the railway infrastructure previously leased to *Pacific National*, who continued to provide above rail services on the network.

In September 2009 the Tasmanian Government and *Pacific National* formally entered into a business sale agreement for purchase of the Tasmanian rail business. The rail infrastructure and railway operations were transferred to a new State-owned rail company, *Tasmanian Railway Pty Ltd* trading as *TasRail*.

Today, rail transport in Tasmania consists of a network of narrow gauge track (1,067 mm) reaching virtually all cities and major towns. Services are focussed primarily on bulk freight, with no commercial passenger services being operated.

Victoria Railway History

History

Australia's first steam operated railway was a 4 km (2½ mile) broad gauge (1600 mm) line between the Melbourne City Terminus (on the site of modern day Flinders Street Station) and Sandridge (now Port Melbourne), constructed by the *Melbourne and Hobson's Bay Railway Company*. It opened in September 1854.

The first country line open in 1857 when the *Geelong and Melbourne Railway Company* opened a line from Melbourne to Geelong. From that time onwards the majority of early Victorian lines were constructed by privately companies, until the 1870s when the *Government Railway Department* (*Victorian Railways*) began major railway line construction.



Geelong Station (*Victorian Railways*)

The suburban network expanded to Richmond in 1859, then later to Brighton and Hawthorn by the early 1860s. Initially, the suburban lines were all built by private companies who based their operations around Flinders St, which lead to them amalgamating into the *Melbourne and Hobson's Bay United Railway Company* by 1865, with public ownership coming in 1878.

In 1862 Victorian railways reached the gold rush towns of Bendigo and Ballarat, and in 1864 the Murray River port of Echuca was reached.

The first inter-state rail system connection was made, when the Victorian system connected with the state of New South Wales at Albury in 1883. This required a break-of-gauge as the New South Wales system was standard gauge (1,435 mm). A second inter-state connection followed in 1887 when the broad gauge South Australian Railways linked with Victoria at Serviceton.

The majority of the railways of Victoria are of 1,600 mm (5' 3") broad gauge. In addition, the Victorian Railways experimented with four short narrow gauge lines of 762 mm (2' 6") in the early 20th century. Efforts to eliminate the multiple gauge issue were proposed many times in the intervening years, but little real action was taken. By the 1950s, interstate traffic was suffering from the break-of-gauge at the border, so a parallel standard gauge line was opened from Albury to Melbourne in 1962, along with a bogie exchange depot to allow wagons to operate on both the broad and standard gauge networks. The other interstate link, from Melbourne to Adelaide, South Australia, was not converted from broad to standard gauge until 1995.

Today the standard gauge network consists of the two main interstate lines, and a number of branch lines in the west of the state.



Construction of the Victorian Railways 'X' Class Steam Locomotives (*Victorian Railways*)

Narrow Gauge Private Railways

In addition to the main Victorian rail network, a number of narrow gauge private railways and tramways have also existed for logging and mining purposes. These included the Yallourn 900mm Open Cut Coal Mine Railway in the Latrobe Valley, the Fyansford Cement Works Railway near Geelong, the Tyers Valley Tramway at Mount Baw Baw, and the Powelltown Tramway from Yarra Junction.

Most of the logging tramways operated in the Otway Ranges, Gippsland, and the inner east of the Great Dividing Range; primarily between the 1850s and the 1950s, with only one surviving into the 1960s. They were primarily of 1067 mm (3'6") or 914 mm (3') gauge, with 610 mm (2'), 762 mm (2' 6"), 1,219 mm (4'), 1,600 mm (5' 3") and variants also used.

Today in Victoria passenger services are operated by *Metro Trains Melbourne* in suburban Melbourne with electric multiple units, and *V/Line* in regional Victoria with diesel trains. Freight services are operated by *Pacific National* and other private operators such as *El Zorro*, *Specialised Container Transport* and *QRNational*.

Western Australia Railway History

The railways of Western Australia began as a series narrow gauge (1067 mm) lines from Fremantle, Geraldton, Bunbury, Albany and Esperance. Some of the lines were privately funded, mainly for carrying grain and minerals, but the majority of the network was instigated by the state government.

The private *Midland Railway Company* and *Great Southern Railway* constructed lines in the wheat belt with the support of land grants.

Although the network majority of the network in south-western Western Australia was built as narrow gauge, standard (1435 mm) gauge lines now connect Perth and Esperance to the national inter-state network. Western Australia got its initial connection to the eastern states of Australia in 1917 with the opening of the standard gauge (1435 mm) Trans-Australian Railway linking Port Augusta, South Australia to Kalgoorlie, Western Australia.

In the northern part of the state long distance heavy-haul railways have been built, principally in the Pilbara region, for the transport of minerals. Major mining companies, such as BHP Billiton and Hamersley Iron, operate these railways exclusively for the transport of the mining ore to port.

The state railways in Western Australia were initially controlled by the Department of Works and Railways, until 1890 when the *Western Australian Government Railways (WAGR)* was created. WAGR became *Westrail* in 1975 and continued to manage both passenger and freight rail services in Western Australia until 2000, when the state owned freight operation was sold to *Australian Western Railroad* - a subsidiary of the *Australian Railroad Group (ARG)*. The *Australian Western Railroad* operation was purchased by *Queensland Rail* in 2006.

Significant events in Western Australia's rail history include

- 1871 - Private timber railway opens from Lockville to Yoganup, south of Perth
- 1879 - Government 1067 mm gauge line opens between Geraldton and Northampton to transport lead and copper to port
- 1881 - Line from Fremantle to Perth and Guildford opened by the Western Australian Government Railways (WAGR)
- 1889 - Beverly line was extended to Albany by the *Great Southern Railway*
- 1893 - Line opens from Perth to Bunbury
- 1894 - *Midland Railway Company* opens line from Midland Junction to Walkaway, connecting with the Government Geraldton line
- 1896 - Line reaches Kalgoorlie
- 1917 - Standard gauge Trans-Australian Railway connects eastern Australia with Western Australia, with a break-of-gauge at Kalgoorlie
- 1968 - Kalgoorlie to Perth standard gauge line opens. (Lines east of Northam converted to standard gauge, including Kalgoorlie to Esperance. North and south of Northam remains narrow gauge only. West of Northam becomes dual gauge.)
- 1986 - Electrification of Perth suburban lines with 25 kV AC overhead power supply commences
- 1993 - Northern Suburbs Transit System commences operation with the opening of a new line from Joondalup to Perth
- 2007 - The Mandurah railway line opens as part of the *New MetroRail* project, which also included construction of the Thornlie spur and Greenwood railway station.

In Western Australia today passenger rail services are controlled by the Public Transport Authority (a department of the Government of Western Australia) through *Transperth* who operates public transport in Perth, and *Transwa* who operates country passenger services. Privately owned *Great Southern Railway* also operates the *Indian Pacific* trains that connect Perth with the eastern states.

Intrastate freight is mainly operated by the *Australian Railroad Group (ARG)*, while interstate traffic is operated by *ARG*, *Pacific National*, *Specialised Container Transport* and *QRNational*. A number of private iron ore haulage railways also operate in the Pilbara region of the state.



NRM Exhibits Guide

TEA AND SUGAR TRAIN

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A short history of the NRM's *Tea and Sugar* cars

The *Tea and Sugar* is well known to most people as the train that services the remote employees on Australian Nationals Trans Australia line. It began life very early this century during the construction phase of the Trans Australia Railway (TAR) which links Port Augusta to Kalgoorlie. The original survey party recommended that a line of 1,063 miles in length be built to the then new Australian Standard of 4 ft. 8½ in., with a ruling grade of 1 in 80, and a minimum curvature of 20 chains radius for a total estimated cost of £4,000,000. The leading cost items were permanent way and water supply. Once construction had begun it became apparent that apart from shortages caused by World War I, keeping the workers supplied with materials and food was destined to be one of the biggest organisational headaches for the line builders. Initially an ad-hoc service using a brake van to transport goods was implemented with the exact inauguration of the *Tea and Sugar* as a regular service being a bit of a mystery. Certainly by 1915 it had been formally recognised with the provision of dedicated vehicles for use as a travelling supply van, butcher shop and a fruit and vegetable van.



Tea & Sugar consist with Locomotive G1 at its head gets shunted by Diesel 515 at the rear of the consist - 21st September 2008 (*Chris Drymalik*)

Whilst construction was taking place two sets of vehicles were provided, one for the Kalgoorlie construction crews and the other based at Port Augusta. The two pair of supply and butchers vans initially began life in 1913 as 'B' class four wheel ballast wagons built under contract by Grey Brothers for use on the construction. Sometime about 1915 the ballast wagon bodies were removed and the underframes fitted with newly constructed bodies. The general stores/supply vans were a simple wooden van body, but the butchers cars were far more interesting. Part of a sheep wagon and a wooden van were combined to create a hybrid vehicle that was used to transport live sheep that were killed enroute when and as required. This arrangement had been forced on the Commonwealth Railways as no suitable method of refrigeration was available to keep killed meat fresh for long periods. All the vehicles once converted were classified as 'VS' 4 wheeled enclosed vans, having the road numbers 123, 126, 248 and 426 despite their unusual modifications. The fruit and veg van is a bit of mystery, as very little information on it survives, but it is suspect it was just a standard enclosed 4 wheel 'VS' class van.



Commonwealth Railways Tea & Sugar Provision Van and Butcher's Van FA 640 - 21 September 2001
(Chris Drymalik)

Early in 1918 authorization was granted to construct a replacement travelling Butchers shop. The contractors, Fullerton Brothers, had repeatedly complained about the existing accommodation and lack of facilities. Enclosed V class van No. 258 and S class sheep wagon No. 308 each donated half their respective bodies to the other creating two new hybrid vehicles which were coded SA 258 and SA 308 at a cost of £142 and £101 each respectively. Despite the original complaints, that had forced the new vehicles to be constructed, the replacement vans facilities were still so spartan that Fullerton Brothers made the following request to the Railway Commissioner on behalf of their employees on 15 November 1919.

'I consider that a stove should be placed in the van on the eastern side. At the present time there are no means by which the butcher, the man in the fruit and vegetable van, and the man in the provision and bread van, can cook their meals on the train. They have to jump out and light a fire, whenever the train stops and boil the billy alongside the line. In some cases the train goes before the billy is boiled. The Commissioner originally approved of a stove being placed in this van; but it was not put in...'

As a result of this submission better facilities and accommodation were provided in 1922 at a cost of £634, with the hirer (Fullerton Bros) being forced to pay the Commonwealth a new rate, set at £1 per week, to use the van.

The two original VS class stores vans were replaced on 8 November 1920 by purpose built vehicles VP 351 and VP 352. Whilst the new vans provided improved accommodation, electric light was lacking and was not fitted to the provisions and meat supply vans until 1924. Prior to this lighting had been provided by kerosene lamps.

After the initial vehicle building program, following completion of the line, nothing much happened to the rollingstock used on the *Tea and Sugar* until 1944 when two new bodies were built for use as mobile Butchers cars. FA class van No. 640 (see page 224) entered service on 20 November 1944, being constructed on a 45' flat wagon that originally had been built in 1916. The other van FA 658 entered service on 18 December 1944 and had been built on the underframe of a G class open wagon. Apart from new refrigeration units fitted in 1963 both vans remained basically unaltered, apart from minor overhauls, until being written off on 11 September 1982. They were stored at Port Augusta and Stirling North for six years until FA 640 was delivered to Port Dock Station Museum on 2 August 1988 and FA 658 was tendered for disposal. Unfortunately prior to being obtained by the Museum FA 640 was badly vandalised and many fittings stolen. It is currently stored under cover awaiting full restoration.

In 1955 the two existing provision stores vans were replaced by two purposed built brand new all steel framed vehicles. Entering service on 18 October 1955, VPA 1339 provided a far superior service and facilities to that of the then existing vans. The other provisions stores van VPA 1340 (see page 227) entered service on 14 December 1955 having cost the Commonwealth Railway £28,889 to construct. When the first van entered service it was painted with 'PROVISION C.R. STORE' on the side. The Commissioner ordered that the van immediately be withdrawn and the lettering changed so that the 'CR' appeared above the words 'PROVISION STORE'. The other van VPA 1340 entered service correctly painted.

Both vans were recoded from 'VPA' to 'OPA' on 30 November 1984 and officially written off on 3 May 1986 with VPA 1340 being transported to Port Dock Station Museum on 2 August 1988. Both vans had become surplus due to Pullman sleeping cars *Macedon* and *Mount Lofty* being converted to new provisions store cars VPB 74 and VPB 328 respectively. The *Macedon* and *Mount Lofty* cars had originally been imported from America in 1928 for use as sleeping cars on the Adelaide to Melbourne Express (later named 'The Overland'). *Macedon* was sold to the Commonwealth by the Victorian Railways and entered service as twinette sleeping car ARC 74 for use on the TAR on 21 July 1950. Initially painted chocolate and cream, it was repainted maroon and silver in 1964 and stayed that way until being withdrawn in 1973. *Mount Lofty* was purchased from the South Australian Railways on 25 August 1964 along with several surplus wooden cars. It was never used by the Commonwealth, instead being stored until earmarked for conversion in 1973. *Mount Lofty* re-entered service on 1 June 1979 as VPB 328, the interior having been completely stripped and fitted with shelves, a staff sleeping compartment and full air conditioning. The exterior was repainted grey and almost all windows sealed over. *Macedon* was converted similarly and re-entered service on 29 October 1979 as

Section	Train	System	Gauge
Perth- Kalgoorlie	Westlander	WA Government Railways	1067mm (narrow gauge)
Kalgoorlie - Pt Pirie	Trans-Australian	Commonwealth Railways	1435mm (standard gauge)
Pt Pirie - Adelaide	West East Express	SA Government Railways	1600mm (broad gauge)

Table 3.1: Changing trains on the journey from Perth to Adelaide

VPB 74. Both vehicles were recoded from 'VPB' to 'OPB' in 1984 and remained in regular service each week on the *Tea and Sugar* until the service was discontinued in 1996.

A number of other special vehicles were used occasionally on the *Tea and Sugar*, these included Pay cars (see page 226), Show Room car, and a Community Welfare car. Other than the Pay car, they generally appeared on an irregular schedule, being included when special groups or services were being offered and would sometimes be returned on trains other than the *Tea and Sugar*.

Apart from the vehicles mentioned above, the *Tea and Sugar* train regularly used old wooden Trans-Australian passenger cars (see page 179) for the transportation of employees. In later years these vehicles were replaced with several ex South Australian Railways steel cars and New South Wales cars specially obtained for the service.

The Trans-Australian Railway

Joining the rail network of the state of Western Australia into the eastern states network had been promised as part of the 1901 Federation of all the Australian states. Construction of the new *Trans-Australian Railway* commenced in 1912 when the first sod was officially turned. Initially construction plans called for the railway to be built from Kalgoorlie in Western Australia to Port Augusta in South Australia. At both of these points a connection could be made into the existing state rail systems by a simple change of trains. Later the railway line was extended in South Australia from Port Augusta to Port Pirie to make it easier to travel onto Adelaide. However even then, to travel from Perth to Adelaide it was necessary to travel on other trains of different gauges to complete the journey.

The Trans-Australian line was the first major project to be constructed by the new Federal Government, who designed, built and operated the railway as a separate entity from the state based system that it connected to. The original survey party decided on a route that was 1,063 miles (1711 km) in length and it was agreed that it should be built to the then new Australian Standard rail gauge of 4' 8½", despite the rail system it connected to at either end being to a gauge of 3' 6". The ruling grade was 1 in 80, and a minimum curvature of 20 chains radius.

As a result of the difference in gauges at the end point the railway, all passengers and goods had to change trains at Kalgoorlie and Port Augusta. The changing of trains became a major impediment to rail operations, but was only gradually eliminated. Firstly, in 1936 the line was extended from Port Augusta to Port Pirie to shorten the journey distance to Adelaide and eliminate one of the gauge changes. In 1970 standard gauge was extended from Kalgoorlie to Perth eliminating the change of gauge at Kalgoorlie, and finally in 1984 the standard gauge was extended to Adelaide eliminating the change at Port Pirie.

Background

Federation, and the construction of a Trans-Continental Railway

The task of uniting the six autonomous Australian settlements under one Federal government was the subject of much discussion in the late 19th century. Colony rivalries and differing priorities made it difficult to reach agreement what the powers and structure of the new Federation should be. New South Wales and Victoria had always seen themselves as rivals aware that the other colonies may well benefit more than themselves in the form of a subsidy, from their wealth and prosperity.

Western Australia was a reluctant guest at the Federation table, arguing that:



Kalgoorlie - GA17 departing with a Trans passenger train - station, cabin and water tank (*NRM Collection*)

- the distance between her and the eastern sea-board (where the seat of Federal government would be located), would mean that the interests of her people would be ignored;
- she was neither a Cinderella state, nor a poor cousin. The Kalgoorlie/Coolgardie goldfields gave hint of vast potential mineral wealth. In effect, Western Australia would be milked for her economic contribution without having any political influence in a central government.

To lessen the Western Australian Government fears of isolation from the other states, it was agreed that the new Federal Government would construct a rail line linking the Eastern Colonies direct to the West. Part of the arrangement had Western Australia and South Australia, ceded a narrow corridor of territory so that a railway link could be constructed.

The line, variously referred to as the *Trans-Continental*, and the *Trans-Australian Railway*, was agreed to as part of the formation of the *Commonwealth of Australia* in 1901. At the time, the only way to get from Perth, the capital of Western Australia was via long and potentially dangerous sea voyage. The land route required the crossing of over a 1,000 miles of desert country. In 1907 legislation was passed to allow the undertaking of a survey of the route, which took place in 1909. Work on building the line began simultaneously, at the existing South Australian railhead of Port Augusta and the Western Australian railhead of Kalgoorlie, in September 1912. It was completed on the 17th October 1917 when the two construction halves met.

The final distance was 1051 miles (1692 km), slightly less than the original survey. At no point did the line cross a permanent fresh watercourse, so bores and reservoirs were established at intervals. Unfortunately the water quality was poor and often brackish so frequently water supplies had to be carried into the area by the train.

Life along the Trans-Australian Railway - based on notes by John Henry Smith

From Port Augusta to Kalgoorlie, 1,770km of railway was maintained by communities of six houses, thirty km apart. For the residents of these communities the problem of food, water and isolation was ever present. Life today has some of the benefits and conveniences found in the cities, but in comparison it is still frontier country. The comparison was even greater in the first half of this century.

Houses were provided for the railway workers - three roomed houses in a 'T' form, each room being linked by open latticed-walled corridors. They were usually constructed of corrugated iron with no

fly screen for the doors or windows. Temperature could be around 50C for weeks on end and the only cooking facilities were a wood stove. Without refrigeration food could not be kept, and meat especially had to be cooked as soon as it had been purchased from the supply train (known as the 'Tea and Sugar').

A 'pit' or 'dry' toilet (a long drop) at the bottom of the yard, and tin (galvanised) tubs and baths were all that served as conveniences. It is claimed that at night, one never ventured without a light (candle) in order not to step on any snakes that might have decided to visit.

The rain water tank was filled from the catchment area provided by the roof of the house - when it rained. This precious water was for drinking only. Water for their domestic purposes came from tanks filled with water carried from Port Augusta in the water wagons included with the weekly train.

The only power provided was from a bank of batteries and one accumulator (like a car battery). The accumulator could only be charged at Port Augusta; each family was allowed one charging per fortnight, the accumulator being sent away to Port Augusta. Wind generators could provide power and 'free' electricity, but the towers and equipment were expensive. At best they generated a 12 volt supply to charge radio batteries, and 32 volts did give electric light. The Commonwealth Railways did not provide generators until about 1960 - and then only in the bigger camps of locomotive depots.

There was no refrigeration and the Coolgardie safe hung in the shade of the latticed-wall corridor, providing the only 'cooler' place for food. Later coolers had double walls of mesh, the space filled with charcoal, kept wet through percolation. Ice boxes, kerosene refrigeration and then gas-heated refrigeration marked progress in technology for the women out on the Nullarbor. The first kerosene refrigerator on the Nullarbor appeared in 1938. Domestic lighting was also provided courtesy of kerosene - hurricane/wick lamps, Aladdin lamps and Tilley lamps.

All cleaning was done by hand as there was no electric power. Linoleum covered floors were easy to sweep, but after a dust storm, dirt was shovelled out. Cupboards had to be cleaned out - crockery, clothing, etc - everything had to be washed. Some dust storms were so heavy that lamps had to be lit inside houses in order to see and it was necessary to lay on the floor with a cloth over the mouth so that it was possible to breathe.

Respite from the dust came with the rain and then there were the floods and mud! Mud was trampled everywhere, including the house. While the women coped with heat, flies and dust in the home, the men had to deal with the same out along the lines. Tracks were laid, maintained and repaired but there were no air-conditioned lunch rooms - just the open spaces, dust, heat, flies and a water-bag.

It has been claimed that it was a great life for a kid. There was space and the room to roam, explore and learn. Formal education was based on correspondence lessons sent out from Port Augusta once a fortnight. Mother became the teacher. But there was also the school of the bush and its lessons were absorbed by being with young Aboriginal people as they learnt the traditional ways from the elders and then practised and developed their bush craft in their play. Boys gained most from this and integrated more easily. More freedom was allowed than to girls. There was less common ground between Aboriginal and white girls. Cultural values meant that white girls looked to their mothers as models and therefore assisted them and learnt housekeeping skills. Mothers were more protective towards their daughters and did not accept them going off into the scrub for a few days, yet it seemed acceptable for their sons to do so.

Secondary school meant leaving home and so 'going on' was the exception. It was possible to continue correspondence lessons at secondary level, but sometimes this became difficult as the level of work surpassed the level of education of the parents. There were high schools in Port Augusta and Kalgoorlie and a few students came to board in Adelaide.

A great life for a kid, yet what were the prospects and expectations of children out on the Nullarbor 50 or more years ago? A boy's highest ambition was to drive a locomotive - like their fathers. For girls, the railways offered little, apart from marriage to a railway worker. The proportion of such marriages was high.

Most girls became housewives and mothers - like their mothers. But before marriage they did aspire to semi-professional careers such as nursing and teaching. Many became governesses to the children of station owners and managers. Such careers carried status - they were seen as a rung up the social ladder.

As well as being wives, mothers and housekeepers, women also had to fill the role of a para-medic, able to treat and cure snake-bite, sun-burn, heat exhaustion, and gastroenteritis (summer diarrhoea). Starvation and plenty of boiled water was a standard treatment. For severe cases there was the additional medication of water and corn.our to bind the contents of the stomach and intestines. And for those who suffered the opposite of excessive looseness of the bowels, there was the weekly dose of castor oil.

Inevitably there was pregnancy and child-birth - help and advice came from the other women of the settlement, pooling their collective knowledge gained from a text on home nursing and experience. Common sense and folk-lore prevailed.

The highlight of the week was the arrival of the *Tea and Sugar* train. It may have developed into a social event, but it was a necessary service, a life line. The first supply trains (provisions trains) brought basic food stuffs, wood (fuel) - remember this is the Nullarbor - and water. Women made their own bread but the food brought by the supply train was kept 'fresh' in the cool of the vans constructed of thick timber. Fresh meat was 'on the hoof'. All families had to pre-order and their requirements were packed into the provision van accordingly. Livestock was carried in the butcher's section that included a slaughter van. As the train approached a siding, the meat order was checked, the butcher selected a beast, had it slaughtered, gutted, skinned it and was sectioning the carcass into the cuts ordered by the time the train had halted.

What fresh milk there was, was not transported. Goats were kept, penned at each siding and occasionally they also supplemented the meat supply. The cream from the goat's milk was used to make butter. To prevent inbreeding within a herd, billygoats were exchanged between the various camps or towns, courtesy of the provisions train.

Water wagons transported water for up to 800 km and ensured the renewal of that necessary commodity.

Wood for the stoves and coppers was tossed out along the line.

And the social event? Regardless of the hour 10.00am or 1.00pm, the entire settlement met the train. Men had their weekly shave and donned a clean shirt; women put on their best dress and a little bit of 'lippy' and the children were expected to be clean and in their best, but 'catching' them, 'pinning them down' and making sure that they were bathed was another matter.

But the children eagerly anticipated the Tea and Sugar. Although it was part of the weekly routine, there was the excitement of climbing and crawling over the locomotive and talking to the engineer who seemed to treat them as adults. Not being told what to do by their parents was an hour's fantasy and fed the dreams of being an engine driver.

And then there was always the hope that after the weekly provisions had been bought, there might be 'a few coppers' left over to buy sweets (lollies): a penny (less than a cent) bought three or four boiled sweets. That's what was going if one was lucky. Eyes only lingered on the packets of 'Tip-Top Toffees'; at six pence (5 cents) a packet, they were too expensive. Chocolate was available only in the winter; it did not travel well and melted in the warmer temperatures, let alone the extreme heat of summer.

The men were also drawn towards the engine driver and the fireman. These were the elite of the railways, but all the men had the bond of working on the railways and could engage in conversation about their work and become recipients of the ubiquitous stories (of course, no rumours!) about expansion, improvements, changes being planned by politicians in the remote cities etc. News of what was happening in other camps also was sought with great interest.

As shoppers anywhere seeking the best buys, the women concentrated on procuring their goods, after which there was the real business of exchanging news and gossip. The train crew were eagerly sought out, for if they were worth their salt, they were worthy mediums through which information could be exchanged and once they had proved their worth, they became the trustees of news along the line. It was they who knew who was going to have a baby, leaving, which children were staying on at school, who was going to attend a secondary school at a larger centre; they provided the information about new families in settlements and who was arguing with whom. When the thirst for information had been satisfied, the residents then passed on the latest news from within their own community. The crew were also an unofficial postal service - they were given letters to either post or deliver and they even passed on verbal messages.

Technological development in the decades to 1990, brought about many changes in lifestyles, standards of living and modes of transport. These changes had an impact on all aspects of Australian society, including the small communities scattered along the Trans-Continental line.

The Trans-Australian was a self-contained railway operated by the Commonwealth Railways which had to make provisions for the staff along the Nullarbor. All needs, except medical and education, were catered for. The Royal Flying Doctor service and the state education system had the latter responsibilities.

The *Tea and Sugar* continued as the lifeline for railway employees and it also served the pastoral stations and those who made independent livings along the line. However in 1981, the ubiquitous problem of containing costs was solved by reducing the number of stops which necessitated the cessation of services to pastoral stations. Then the *Tea and Sugar* limited its stops to railway camps only. As the Commonwealth Railways was unable to charge freight costs of goods (which are sold at store prices) only employees were then able to take advantage of the services of the *Tea and Sugar*. The pastoral community and others had to pay freight on their requirements which are transported along with normal freight.

Housing changed. The corrugated iron and wood structures were replaced with prefabricated, transportable type dwellings, which with air-conditioning provided more comfortable (family) accommodation. Solar panels fitted to the roofs provided hot water on tap - no more wood fires to heat and boil water. Video cassette recorders and satellite TV replaced the creative pursuits and some of the community activities that previously occupied children and filled leisure time. Yet the remoteness remained and life could still be difficult.

More facilities were available in some towns. Cook, near the SA - WA border, had a basketball court and swimming pool as well as an air-conditioned recreation area with pool table and bar (an ex-SA Education Department transportable classroom).

Septic sewerage systems also did much to make things quite nice.

The women still supported their men folk and families by making the best of the situation - their philosophy based on the maxim life is what you make it. Of course they were still as eager to know what is happening further along the line in the remaining camps and they sought out the train crews (for this information) just as eagerly as the men. Like people everywhere they had their differences of opinion, perhaps even more so being such small communities where things could 'get on your nerves' easily when it was not possible to escape from an irritation, but what was the point when the children of the protagonists were playing together.

The positive attitude of these women was also reflected in their knowledge: you don't have to worry (about the children) out here - not like in the city. These attitudes were countered by the hard reality of maintaining staff - the turnover was high, especially among single men who may only stay 3-6 months. In the 5 years, July 1969 to June 1974, there were 1175 persons hired and 1182 left. Anyone who was strong, healthy, active and prepared to work was taken on, regardless of age.

Much had changed since the early vans of the *Tea and Sugar*. The wooden construction of the first vans had given way to insulated evaporative cooled vans and motor driven refrigeration cooled, chilled and froze perishables as required. No longer was there a slaughter van, but a refrigerated Butcher's Van carrying beef, pork, mutton, fresh milk and ice cream. During the 1960s and 1970s the Butcher's Van was also the home of the community notice board which bore messages written on scraps of paper and pieces of cardboard, informing everyone along the line of what was for sale, wanted or available for exchange, as well as personal messages.

A Cold Stores Van carried fruit, vegetables, sweets, chocolate and beer.

The Provisions Van extended its range of goods to include groceries, clothing, general household articles and goods, records, cassettes and some (small) furniture. In June 1982 the Butcher's Van was taken from the train and the final *Tea and Sugar* was a type of supermarket on bogies, which provided goods at Port Augusta prices, except for specials that were advertised in the press.

The *Tea and Sugar* still brought in domestic and drinking water, wood for fuel and bulk kerosene. Maintenance supplies such as rails, sleepers (concrete) also came into the camps per the *Tea and Sugar*.

A few passenger cars, as in earlier days, still carried those who choose this mode of travel. And, once a fortnight, the pay-van was included. The pay-clerk was not only responsible for the employee's wages, but also did their banking and postal business where there was no post-office.

In spite of the changes, the arrival of the Tea and Sugar was still an occasion to dress-up and exchange news, even though there were fewer camps and fewer families than in the early days. By mid-1985 there were only twelve camps left and by 1987 these had reduced to nine.

Conditions for the train crews had improved considerably; with the introduction of diesel locomotives - ice-boxes for their food, refrigerated water coolers, fans for each driver, plus radiant heaters at foot level. Diesels locomotives had shortened the time taken to serve the remaining camps, although the distance was still the same!

Education was still based on lessons from the correspondence school, but modern technology provided a direct link between students and teacher(s) by means of the DUCT system (a telecommunications link). Modern, faster diesel travel permitted the occasional visit from a teacher. Larger centres had schools which enabled some students to experience school life in much the same way as their urban cousins.

Cook had a school where students attended normal lessons and their experiences of school life had similarities with that of any city student.

For students at places such as Barton (line kids), there was the opportunity to enrol in the Open Access College at Marden through which they could do their correspondence lessons, or to enrol in the Pt Augusta *School of the Air*. Marden had two colleges, one R-10 (the School of Distance Education), the other a Senior College at Port Augusta was R-12. Students enrolled in these colleges do have direct access to teachers through a telephone bridge. Their written work was passed in to their teachers who would mark and assess it.

Father Christmas, alias Alf Harris, also visited the children of the Nullarbor. Born in 1929, son of a ganger at Zanthus - east of Kalgoorlie (WA) - Alf grew up there and in Kalgoorlie. Before joining the Commonwealth Railways in 1948 at the age of 19, as a cleaner, he had tried mining at Coober Pedy, Kingoonya and Tarcoola. In 1960 he donned the garb of Father Christmas, a role that with the exception of one year, he continued to play, even after retirement.

The Welfare Car became part of the Tea and Sugar in 1945 - its purpose was to help immigrants settle in these remote areas and to serve a community referred to as Little Europe. These immigrants had to work wherever the Federal Government sent them in order to pay back their fare to Australia.

By the 1970s the services provided by the Welfare Car had extended to TB and dental clinics, a toy library, Infant Health, clergy for all denominations, a representative from the Aboriginal Commission, representative from the Good Neighbour Council and facilitating the visit of Father Christmas to the outlying communities. Also help was given in expediting furniture removal, investigating leases, assisting and supporting women having their first baby, arranging for new families to be linked with old families for support, and the officers also gave advice concerning family matters and mental health.

The Welfare Car also carried gifts from the people of Port Augusta. These gifts were clothing, magazines and such. In earlier days, when gangers wages were low, these gifts were welcomed because of need. Later they are welcomed because it gave the women an opportunity to see, touch and try on - not possible when ordering by catalogue. Also it was another opportunity for social interaction.

The Welfare Officer was responsible for Commonwealth Railway/Australian National employees and their families:

- first aid equipment and recreational facilities had to be inspected
- first aid equipment on goods trains and the Tea and Sugar was inspected
- instruction on first aid was given to guards, engineers, shunters and apprentices
- maintained a disaster chest in readiness for emergencies along the line

- arranged movie films (shown in the theatrette van) - each siding/camp had seven films a year.

The Royal Flying Doctor Service and the Air Ambulance linked the remote communities with the Tarcoola and Pt Augusta hospitals. The Flying Doctor Service also held monthly clinics at designated places.

In between, people relied on radio links with the sister in charge of the hospitals, to discuss symptoms and to seek advice.



NRM Exhibits Guide

LIST OF NRM ROLLINGSTOCK

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The following tables contains a listing of all the Rolling Stock at the National Railway Museum, Port Adelaide.

Steam Locomotives

Steam Locomotives (see page 53)	Operator	Gauge	Primary use
<i>Tom Barr Smith</i> No.504	SAR	1600mm	Mainline Passenger Locomotive
<i>Essington Lewis</i> No.523	SAR	1600mm	Mainline Passenger Locomotive
624	SAR	1600mm	Mainline Passenger Locomotive
702	SAR	1600mm	Mainline Freight Locomotive
752	SAR	1600mm	Branchline Mixed Traffic Locomotive
F 255	SAR	1600mm	Suburban Passenger Locomotive
P 117	SAR	1600mm	Mixed Traffic Locomotive
Rx 93	SAR	1600mm	Mixed Traffic Locomotive
G 1	CR	1435mm	Passenger and Freight Traffic
409	SAR	1067mm	Mainline Freight Locomotive
T 253	SAR	1067mm	Mainline Mixed Traffic Locomotive
Y 97	SAR	1067mm	Mixed Traffic Locomotive
NM 34	CR	1067mm	Mainline Mixed Traffic Locomotive
A 21	Silverton	1067mm	Mainline Mixed Traffic Locomotive
<i>H.F (Gerry) Walsh</i> W 25	Silverton	1067mm	Mainline Mixed Traffic Locomotive
Y 12	Silverton	1067mm	Mainline Mixed Traffic Locomotive
4	BHP	1067mm	Mainline Freight Locomotive
<i>Peronne</i>	BHAS	1067mm	Shunt Locomotive
3 - <i>Skipper</i>	MM	609.6mm	Industrial Freight Locomotive

Diesel-Electric Locomotives

Diesel-Electric Locomotives (see page 103)	Operator	Gauge	Primary use
515	SAR, ANR	1600mm	Shunt Locomotive
801	SAR, ANR	1600mm	Mainline Mixed Traffic Locomotive
<i>Lady Norrie</i> No.900	SAR, ANR	1600mm	Mainline Mixed Traffic Locomotive
930	SAR, ANR	1600mm	Heavy passenger & freight engine used over most lines
Ruston	ICI, PSP	1600mm	shunt locomotive
DE 91	CR, ANR	1435mm	Shunt Locomotive
GM 2	CR, ANR	1435mm	Mainline Mixed Traffic Locomotive
ETSA 1	ETSA	1435mm	Shunter
NSU 61	CR, ANR	1067mm	Mainline Mixed Traffic Locomotive



30th April 1988, Steam Engine 504 being turned around on the turntable at Mile End Diesel depot on it's way down to Port Dock (*Chris Drymalik*)

Electric Locomotives

Electric Locomotives (see page 127)	Operator	Gauge	Primary use
E1	BHP	1067mm	Shunt Locomotive

Railcars

Railcars (see page 133)	Operator	Gauge	Primary use
8	SAR	1600mm	Country / Suburban Passenger
41	SAR	1600mm	Country Passenger
Bluebird <i>Kestrel</i> No.257	SAR, ANR	1600mm	Country Passenger
321	SAR, STA, TA	1600mm	Suburban Passenger
400	SAR, STA, TA	1600mm	Suburban Passenger
CB 1	CR/ANR	1435mm	Country passenger services

Passenger Carriages

Passenger Carriages (see page 151)	Operator	Gauge	Primary use
294	SAR	1600mm	Passenger Car
376	SAR	1600mm	Country Passenger / Baggage Car
446	SAR	1600mm	Suburban Passenger Car
606	SAR, ANR	1600mm	Country Passenger
875	SAR/STA	1600mm	Suburban Passenger Trailer Car
⁴⁶ <i>Adelaide</i>	SAR, STA	1600mm	Dining Car
<i>Allambi</i>	V&SAR, V/Line, VR	1600mm	Overland sleeping car / Vineland sleeping car
BE 42	SAR	1600mm	Second Class Sitting Car
C1	SAR, ANR	1600mm	Cafeteria Car
<i>Onkaparinga</i>	SAR	1600mm	Sleeping Car



Locomotive 930 after Restoration at the museum (*Chris Drymalik*)



Modified 'MilkBar interior' (*NRM Collection*)



Pullman dining car *Adelaide* is almost completely hidden by TV equipment during filming of ABC program *'The Collectors'* on 17th March 2007 (*Chris Drymalik*)

Brake vans (see page 195)	Operator	Gauge	Primary use
276	SAR	1600mm	Brake Van
4074	SAR	1600mm	Brakevan
4367	SAR	1600mm	Caboose
AVAP 396 (8394)	SAR	1600mm	Brakevan
AVEP 349	CR	1435mm	Freight Train Brake Van
7553	SAR	1067mm	Brake Van

Service Stock

Service Stock (see page 209)	Operator	Gauge	Primary use
5-ton Travelling Crane	SAR	1600mm	5-ton Travelling Crane
Accident Crane No.3	SAR	1600mm	Accident Crane
AMW 4015	SAR	1600mm	Bogie Match Wagon
Dynamometer Car	SAR, ANR, V&SAR	1600mm	Dynamometer Car
ESV 8131	SAR	1600mm	Bogie employees van
Matisa Tamper	SAR	1600mm	Tamper
<i>Murray</i>	SAR, ANR, STA	1600mm	South Australian Railways Commissioners Car
Steel Open Wagon 363	SAR	1600mm	match-wagon for the crane No.2327
<i>Vice Regal Car</i>	SAR	1600mm	Vice Regal Car
FA 640	SAR	1435mm	Tea & Sugar Train
PA 281	CR	1435mm	Tea & Sugar Train
VPA 1340	CR	1435mm	Tea & Sugar Train
TSB 691	CR	1435mm	Tank Wagon
WT 5506	SAR	1067mm	Water Tank Wagon

Freight Wagons

Freight Wagons (see page 233)	Operator	Gauge	Primary use
TV 4872	SAR	1600mm	Bogie fuel tank wagon
WL 8200	SAR	1600mm	Bogie well flat wagon
Y 3582	SAR	1600mm	4 wheel steel open
Z 3236	SAR	1600mm	4 wheel steel hopper
BAS 615	CR	1435mm	Ballast Wagon
V 260	CR	1435mm	bogie Covered Van (outside frame),
FNT 7850	SAR	1067mm	Flat Wagon
HFN 5108	SAR	1067mm	Hopper Wagon for the carriage of coal and ballast
ON 929	Silverton	1067mm	Ore Wagon
V 1990	SAR	1067mm	4-wheel Louvred Van
Y 5019	SAR	1067mm	Open wagon (drop-sides)
YY 4913	SAR	1067mm	Open wagon
YY 4927	SAR	1067mm	Open wagon
YY 4947	SAR	1067mm	Open wagon
Y 5017 (restored as CR NGAS 373)	CR	1067mm	Open wagon (drop-sides)



Commonwealth Railways Budd Railcar CB 1 being placed on it's standard gauge power bogies - 3.10.2001 (*Chris Drymalik*)

Ganger Vehicles

Ganger Vehicles (see page 267)	Operator	Gauge	Primary use
3 wheel Pump Trike	SAR	1600mm	Ganger's 3 wheel Pump Trike
4 wheel Pump Car - B 179	SAR	1600mm	Ganger's 4 wheel Pump Car
Motor Pump Car - unnumbered	SAR	1600mm	Ganger's Motor Pump Car
F 40	SAR, ANR	1600mm	Ganger's Trolley
F 147	SAR	1600mm	Ganger's Trolley

Ganger Vehicles (see page 267)	Operator	Gauge	Primary use
M	SAR	1600mm	Ganger's Trolley
M 183	SAR	1600mm	Ganger's Trolley
S 50	SAR	1600mm	Ganger's Trolley
SD 101	SAR	1600mm	Ganger's Trolley
Wickham	SAR	1600mm	Ganger's Trolley
Trolley - unpowered	SAR	1600mm	Ganger's Trolley
CC 165	CR, ANR	1067mm	Ganger's Trolley
F 171	SAR	1067mm	Ganger's Trolley
T 123	SAR	1067mm	Ganger's Trolley

Miscellaneous Vehicles

Miscellaneous Vehicles (see page 289)	Operator	Gauge	Primary use
Locomotive Wheels	SAR	1600mm	Originally used on 2-4-0T Locomotive
MIC 4	CR	1435mm	Motorised Inspection Car
Malcolm Moore & Company	S.A.H.B	1067mm	Internal Combustion Locomotive
Jetty Truck No.146	S.A.H.B	1067mm	Jetty Truck
Explosives Van	SAR	609.6 mm	Explosives Van
Ruston Hornsby Diesel Locomotives No.304	WGC	609.6 mm	Industrial Freight Locomotive
Ruston Hornsby Diesel Locomotives No.306	WGC	609.6 mm	Industrial Freight Locomotive
Malcolm Moore Diesel Locomotive No.1514	WGC	609.6 mm	Industrial Freight Locomotive
No.1 <i>Juilet</i>	MERM	457mm	Amusement Locomotive
No.2 <i>Chitty</i>	MERM	457mm	Amusement Locomotive
Boomerang Train	Misc	254mm	Amusement Locomotive



Locomotive Number 1 Juliet (*Andrew Peters*)



STEAM LOCOMOTIVES

500 Class 4-8-4 Steam Locomotive No. 504 - <i>Tom Barr Smith</i> - South Australian Railways - Broad Gauge	55
520 Class 4-8-4 Steam Locomotive No. 523 - <i>Essington Lewis</i> - South Australian Railways - Broad Gauge	57
620 Class 4-6-2 Steam Locomotive No. 624 - South Australian Railways - Broad Gauge	62
700 Class 2-8-2 Steam Locomotive No. 702 - South Australian Railways - Broad Gauge	66
750 Class 2-8-2 Steam Locomotive No. 752 - South Australian Railways - Broad Gauge	66
F class 4-6-2 Steam Locomotive No. 255 - South Australian Railways - Broad Gauge	68
P Class 2-4-0 Steam Locomotive No. 117 - South Australian Railways - Broad Gauge	74
Rx Class 4-6-0 Steam Locomotive No. 93 - South Australian Railways - Broad Gauge	76
G class 4-6-0 steam locomotive No. 1 - Commonwealth Railways - Standard Gauge	76
400 Class 4-8-2+2-8-4 Steam Locomotive No. 409 - South Australian Railways - Narrow Gauge	79
T Class 4-8-0 Steam Locomotive No. 253 - South Australian Railways - Narrow Gauge	82
Y Class 2-6-0 Steam Locomotive No. 97 - South Australian Railways - Narrow Gauge	86
NM class 4-8-0 Steam Locomotive No. 34 - Commonwealth Railways - Narrow Gauge	86
A Class 4-6-0 Steam Locomotive No. 21 - Silverton Tramway Company - Narrow Gauge	89
W Class 4-8-2 Steam Locomotive No. 25 - <i>H.E (Gerry) Walsh</i> - Silverton Tramway Company - Narrow Gauge	91
Y Class 2-6-0 Steam Locomotive No. 12 - Silverton Tramway Company - Narrow Gauge	93
BHP 4-6-0 Steam Locomotive No. 4 - Broken Hill Proprietary Company - Narrow Gauge	95
0-6-0 Steam Locomotive No. 4 - <i>Peronne</i> - Broken Hill Associated Smelters - Narrow Gauge	97
0-6-2T Steam Locomotive No. 3 - <i>Skipper</i> - Millaquin Mill - 2 Foot Gauge	100

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	Sir W. G. Armstrong-Whitworth & Co., Newcastle-on-Tyne, England
Number in class	10
Number series	500 - 509
Designer	F. J. Shea
Entered service	18th October 1926
Condemned	9th July 1962
Entered the museum	23rd July 1965
Length (over coupling points)	84' 2" (25.654 metres)
Total Weight	222 tons 6 cwt (225,856 kilograms)
Tractive Effort	59,000 lbs
Wheel Arrangement	4-8-4 (4-8-2 original)
Driving Wheels Diameter	63" (1600 mm)
Maximum Axle Load	22 tons 3 cwt (22,504 kilograms)
Boiler Pressure	200 lbs psi
Cylinders	2x outside 26" x 28" (660mm x 771mm)
Valve Gear	Walschaert
Water Capacity	7,000 gallons (31,822 litres)
Coal Capacity	11 tons (11,176 kilograms)
Grate Area	66.6 sq ft
Mileage	855,029 miles (1,375,998 kilometres)
Maximum Speed	50 mph (80 km/h)
Built by	Sir W. G. Armstrong-Whitworth & Co., Newcastle-on-Tyne, England

Table 5.1: Details of 500 Class 4-8-4 Steam Locomotive No. 504 - *Tom Barr Smith* - South Australian Railways - Broad Gauge

500 Class 4-8-4 Steam Locomotive No. 504 - *Tom Barr Smith* - South Australian Railways - Broad Gauge

From the mid-1880s, when the South Australian Railways Nairne Railway (later to become the first section of the Main South Line) began its push southward from Adelaide, the Mt. Lofty Ranges posed immediate problems for the construction and mechanical engineers of the day. The rails had to climb 1534 feet (468 metres) in 19.4 miles (31.4 kilometres) and pass through eight tunnels to reach the summit at Mt. Lofty, and locomotives of sufficient power to conquer the 1 in 45 grades designed and built.

The four Baldwin built locomotives ordered for this purpose were soon found to be unsuited, and the small K-class 0-6-4Ts, usually working in pairs, were forced to handle the traffic for a while. The first of the R-class arrived in 1886 and, later re-built to the more powerful Rx-class, they worked all major South Line trains until the 1920s. As traffic increased these engines had also to be worked in pairs with, sometimes, a third pushing in the rear. Around 1920 a half-hearted attempt was made at designing a more powerful locomotive, but it was left to the Webb administration to solve the problem.

W. A. (Bill) Webb had come from the Missouri-Kansas-Texas Railroad to rehabilitate an ailing South Australian Railways, and one of his first tasks was to upgrade its motive power. This job was given to his Chief Mechanical Engineer, Fred Shea, who set about designing three classes of very powerful locomotives, the like of which had not before been seen in South Australia. They were the 500, 600 and 700 classes.

The 500-class 4-8-2 was a machine of magnificent size and power and was to immediately capture the imaginations of South Australians. At 213 tons and exerting a tractive effort of 51,000 lbs, it was



30th April 1988, engine 804 shunting Steam Engine 504 around Mile end Diesel depot on it's way down to Port Dock (*Chris Drymalik*)



504 at adelaide station, this would be its last trip. (*NRM Collection*)



30th April 1988 Mile End - Moving Steam Engine 504 to Port Dock (*Chris Drymalik*)

almost two-and-a-half times more powerful than the Rx-class. Whereas an Rx unaided could haul 190 tons over Mt. Lofty, the 500s could lift 400 tons - later increased to 450 tons.

In a constant quest for more power it was decided to equip the 500s with boosters (small auxillary steam engines). This necessitated the replacement of the two-wheel trailing truck with one of four wheels. The booster contributed an extra 8,000 lbs to the tractive effort and permitted an increase in the engine load over Mt. Lofty to 540 tons. The 500s were now 4-8-4s and were reclassified 500B. No. 504 was modified and reissued to traffic on 23rd August 1929.

During the 1930s the 500s underwent yet another change in appearance when they were semi streamlined after the style of the Southern Pacific's (USA) GS-2 class "Daylights", and with their silvered smokebox doors they soon became known as "Palefaces". Perhaps they are remembered most for providing the head-end power for The Overland between Adelaide and Tailem Bend for thirty years. They were permitted a maximum load of eleven E-class Joint Stock cars, and the sight and sound of them blasting upgrade presented a truly magnificent spectacle. In addition, together with the 720B-class 2-8-4s, they hauled most south line freight trains with occasional turns on the Terowie and Port Pirie lines.

With the introduction of the 900-class diesel electrics in the early 1950s the 500Bs began to relinquish their exalted status and by the early '60s only Nos. 500 and 504 remained avail-able for traffic. Both were used for a time on ARHS excursions, but 504 was earmarked for preservation. It was written off and placed in the Mile End Railway Museum on 23 July 1965.

520 Class 4-8-4 Steam Locomotive No. 523 - *Essington Lewis* - South Australian Railways - Broad Gauge

523 is representative of a class of locomotives which has come to be among the best known of the South Australian big power engines. This was partly because of their versatility which caused them to be the last of the big engines to survive the onslaught of the diesel.

The 520 class consisted of twelve very large engines, which were built during the Second World War as a result of a shortage of motive power suitable for serving the heavily-trafficked broad gauge line from Adelaide to Port Pirie. At that time this line was a vital link in the flow of supplies and troops to the threatened northern shores of Australia.



504 during a night event (*A. Peters*)



504 and special car Murray on display inside the Main Pavillion (*A. Peters*)



South Australian Railways builders photo of 523 (*NRM collection*)



South Australian Railways builders photo of 521 (*NRM collection*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	S.A.R. Islington Workshops
Number in class	12
Number series	520 - 531
Designer	F. H. Harrison
Entered service	14th August 1944
Condemmed	21st August 1969
Entered the museum	28th November 1968
Length (over coupling points)	87' 4.375" (26.628 metres)
Total Weight	200.675 Tons (203,885 kilograms)
Wheel Arrangement	4-8-4
Driving Wheels Diameter	66" (1670 mm)
Maximum Axle Load	15 tons 16 cwt (16,052 kilograms)
Boiler Pressure	215 lbs psi
Cylinders	2x outside 20½" x 28" (520mm x 711mm)
Valve Gear	Walschaert
Tractive Effort	32,600 lbs
Coal Capacity	9½ tons (9,906 kilograms)
Grate Area	45 sq ft
Water Capacity	9100 gallons (41,369 litres)
Maximum Speed	70 mph (112 km/h)
Mileage	551,955 miles (888,261 kilometres)

Table 5.2: Details of 520 Class 4-8-4 Steam Locomotive No. 523 - *Essington Lewis* - South Australian Railways - Broad Gauge

The class was designed and built by the South Australian Railways Chief Mechanical Engineer, Mr F.H. Harrison, at the Islington Workshops. They are very versatile engines as, although they turn the scales at over two hundred tons, the weight is spread over twenty-eight wheels, on engine and tender, thus allowing them to run on light 60 lb track.

They were fitted with 5 ft 6 in diameter driving wheels, which were specially balanced for seventy miles an hour running. This meant that they were especially useful on the fast passenger expresses on the Port Pirie line, but were also invaluable on fast passenger and goods trains on all the main lines. Indeed for many years they were rostered to work the famous Broken Hill produce train. However, they were equally at home on the lightly laid branch lines, and were to be found as far afield as Pinnaroo, Moonta, Gladstone and Morgan.

523 was the first of the class to be built with a slightly modified front end, which hid the short chimney (visible on 520, 521 and 522) by the inclusion of a small built up piece fronted by a louvred opening. Also, the slope on the chisel nose was considerably reduced in 523 and later engines. Like the others in the class, she was designed for a service maximum speed of 70 m.p.h., and in fact frequently attained this speed. Easy running at this speed was helped by the fact that the class was fitted with Timken roller bearings on all wheels - the first engines in Australia to be so fitted.

523 is named Essington Lewis after the then General Manager of the Broken Hill Proprietary Company - Australia's largest privately owned company. Built in 1944, this engine was converted on 1st July 1949 to burn a combination of coal and oil. This was partly because of problems incurred in getting coal to slide forward in the tender, and partly because of current difficulties in acquiring sufficient coal. 523 was to be later modified externally by the removal of the front cowling, a move which simplified maintenance.

Although built as late as 1944, it was to be only seven years before the first main line diesels appeared, to operate on the very routes that the big engines were most at home on. Like the rest of the class the big 4-8-4 continued to operate on the fast Port Pirie and Terowie trains for some time, but the amount of work for it dwindled until by the mid-1960's it was considered to be redundant. 524 worked the last



523 during a Behind the Scenes event (*Andrew Peters*)



523 outside during a night time members meeting (*B. Channing*)



523 during a shunt movement (*Chris Drymalik*)

broad gauge regular steam train when she handled the Port Pirie Passenger on 24th October 1966.

620 Class 4-6-2 Steam Locomotive No. 624 - South Australian Railways - Broad Gauge

Two classes of “Pacific” locomotives, both designed by Fred Shea, saw service on the South Australian Railways. The first, the powerful 600-class, built under the Webb administration revolutionized the working of heavy express trains, such as the Overland. The second was the 620-class, ten of which were built at the Islington Workshops between 1936 and 1938, for use over secondary lines laid with 60 lb plant.

The first of these, No. 620, was Australia’s first streamlined locomotive, the smokebox being covered with a chromed steel grille similar to those fitted to motor cars of the period, and painted Hawthorn green with yellow stripes. On being outshopped it was placed on display at the Wayville Showgrounds for the duration of the Centenary Exhibition. It entered service on 26th June 1936 hauling the “Centenary Limited”, a train made up of refurbished end-loading cars resplendant in a livery of green and cream. The remainder of the class were built un-streamlined. All were fitted with Baker’s valve gear, the only South Australian Locomotives to be so equipped.

No. 624 was placed in service on 17th July 1937 and for the next thirty years performed those duties for which the class had been constructed, working to Gladstone, Morgan, Moonta, Port Pirie, Pinnaroo, Renmark and Victor Harbor. In later years, after the onset of dieselisation, 620s were relegated to working Bridgewater and Willunga locals, mixed trains out of Tailem Bend and occasionally even freight trains. 624 entered the Mile End Railway Museum on 14th April 1967 but was not officially written off until 7th September. It was moved to the museum on 2nd October 1988.



Front end view of 624 (*Andrew Peters*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	S.A.R. Islington Workshops
Number in class	10
Number series	620 - 629
Designer	F. J. Shea
Entered service	17th July 1937
Condemmed	7th September 1967
Entered the museum	14th April 1967
Length (over coupling points)	69' 8" (21.234 metres)
Total Weight	140 tons 15 cwt (143,002 kilograms)
Tractive Effort	25,000 lbs
Wheel Arrangement	4-6-2
Driving Wheels Diameter	66" (1676mm)
Maximum Axle Load	15 tons 18 cwt (16,154 kilograms)
Boiler Pressure	200 lbs psi
Cylinders	2x outside - 18½" x 28" (470mm x 711mm)
Valve Gear	Baker
Coal Capacity	9 tons (9,144 kilograms)
Grate Area	33.4 sq ft
Water Capacity	5,200 gallons (23,639 litres)
Mileage	704,164 miles (1,133,211 kilometres)
Maximum Speed	70 mph (112 km/h)

Table 5.3: Details of 620 Class 4-6-2 Steam Locomotive No. 624 - South Australian Railways - Broad Gauge



624 outside with the Pullman Dining car Adelaide during the Port Adelaide Railway 150th event
(Andrew Peters)



South Australian Railways builders photo of 624 in 1937 (*NRM collectio*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	Sir W. G. Armstrong-Whitworth & Co., Newcastle-on-Tyne, England
Number in class	10
Number series	700 - 709
Designer	F. J. Shea
Entered service	20th September 1926
Condemmed	9th July 1964
Entered the museum	1st June 1965
Length (over coupling points)	73' 2" (22.3 metres)
Total Weight	171 tons 3 cwt (173,888 kilograms)
Wheel Arrangement	2-8-2
Driving Wheels Diameter	57" (1448mm)
Maximum Axle Load	18 tons 18 cwt (19,202 kilograms)
Boiler Pressure	200 lbs psi
Cylinders	2x outside - 22" x 28" (559mm x 711mm)
Valve Gear	Walschaert
Tractive Effort	40,400 lbs
Coal Capacity	17 tons (17,272 kilograms)
Grate Area	47 sq ft
Water Capacity	5,900 gallons (26,821 litres)
Mileage	775,526 miles (1,248,053 kilometres)
Maximum Speed	45 mph (72 km/h)

Table 5.4: Details of 700 Class 2-8-2 Steam Locomotive No. 702 - South Australian Railways - Broad Gauge

700 Class 2-8-2 Steam Locomotive No. 702 - South Australian Railways - Broad Gauge

Historically No. 702 is one of the most important locomotives in the museum's collection, for it represents the third of Fred Shea's most successful designs for the rehabilitation of the motive power of the South Australian Railways in the 1920s.



702 in the former Mile end railway Museum (NRM Collection)

Besides the 700-class 2-8-2s, he also produced designs for the 500-class 4-8-2s and the 600-class 4-6-2s. All types were of the same general configuration and, though built in Great Britain by the Armstrong Whitworth Company, were of classic North American style. No. 702 was given builder's number 645 of 1926 and was placed in service on 20th September 1926.

The 700s were main line freight locomotives and released many Rx-class 4-6-0s, until then the largest engines available for this traffic, for shunting and branch line services. The difference in power between the these two classes can be gauged by the fact that a 700 could lift 390 tons over Mt Lofty while an Rx could manage only 190 tons.

The 700-class proved so successful that another ten were ordered, this time from the South Australian Railways own Islington Workshops. Though dimensionally similar to the original engines they differed in some minor details and so were classified 710. Unlike the 500 and 600 classes, which were substationally rebuilt, the 700s with the exception of No. 706, retained their classic "Webb" lines throughout their lives. No. 702 was the only member of the class to be equipped with a coal pusher in 1951. It was condemned 9th July 1964 and placed in the Mile End Railway Museum on 1st June 1965.

750 Class 2-8-2 Steam Locomotive No. 752 - South Australian Railways - Broad Gauge

The years immediately following World War II saw an acute shortage of motive power on the South Australian Railways. Increasing traffic coupled with a backlog of maintenance due to the demands of the war effort were taking their toll forcing management to look for a quick solution to the problem.



South Australian Railways - 700-class 2-8-2 steam locomotive No. 702 - Northbound Dry Creek transfer freight locomotive 702 at Torrens Bridge. 8.12.1956 (*D.Colquhoun*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	Victorian Railways. Transferred to South Australian Railways as N477 on 16th February 1951.
Number in class	10
Condemned	750 - 759
Designer	A. E. Smith
Built by	North British Locomotive Co., Glasgow, Scotland
Entered service	2nd March 1951 (S.A.R. service)
Withdrawn	21st August 1967
Entered the museum	14th April 1967
Length (over coupling points)	67' 5" (20.5486 metres)
Total Weight	124 tons 13 cwt (126,644 kilograms)
Wheel Arrangement	2-8-2
Driving Wheels Diameter	55 ³ / ₄ " (1416mm)
Maximum Axle Load	13 tons 17 cwt (14,071 kilograms)
Cylinders	2x outside - 20" x 26" (508mm x 660mm)
Valve Gear	Walschaert
Boiler Pressure	175 lbs psi
Tractive Effort	28,650 lbs
Coal Capacity	6 tons (6096 kilograms)
Grate Area	31 sq ft
Water Capacity	4,600 gallons (20,912 litres)
Mileage	262,593 miles (423,170 kilometres)
Maximum Speed	60 mph (96 km/h)

Table 5.5: Details of 750 Class 2-8-2 Steam Locomotive No. 752 - South Australian Railways - Broad Gauge

Two sources presented themselves: the Victorian Railways found themselves with a surplus of N-class 2-8-2 locomotives and the Clyde Engineering Company, Granville, NSW had begun building forty 2-8-2s for China, the order having then been cancelled due to the communist incursion. The South Australian Railways purchased ten of each type which became their 750 and 740 classes respectively. Unfortunately no 740-class was saved for preservation, but their design was based on Fred Shea's 700-class of 1926 represented in the museum's collection by locomotive No. 702.



750 class (*NRM Collection*)

The Victorian Railways N-class were built to the design of A.E.Smith and had been introduced in 1925, eighty-three having been built before production ceased in 1951. The ten purchased by the South Australian Railways were from a batch of fifty then being supplied by the North British Locomotive Co., and were given road numbers 750-759. No. 752 had been VR's No. 477, carrying builder's number 26787 of 1950, and entering service on 16th February 1951. It was delivered to the South Australian Railways eight days later on the 24th.

The 750s immediately displaced the ageing Rx-class engines from branch-line service, particularly over the light lines of the Mallee radiating from Tailem Bend. Two were retained at Mile End for service on the Port line.

Though efficient and free-steaming they were unpopular with engine crews because of their cramped cabs in comparison to the South Australian locomotives. Just ten years after entering service only two, Nos. 752 and 755 remained. No. 752 still saw occasional service and, in November 1963, was used to haul the Myer "Santa Specials", which brought children and their parents to the city, at discounted fares, to do their Christmas shopping. It was last steamed in November 1964, placed in the Mile End Museum on 14th April 1967 and formally written off on 21st August 1967.

F class 4-6-2 Steam Locomotive No. 255 - South Australian Railways - Broad Gauge

For over fifty years the majority of Adelaide's suburban trains were hauled by the F-class 4-6-2 tank locomotives and though in later years they became an anachronism, quaintly old-fashioned in appearance in the diesel age, they were still quite capable of a good turn of speed on express run.



750 class (NRM Collection)



750 class (NRM Collection)



Locomotive 752 - 12 February 2011 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	South Australian Railways Islington Workshops (21) James Martin & Co. Gawler (12) Perry Engineering Mile End (10)
Number in class	43
Number series	167 - 189, 236 - 255
Designer	T. S. Roberts
Built by	Perry Engineering Mile End
Entered service	6th October 1922
Withdrawn	21st August 1969
Entered the museum	19th April 1967
Length (over coupling points)	40' 7 ¹ / ₄ " (12.376 metres)
Total Weight	59 Tons (59,944 kilograms)
Maximum Speed	60 mph (96.54 km/h)
Wheel Arrangement	4-6-2
Driving Wheels Diameter	63" (1600mm)
Maximum Axle Load	12 tons 6 cwt (12,496 kilograms)
Boiler Pressure	185 lbs psi
Cylinders	2x outside - 17 ¹ / ₂ " x 24" (444mm x 609mm)
Valve Gear	Stephenson
Tractive Effort	18,335 lbs
Coal Capacity	2 ¹ / ₄ Tons (2286 kilograms)
Grate Area	18 sq ft
Water Capacity	1,160 gallons (5273 litres)
Mileage	905,627 miles (1,457,153 kilometres)

Table 5.6: Details of F class 4-6-2 Steam Locomotive No. 255 - South Australian Railways - Broad Gauge

At the turn of the century the P-class 2-4-0 tanks were the standard suburban passenger engine, but were underpowered for the increasing loads then offering. A more powerful locomotive was obviously necessary. The Chief Mechanical Engineer, Thomas Roberts, who had recently began the rebuilding of the R-class into the more powerful Rx-class, produced a design for a most handsome 4-6-2 tank locomotive to be known as the F-class.

The first, No. 167 was outshopped by the Islington Works and placed in service in April 1902. Eventually, forty-three were built, the last being No. 255, built by the Perry Engineering Company and placed in service 6th October 1922. Known as Dolly Grays (after a song popular at the time of their introduction), later shortened do Dolly, the nickname stayed with them all of their lives.

The F-class worked all suburban lines from Gawler to Noarlunga and from Outer Harbour to Belair. One even worked the old South Terrace to Glenelg railway for a short time in the 1920s, but was found to be unsuited because of the sharp curves existing at Miller's Corner and St Leonards.

Though somewhat slow in accelerating away from stations they were capable of speeds in excess of 60 m.p.h., even with quite heavy loads. The only serious restriction placed on them was on the Belair line where they were limited to three cars. The late 1940s saw twenty-five of them converted to oil-burning, with the appendage of an ugly square tank on top of the coal bunker. No. 255 was one of those converted, but had been returned to coal burning before it was written off.

During the 1930s and 1940s lighter patronised services were worked increasingly by the 55 and 75 class railcars and in the mid 1950s the Red Hen railcars began making further inroads into steam-hauled services. By the early 1960s the remaining F-class had been reduced to shunting duties at Mile End and Port Adelaide. No. 255 was written off on 21st August 1969, after being placed in the Mile End Railway Museum on 19th April 1967. It was placed at the museum on 2nd October 1988.



F 255 outside during a Behind the Scenes event (*Andrew Peters*)



F 255 posed outside during a Behind the Scenes event (*Andrew Peters*)



F 255 on shed during a Behind the Scenes event (*Andrew Peters*)



F 255 in regular service at Eden Hills in the mid 1960's (*Doug Colquhoun*)

P Class 2-4-0 Steam Locomotive No. 117 - South Australian Railways - Broad Gauge

In 1861 Beyer Peacock & Co., Manchester, England, built for the West Midland railway a 2-4-0 tank locomotive that was to be the forerunner of many of this type built, with few modifications, over the next twenty-five years. A most successful design, represented in Australia by the P-class of the South Australian Railways and the F351-class of the New South Wales Railways.

Suburban trains over Adelaide's Port and North lines had been hauled by the small and underpowered E and M class tank locomotives before the advent of the P-class in 1884. Twenty were built, the first six coming from Beyer Peacock and the remainder from James Martin & Co., of Gawler. No. 117 belongs to the latter series then known as the "Colonial Ps". It carried builder's number 57, and was placed in service on 12th June 1893. Along with the rest of the class it would have hauled suburban passenger trains until displaced by the F-class 4-6-2s in the early 1900s.

An unusual service worked by the P-class was over the old Clapham branch, then the southern suburban terminus. Consisting of two to four carriages and a four-wheel brake-van, these trains were known as Clapham Dodgers. They ceased running when the suburban service was extended to Eden Hills and the branch-line closed, in 1919.

When the South Australian Railways took over the Glenelg Railway Company's two lines in 1899 the Ps displaced the Company's small 4-4-0 and 0-4-4 tanks and, along with the K-class 0-6-4Ts, hauled all trains until these lines were closed in 1929. Thereafter most were used for shunting at Port Adelaide, and hauling Port Line goods trains, with occasional runs on Semaphore passenger trains. A couple were also stabled at Mile End and one at Taillem Bend as round-house shunters. With the arrival of the 800-class diesel electrics in 1956 all were withdrawn.

No. 117 is the sole survivor of the class and the only locomotive in the Museum's collection with inside cylinders. It was the first locomotive to enter the Mile End Railway Museum on 24th August 1964, and was placed at the museum on 29th October 1988.

Class operators	South Australian Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways
Class Builders	Beyer-Peacock & Co Manchester England (6) James Martin & Co. Gawler (14)
Number in class	20
Number series	21, 22, 70 - 75, 115 - 126
Built by	James Martin & Co. Gawler
Entered service	12th June 1893
Withdrawn	17th December 1956
Entered the museum	24th August 1964
Length (over coupling points)	28' 5" (8.66 metres)
Total Weight	33.70 tons (34,239 kilograms)
Wheel Arrangement	2-4-0
Driving Wheels Diameter	60" (1524mm)
Maximum Axle Load	12 tons 7 cwt
Boiler Pressure	145 lbs psi
Cylinders	2x inside - 16" x 20" (406mm x 508mm)
Valve Gear	Stephenson
Tractive Effort	10,517 lbs
Water Capacity	600 gallons (2427 litres)
Coal Capacity	1½ Tons (1524 kilograms)
Grate Area	14.67 sq ft
Mileage	1,305,876 miles(2,101,154 kilometres)
Maximum Speed	60 mph (96 km/h)

Table 5.7: Details of P Class 2-4-0 Steam Locomotive No. 117 - South Australian Railways - Broad Gauge



Side view of P117 outside during the Port Adelaide Railway 150th celebrations (*A. Peters*)



P117 outside during the Port Adelaide Railway 150th celebrations (*A. Peters*)

Rx Class 4-6-0 Steam Locomotive No. 93 - South Australian Railways - Broad Gauge

In 1886 the South Australian Railways placed in service six handsome 4-6-0 locomotives built by the Scottish builder Dubs & Co. These were the first members of the R-class and later, after rebuilding, the Rx-class which eventually amounted to 84 engines, the most numerous class on the broad-gauge. No. 93, which had been given builder's number 2142 of 1885, was one of them and entered service on 29th March 1886.

Used primarily for goods haulage over the steeply graded main south line they were soon also hauling the Intercolonial Express between Adelaide and Murray Bridge after the South Australian and Victorian Railways had been joined at Serviceton in January 1887.

Thirty Rs were built between 1885 and 1895 but, between 1899 and 1913, all were rebuilt with larger Belpaire boilers and were reclassified Rx. No. 93 was reissued to traffic after rebuilding on 4th November 1910. As built all were equipped with six-wheel tenders but, with the introduction of the first of the Islington built Rx-class engines in 1909, eight-wheel tenders were fitted. No. 93 retained its six-wheel tender until the early 1950s when it received a bogie replacement from an engine previously written off. In this form it ran until 1966 when, on 28th September, it was placed in the Mile End Railway Museum. It was formally written off on 28th October of that year.

The Rx-class was a most successful design, and handled all main line traffic until displaced by Fred Shea's Big Power engines under the Webb administration of the 1920s. Thereafter they were relegated to secondary duties over branch lines, shunting in freight yards and occasionally hauling local passenger trains.

G class 4-6-0 steam locomotive No. 1 - Commonwealth Railways - Standard Gauge

The Commonwealth Railways, precursor of the present day Australian National, was unique among Australian government railways in that it relied upon other railways, namely the New South Wales

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Designer	W. Thow (R class), T. S. Roberts (Rx class)
Class Builders	Dubs & Co. Glasgow Scotland (6) James Martin & Co. Gawler (24) South Australian Railways Islington Workshops (14) North British Locomotive Co. Glasgow Scotland (15) Walkers Maryborough Queensland (25)
Number in class	84
Number series	5, 9, 10, 15, 20*, 25*, 48, 55, 56, 91* - 96*, 102* - 107*, 138* - 153*, 155, 158, 160, 190 - 203, 206 - 235 (* originally built as R class)
Built by	Dubs & Co., Glasgow, Scotland
Entered service	29th March 1886
Condemned	28th October 1966
Entered the museum	28th September 1966
Length (over coupling points)	58' 12" (17.67 metres)
Total Weight	88 tons 12 cwt (90,017 kilograms)
Maximum Speed	60 mph (96.54 km/h)
Wheel Arrangement	4-6-0
Driving Wheels Diameter	54" (1371mm)
Maximum Axle Load	11 tons 8 cwt (11,582 kilograms)
Boiler Pressure	175 lbs psi
Cylinders	2x outside - 18" x 24" (457mm x 609mm)
Tractive Effort	21,420 lbs
Coal Capacity	7 tons 15 cwt (7,874 kilograms)
Grate Area	20.27 sq ft
Water Capacity	4120 gallons (18,729 litres)
Mileage	1,312,446 miles (2,112,119 kilometres)

Table 5.8: Details of Rx Class 4-6-0 Steam Locomotive No. 93 - South Australian Railways - Broad Gauge

Class operators	Commonwealth Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Class Builders	Clyde Engineering Works, NSW Baldwin Locomotive Works, Philadelphia, USA Toowoomba Foundry Co Ltd, Queensland
Number in class	26
Entered service	2nd March 1914
Withdrawn	August 1945
Entered the museum	17th December 1969
Overall Length	59' 8'
Total Weight	106 tons 4 cwt
Wheel Arrangement	4-6-0
Cylinders	2x outside - 20" x 26"
Valve Gear	Allan
Tractive Effort	22,200 lbs
Coal Capacity	7½ tons
Water Capacity	3,650 gallons

Table 5.9: Details of Steam Engine G class 4-6-0 steam locomotive No. 1 - Commonwealth Railways - Standard Gauge



Rx 93 on display during a Behind the Scenes event (*Andrew Peters*)



Rx 93 on display during a Behind the Scenes event (*Andrew Peters*)



Rx 93 and Travelling Post Office van 018 during a shunt (*Chris Drymalik*)

and Queensland Railways for its steam locomotive designs. The G-class were built to William Thow's highly successful design for the NSW's P6 (later C32) class, introduced in 1892, and were the first passenger locomotives built for the Transcontinental Railway. Twenty-six were constructed between 1914 and 1917: four by Clyde Engineering, twelve by the Baldwin Locomotive Works and ten by the Toowoomba Foundry. No. 1 was built by Clyde, works No. 126 of 1914, and was placed in service in March of that year.

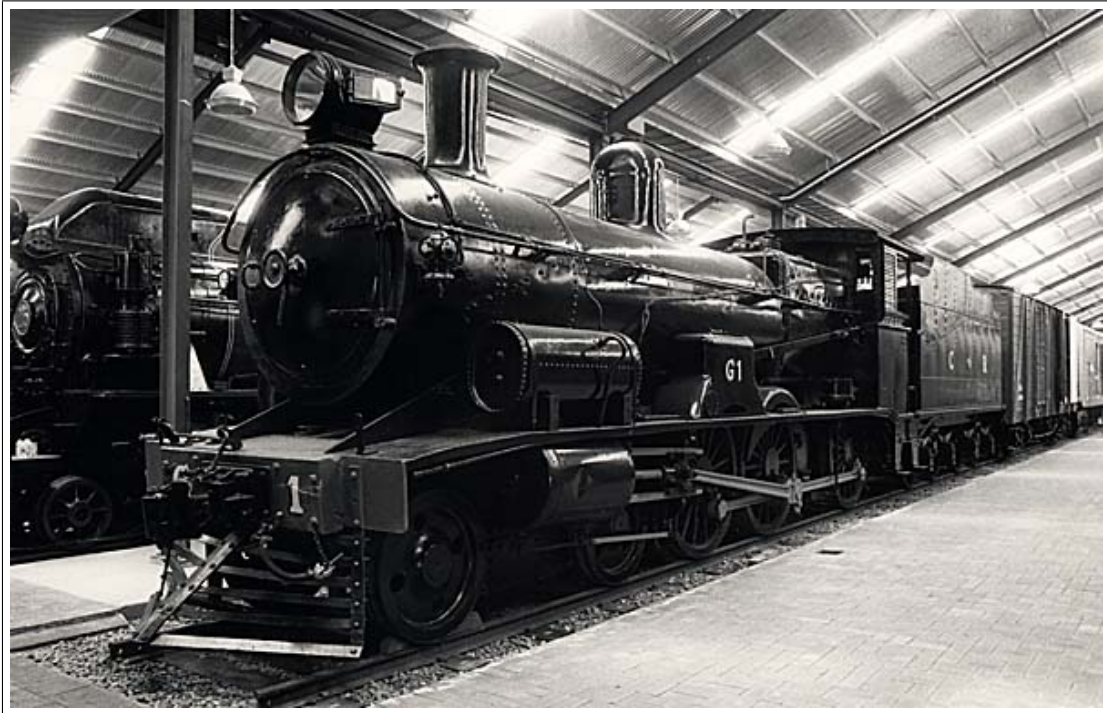
The G-class spent twenty years hauling the "Transcontinental Express" between Port Augusta and Kalgoorlie until displaced in 1936 by the larger and more powerful C-class. Thereafter they were relegated to working the "Mixed" between Port Pirie and Port Augusta, hauling occasional goods trains, shunting and, during World War II, working troop trains.

Withdrawn from service in August 1946, No. 1 was not sent to the scrap yards at Siberia, Port Augusta, but because of its historical significance, was stored pending a preservation site. By the late 1960s this had still not eventuated and it was offered to the Mile End Railway Museum by the then Commissioner Mr. K. R. Smith. It was gratefully accepted and placed on display on 17th December 1969. On 14th July 1988 it made yet another journey when it was transported by road to the Museum.

400 Class 4-8-2+2-8-4 Steam Locomotive No. 409 - South Australian Railways - Narrow Gauge

After the Second World War there was a need for more and bigger motive power for the heavy ore trains between Broken Hill and Port Pirie. The T's were doing a sterling job, but there was too much traffic for them to handle on their own. In 1951 an order was given to Beyer-Peacock of Manchester for ten large articulated engines of the Beyer-Garratt 4-8-2+2-8-4 type. This order was subsequently sublet to their European associate, Societe Franco-Belge de Materiel des Chemins-de-Fer, of Raismes in France.

It took two years until the first of these engines arrived in South Australia, and so to fill the gap the South Australian Railways took over six of the Australian designed Australian Standard Garratts from



G 1 at the Railway Museum, 1988 (*Murray Billett*)



Commonwealth Railways G-class 4-6-0 steam locomotive No. 1 - 6.10.2001 (*Chris Drymalik*)



G 1 at the head of a *Tea and Sugar* consist - 18 May 2002 (*Chris Drymalik*)



400 class (*NRM Collection*)



400 class (*NRM Collection*)

the Western Australian Government Railways. Given South Australian numbers 300 to 305, they only lasted eighteen months in service, before the arrival of the 400 class.

These arrived in 1953, and by 1955 had taken over most of the working of the Broken Hill line. Identical in main specifications to the world-famous 60th class of the East African Railways, the 400's were oil-burners, but with provision for the installation of a mechanical stoker if converted to burn coal. They were also designed to be easily converted for service on either the broad or standard gauge if required.

Unfortunately, these magnificent engines came too late, for less than ten years after they were fully in service the diesel appeared on the scene and in 1963 they were all placed in storage at Peterborough. Here they were to remain until 1969 when a few of them were returned to service while the diesels were being converted ready for service on the new standard gauge line. Apart from trips to Terowie, it was only during this period when they were seen off the main Broken Hill line. During this time they worked on both Wilmington and Quorn lines.

Locomotive 409 was the second-last steam engine to have been placed in service on the South Australian Railways, the last being 406, which began work one week later. The boiler now in 409 was originally 408, having accomplished 20,536 miles before the change.

T Class 4-8-0 Steam Locomotive No. 253 - South Australian Railways - Narrow Gauge

By 1903 the ore traffic on the line from Broken Hill was rapidly expanding and the diminutive Y class locomotives were proving to be far too small for the heavy hauls. So a larger engine of the 4-8-0 wheel arrangement was designed, and four were ordered. T44, 45, 46 and 180 were built at Islington. The first, 180, appeared in 1903 and the other three later in 1907. Nicknamed Big Ben, these engines proved to be most successful, and a further 34 were ordered from James Martin and Company of Gawler and 40 from Walkers of Maryborough in Queensland.

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builder	Societe Franco-Belge De Materiel Des Chemins De Fer Raismes, France (Under licence to Beyer Peacock & Co. - Manchester, England)
Number in Class	10
Number Series	400 - 409
Entered service	6th September 1954
Condemned	1st May 1970
Entered the museum	17.11.1970
Length (over coupling points)	87' 5"
Total Weight	148 tons 19 cwt
Wheel Arrangement	4-8-2+2-8-4
Driving Wheel Diameter	4'
Cylinders	4x outside - 16" x 24"
Tractive Effort	43,520 lbs
Fuel Capacity	6 tons (1,400 gallons fuel oil)
Grate Area	48 ³ / ₄ square feet
Water Capacity	3,700 gallons

Table 5.10: Details of 400 Class 4-8-2+2-8-4 Steam Locomotive No. 409 - South Australian Railways - Narrow Gauge

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	South Australian Railways, Islington workshops James Martin, Gawler, South Australia. Walkers Ltd, Maryborough, Queensland
Number in class	78
Entered service	8th September 1917
Withdrawn	18th May 1970
Entered the museum	24th November 1970
Length (over coupling points)	54' 0"
Weight in Working Order:	78 tons 8 cwt
Tractive Effort	21,904 lbs
Wheel Arrangement	4-8-0
Driving Wheel Diameter	3 ft' 7"
Cylinders	2x outside - 16 ¹ / ₂ " x 22"
Valve Gear	Stephenson
Boiler Pressure	185 lbs p.s.i.
Tractive Effort	21,904 lbs
Coal Capacity:	8 tons
Water Capacity	2,500 gallons

Table 5.11: Details of T Class 4-8-0 Steam Locomotive No. 253 - South Australian Railways - Narrow Gauge



Locomotives T253 and Y 97 (*Andrew Peters*)

The class remained dominant on the line for some half a century until the advent of the large Beyer-Garratts, which were to supplement rather than to displace the T's. In all that time they remained the biggest power on all the South Australian narrow-gauge lines.

They did not remain solely on the Broken Hill line, but saw service also on the Port Lincoln Division, the South-Eastern narrow gauge lines and even the narrow gauge Commonwealth Railways line to Alice Springs during the Second World War. Between 1923 and 1949 five members of the class were converted to run on 5 ft 3 in gauge Murray River lines, during which time they were designated as being the Tx class. The only narrow gauge lines on which they did not run were the branches to Glencoe, Beachport and Kingston.

By the 1950's the engines were looking very different from those that had emerged from the builders in the first two decades of the century. Large headlights had been added, the smokebox had been twice extended - the second time to incorporate a Cyclone spark arrestor - and the tender enlarged. By the end of their lives the tenders had become rather ungainly and towered above the engines, particularly on those engines which had been converted to burn oil, and an additional tank installed.

In the 1920's six of the T's were sold to the Tasmanian Railways, but the bulk survived in South Australia right up to the 1960's, and indeed it was to be a T class engine that was to haul the last regularly scheduled steam train to operate in South Australia on 9th January 1970.

The conversion of the main line from Port Pirie to Broken Hill from narrow to standard gauge was the death-knell of the class, although paradoxically it also gave them a last moment of glory. Right at the end of the narrow gauge days all the diesels were withdrawn from service to allow them to be converted to run on the new standard gauge line, and during this period the T's and the Beyer-Garratts again reigned supreme on the line. However, on 18th May 1970 no fewer than 24 members of the class were condemned, and the final six followed a month later.



Locomotive T253 (*Andrew Peters*)



Builders photo of the prototype Tclass Number 180 (*NRM Collection*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	South Australian Railways, Islington Workshops Beyer Peacock, Manchester, England. James Martin, Gawler, South Australia.
Number in class	129
Entered service	27th February 1890
Condemned	4th September 1970
Entered the museum	23rd September 1970
Length (over coupling points)	39' 3"
Total Weight	47 tons 15 cwt
Tractive Effort	13,289 lbs
Wheel Arrangement	2-6-0
Driving Wheel Diameter	3' 3"
Cylinders	2x outside - 14½" x 20"
Coal Capacity	4 tons 10 cwt
Water Capacity	1,600 gallons

Table 5.12: Details of Y Class 2-6-0 Steam Locomotive No. 97 - South Australian Railways - Narrow Gauge

Y Class 2-6-0 Steam Locomotive No. 97 - South Australian Railways - Narrow Gauge

The Y-class 2-6-0s constituted the largest class of locomotives on the South Australian Railways, 129 having been built between 1885 and 1898. The last of the series to go into service, No. 179, was also the first locomotive to be built at the Islington Workshops.

The initial order was placed with Beyer Peacock & Co. of Manchester, England but, besides the two constructed at Islington, a large number were also built at Gawler by James Martin & Co. No. 97 is a Beyer Peacock locomotive and carries builder's number 3147 of 1889. It was placed in service on 27th February 1890.

The Y-class were a development of Beyer Peacock's "Narrow-gauge Mogul", and this type saw service in every colony in Australia with the exception of Victoria. In South Australia it became the standard narrow-gauge locomotive, serving on the Northern, Western and Southern Systems, and Eyre Peninsula.

Y 97 was withdrawn on 14.5.1970. The day before it had done a special trip for the Australian Railway Historical Society to Eureka & return. It was moved to the Mile End Museum on 23rd September 1970 and eventually to its current home at the museum on 11th November 1988.

NM class 4-8-0 Steam Locomotive No. 34 - Commonwealth Railways - Narrow Gauge

Nearly every Australian railway system designed and built its own steam locomotives. However, there was one major exception among the Government railways, and that was the Commonwealth Railways. Every class that they operated was one based on engines with proven experience in one or other of the States, or else were bought second-hand.

The NM class was no exception, being virtually a direct copy of the Cl7 class 4-8-0 of the Queensland Railways, which in itself was a development of the Cl6 class which had appeared back in 1903. The 22 NM's were ordered as two batches from Thompson and Company of Castlemaine, Victoria, and all were built between 1925 and 1927. NM 15 to 28 and NM 31 to 37 were to become the mainstay of operations on the narrow gauge Central Australia line from Port Augusta to Alice Springs for nearly thirty years, although at times the volume of traffic was such that they had to receive assistance from



Locomotive Y97 (*Andrew Peters*)

Class operators	Commonwealth Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Class Builder	Thompson, Castlemaine Victoria
Number in Class	22
Entered service	2 July 1927
Withdrawn	8 October 1967
Entered the museum	30 October 1967
Overall Length	53' 1/2'
Tractive Effort	19,200 lbs
Wheel Arrangement	4-8-0
Water Capacity	3000 gallons
Weight in Working Order	80 tons 19 cwt

Table 5.13: Details of Steam Engine NM class 4-8-0 Steam Locomotive No. 34 - Commonwealth Railways - Narrow Gauge



NM 34 at Stirling North, circa 1934 (*NRM Collection*)



NM 34 taking water in the workshops yard at Port Augusta before leaving on No. 241 Northbound Ghan on Monday 29 December 1952 (*Doug Colquhoun*)



NM 34 in the rollingstock pavilion (*NRM Collection*)

the borrowed South Australian T's. NM 38 spent part of its life on the North Australia Railway, in and out of service. The NM's were the locomotives which hauled The Ghan in steam days.

Designed to burn Newcastle coal, various fuel shortages caused these engines to be adapted to burn various mixtures on different occasions. One experiment involved a 50-50 mixture of Leigh Creek and Newcastle coals, which permitted free steaming but caused an increased number of sparks to be emitted. In 1949 for a short time all engines in the class were converted to burn oil and Leigh Creek coal, and were fitted with 800 gallon tanks, but all were soon reconverted to burn Newcastle coal.

By the time the NSU diesels arrived in 1954, most of the NM's were in poor condition and few survived for any length of time after that. One that did was NM 34, which was retained at Quorn for use as a standby shunter, and during the sixties actually made a few trips through the Pichi Richi Pass. After a handing over ceremony to the Museum by Mr K.A.Smith at Stirling North on 8th October 1967, she became the last Commonwealth Railways steam engine to be used in traffic when, enroute to the Museum, she hauled a special train through the Pichi Richi Pass to Quorn and Peterborough, double-heading with South Australian Railways T class No. 199

A Class 4-6-0 Steam Locomotive No. 21 - Silverton Tramway Company - Narrow Gauge

Before World War 1 the Silverton Tramway needed new locomotives for the increasing work on the main line. The South Australian Railways had replaced its Y's with the larger T's, but the Silverton Tramway still operated its section of the line with the popular little Ys. To take over the task, a pair of 4-6-0 tender engines were delivered by Beyer-Peacock of Manchester. Numbered 18 and 19, these two engines were designated as belonging to class A. In 1915 another pair were delivered to complete the class.

Like their counterparts the T's, these engines were to be long lived on the strenuous ore runs, pulling their heavy trains for nearly forty years. All the engines of the class were built with small tenders so as to keep them within the limits imposed by the fifty foot turntables, but the two later engines did have slightly larger tenders than the earlier pair.

In their turn the A's were to be replaced by the larger Mountain type W's in 1951, but instead of being

Class operators	Silverton Tramway Company
Condition	Excellent
Entered service	1915
Entered the museum	2.10.1965
Length (over coupling points)	44' 6"
Number in class	4
Ownership	National Railway Museum
Provenance	Silverton Tramways Company
Total Weight	59.10 tons
Tractive Effort	18,467 lbs
Wheel Arrangement	4-6-0
Withdrawn	28.10.1960

Table 5.14: Details of A Class 4-6-0 Steam Locomotive No. 21 - Silverton Tramway Company - Narrow Gauge



Silverton Tramway Co - A-class 4-6-0 Locomotive No. 21 (*Andrew Peters*)

scrapped they were put on the shunting turns, and two were hired by the South Australian Railways, for shunting duties at Peterborough. For the last few years they saw only limited service at Broken Hill, and A18 was the last A to work on 20th January 1961.

These were handsome engines with their large boilers, and have been compared with some of the famous engines of the British Great Western Railway. Although not as powerful as the T's to whom they would hand over their loads at Cockburn, they were every bit as impressive, and in later years (after the T's had received their various modifications) were indubitably the better looking engines.



Silverton Tramway Co - A-class 4-6-0 Locomotive No. 21 (*Andrew Peters*)

On the 35 route miles of the Silverton Tramway these engines could haul loaded ore trains weighing up to 830 tons. On the other hand they were, equally at home on the Broken Hill Express. Officially, they were designated as being mixed traffic engines, and indeed they could handle anything required of them. They had a fairly small diameter driving wheel (4 ft 3 ins) and were only allowed to travel at up to thirty-five miles an hour.

At various times during World War II and during the early 1950s all were loaned to the South Australian Railways. No. 21 was loaned in 1944 and between 29.11.1951 and 28.2.1953.

No. 21 was written off on 28.10.1960 and placed in the Mile End Railway Museum on 2.10.1965. It was transferred to the museum on 1.9.1988 and became the first locomotive to be pushed into the rollingstock pavillion on 19.11.1988

W Class 4-8-2 Steam Locomotive No. 25 - *H.F (Gerry) Walsh* - Silverton Tramway Company - Narrow Gauge

The third of the three Silverton Tramway engines to be preserved in the Museum is the large 4-8-2, number 25 of the Tramway's class W. This design had originally been conceived by the Western Australian Government Railways, which had had sixty of their class W engines placed in service in 1951-2. The Silverton engines, of which four were built, varied from the Western Australian originals in the tender details and by the addition of a streamlined easing which covered the funnel and dome. All four engines were painted out in cotswold green and were named after Directors of the Company.

Class operators	Silverton Tramway Company
Condition	Excellent
Entered service	4th October 1951
Entered the museum	12.3.1970
Length (over coupling points)	61' 11
Number in class	4
Ownership	National Railway Museum
Provenance	Silverton Tramways Company
Total Weight	97 tons
Tractive Effort	21,760 lbs
Wheel Arrangement	4-8-2
Withdrawn	July 1961

Table 5.15: Details of W Class 4-8-2 Steam Locomotive No. 25 - *H.F. (Gerry) Walsh* - Silverton Tramway Company - Narrow Gauge



W Class 4-8-2 Steam Locomotive No. 25 - *H.F. (Gerry) Walsh* - 21st September 2008 (*Chris Drymalik*)



W Class 4-8-2 Steam Locomotive No. 25 - *H.F. (Gerry) Walsh* - 21st September 2008 (*Chris Drymalik*)

Built by the Manchester company, Beyer-Peacock, these engines followed a tradition set by the Y's and the A's. In fact their building meant that every steam engine built for the Company was a product of Beyer-Peacock's. All four engines arrived at Port Pirie on 4th October 1951, and were then railed to Broken Hill. For this trip W 24 and W 25 were steamed and these hauled the other two - W 22 and W 23.

In service these engines could haul 1,200 tons of ore, in contrast to the 800 tons that the A's could manage, and this meant that they matched up well with the 400 class Garratts which were very shortly to be their counterparts on the South Australian Railways. In regular service they took over all roles from the A's and were to be seen on both passenger and freight trains. They performed well for the next nine years until the advent of the sixties, but by then some of the older engines were presenting problems and the mining companies were expanding their activities. These factors combined were sufficient to persuade the company that they should be looking to diesel power, and in 1960 they placed in service the first of the three diesel electric units.

This immediately rendered the W's redundant, and between December 1960 and July 1961 all four were placed in store. After that time W 25 was only steamed up again when she operated on special occasions. W 25 is named H.F. (Gerry) Walsh.

Y Class 2-6-0 Steam Locomotive No. 12 - Silverton Tramway Company - Narrow Gauge

To enable ore to be shipped from the fabulously rich line of lode at Broken Hill to the smelters then being established at Port Pirie, a company was formed to construct and operate a narrow gauge line between Broken Hill and the South Australian Railways railhead at Cockburn, via Silverton - a distance of 35 miles (56.35 kms). Known as the Silverton Tramway Company (only colonial governments were permitted to operate railways) it became a highly successful venture surviving until 1970. At this time, as part of the project for completion of a standard gauge Transcontinental

Class operators	Silverton Tramway Company
Condition	Excellent
Entered service	1893
Entered the museum	2.10.1965
Length (over coupling points)	39 feet 3 inches
Maximum Axle Load	8 tons 6 cwt
Maximum Speed	35 mph
Number in class	19
Ownership	National Railway Museum
Provenance	Silverton Tramways Company
Total Weight	47 tons 14 cwt
Tractive Effort	16,500 lbs
Wheel Arrangement	2-6-0
Withdrawn	13th September 1964

Table 5.16: Details of Y Class 2-6-0 Steam Locomotive No. 12 - Silverton Tramway Company - Narrow Gauge

line between Sydney and Perth, a more direct route was built by the South Australian Railways between Cockburn and Broken Hill, bypassing Silverton.



Silverton Tramway Co. - Y-class 2-6-0 Steam Locomotive No12 (*Andrew Peters*)

When in 1888 the Company considered the purchase of its first locomotives, it made the logical choice of emulating the S.A.R's preference for main line power and ordered from Beyer Peacock & Co. four 2-6-0s identical to their Y-class. These also were classified Y and were the first of nineteen units built by Beyer Peacock and placed in service between 1888 and 1907.

Y 12 was outshopped in 1893 carrying builder's number 3536, and saw just over seventy years of service. However, it's major claim to fame was that it is believed to be the locomotive which was involved in the infamous Battle of Broken Hill, on New Years Day 1915. Y 12 was hauling a picnic train

to Silverton, when it was ambushed by two Turks who fired into the open trucks which were being used to carry the passengers. The two Turks had decided that it was time that they did something to assist their country's war effort. A number of passengers were killed.

Although the Silverton Tramway's Y's looked identical to those of the South Australian Railways when they were built, they were to end their days looking quite different. This was mainly because during their life they received very few alterations while the South Australian engines, on the other hand, were quite extensively modified.



Silverton Tramway Co. - Y-class 2-6-0 Steam Locomotive No12 (*Andrew Peters*)

The Y's were superseded on the main line by the A class 4-6-0's, but they were to continue to shunt for many years. They were popular engines and several lasted into the 1950's, still being preferred for shunting work, even after the advent of the large W class engines. The last use of a Y on the Tramway was Y 12 on 17th July 1961, the year that the diesels were introduced, but so popular were the engines that no less than three have been preserved - Y 12, Y 11 at Silverton and Y 1 at Broken Hill. The last of the class to run was Y 12, with a special train, on 13th September 1964. It was moved to the Mile End Railway Museum on 2 October 1965.

BHP 4-6-0 Steam Locomotive No. 4 - Broken Hill Proprietary Company - Narrow Gauge

In 1914 the Baldwin Locomotive Works, Philadelphia, USA, built two 4-6-0 locomotives for use on the Broken Hill Proprietary's Tramway which ran between Whyalla and Iron Knob. They were to take over the haulage of iron ore from the small British built tank locomotives then in use.

Delivered in August 1914 and given road numbers 4 and 5, they were typical North American products, being supplied with engine bells, but without those typically American appendages, Cow-catchers. The bells were removed shortly after their arrival.

They accounted for all main line haulage and could lift 850 tons away from Iron Knob. Their reign was shortlived, however, as increasing ore production placed ever increasing demands on them, and the



Broken Hill Proprietary Co. - Whyalla & Iron Knob Tramway - 4-6-0 Steam Locomotive No. 4 (*NRM Collection*)



Broken Hill Proprietary Co. - Whyalla & Iron Knob Tramway - 4-6-0 Steam Locomotive No. 4 - 21st September 2008 (*Chris Drymalik*)

Class operators	Broken Hill Proprietary Company
Condition	Excellent
Entered service	August 1914
Entered the museum	19.6.1969
Number in class	2
Ownership	National Railway Museum
Provenance	Broken Hill Proprietary Ltd
Tractive Effort	16,300 lbs
Wheel Arrangement	4-6-0

Table 5.17: Details of BHP 4-6-0 Steam Locomotive No. 4 - Broken Hill Proprietary Company - Narrow Gauge

Class operators	Broken Hill Associated Smelters
Condition	Excellent
Entered service	1919
Entered the museum	10.2.1966
Length (over coupling points)	21' 0
Number in class	3
Ownership	National Railway Museum
Provenance	Broken Hill Proprietary Ltd
Total Weight	18
Tractive Effort	6,800 lbs
Wheel Arrangement	0-6-0
Withdrawn	November 1965

Table 5.18: Details of 0-6-0 Steam Locomotive No. 4 - *Peronne*

Company placed orders with Baldwin for two additional locomotives - 2-8-2s with almost twice the power. These latter locomotives, which were placed in service in 1920, were then the most powerful in use in Australia and, though only 3' 6" gauge, could haul 2,000 ton trains unaided from Iron knob.

No. 4 and 5 were relegated to secondary duties, shunting, work trains, and banking empty ore train up the 1 in 95 grade out of Whyalla. No. 5 was written off and scrapped in 1956, but No. 4 survived, having been fitted with special steam pipes to enable it to drive the Company's pile driver. It performed this duty from time to time until the mid 1960s when it was laid aside. In 1969 it was donated, minus its tender, to the Mile End Railway Museum. At first it was feared that the tender had been scrapped but it was later discovered that the underframes were still in use as a flat car. This was obtained by the Museum who built a new tender on it. Though, on arrival at Mile End on 19th June 1969, No. 4 was found to be in very poor condition, it has since been refurbished to display standard. It was placed at the museum on 11th November 1988.

Visitors will note that No. 4 once more has its engine bell. When removed it had been given to the Iron Knob school who subsequently donated it to the museum.

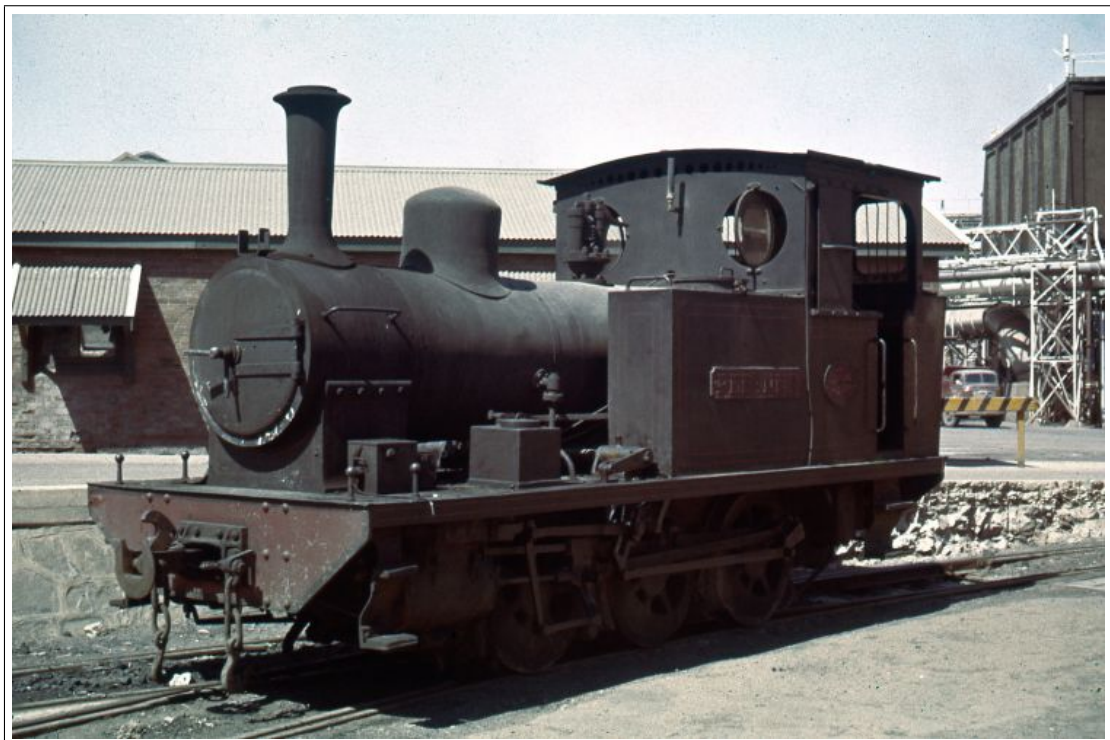
0-6-0 Steam Locomotive No. 4 - *Peronne* - Broken Hill Associated Smelters - Narrow Gauge

The establishment of silver-lead-zinc smelting facilities at Port Pirie in 1889 by the British Broken Hill Company commenced the flow through South Australia of rich ores from the fabulously rich Line of Lode of Broken Hill. It was intensified in 1892 when the Broken Hill Proprietary Company bought out the smelters and transferred its own smelting operations from Broken Hill.

The Company owned just over two miles of sidings at Port Pirie, but shunting was carried out by South Australian Railways locomotives. When the smelters were taken over by Broken Hill Associated Smelters Ltd. in 1915 efforts were made to acquire their own locomotives but, because of World War I, they were unable to do so until 1919. Andrew Barclay & Sons of Kilmarnock, Scotland, had built for



Broken Hill Associated Smelters, Port Pirie - 0-6-0 tank locomotive *Peronne*. Locos Peronne & Pt Pirie in smelters yard at Port Pirie, 1959 (*D. Colquhoun*)



Broken Hill Associated Smelters, Port Pirie - 0-6-0 tank locomotive *Peronne*. at Port Pirie (*NRM Collection*)



Broken Hill Associated Smelters, Port Pirie - 0-6-0 tank locomotive *Peronne* hauls a train at NRM on 10th July 2010 (*Chris Drymalik*)

Class operators	Miliquin Mill
Condition	Excellent
Entered service	1946
Entered the museum	25th May 1981
Length (over coupling points)	21' 3 1/2"
Number in class	13
Ownership	National Railway Museum
Provenance	Millaquin Mill, Queensland
Total Weight	16.00 tons
Tractive Effort	7,200 lbs
Wheel Arrangement	0-6-2T
Withdrawn	1978

Table 5.19: Details of 0-6-2T Steam Locomotive No. 3 - *Skipper*

the British War Dept. a series of 3' 6" gauge 0-6-0 tank locomotives which were rendered surplus at the end of the war. Four were purchased by Broken Hill Associated Smelters.

Carrying builder's numbers 1543 to 1546 of 1918 they were named Pozieres, Polygon, Peronne, Passchendale and Pozieres being slightly larger than the other three. Polygon was sold to New Guinea Copper Mines Ltd. in 1927, being finally scrapped in 1961. Its place was taken in 1928 by a locomotive named Port Pirie which was similar in size to Pozieres. All but Polygon have survived for preservation.

Peronne was purchased from Broken Hill Associated Smelters in November 1965 by Mr. F. B. Andrews and presented to the Mile End Railway Museum. In 1984 a project to restore it to working order was commenced, this work being completed in 1988. Trials were successfully conducted over the Pichi Richi Railway at Quorn and, on its return to Adelaide, it was sent directly to the Museum. Here it figured in the official opening of the Museum, being driven on that occasion by Premier John Bannon. It has since been regularly steamed to haul passenger trains over a section of track especially laid for it.

0-6-2T Steam Locomotive No. 3 - *Skipper* - Millaquin Mill - 2 Foot Gauge

The sugar mills of Queensland are served by extensive networks of 2' 0" gauge "Tramways" which are now operated by diesel locomotives which, for the most part, have been built in Australia. However, they were once worked by a large number of diminutive steam locomotives, most of which came from the British builders John Fowler and Hudswell Clarke. The only Australian company to seriously attempt to enter this field in the years between the wars was Perry Engineering of Mile End who supplied tank locomotives of the 0-4-2 and 0-6-2 types.

Skipper belongs to a group of thirteen 0-6-2Ts built between 1934 and 1952, and was outshopped by Perry in 1946, carrying works number 289. It was built for the Millaquin Mill at Bundaberg and was given road number 3. When displaced by diesel traction it was sent to the Qunaba Mill where it was given the name Skipper and renumbered 2. Written off in 1978 it remained in storage at the mill. Meanwhile the Mile End Railway Museum launched a project to acquire a Perry-built cane locomotive for its collection. The necessary funds were raised and Skipper was purchased, arriving at Mile End on 25th May 1981.

It was moved to the Museum on the former South Australian Railways locomotive transporter wagon WL 8200, on 24th January 1989. It is also interesting to note that, of the thirteen locomotives of this type built by Perry, only two have been broken up. The rest have been preserved around Australia and seven are in working order.



Colonial Sugar Refining Co. - Steam Locomotive O-6-2T No 2 Skipper hauling a cane train (*NRM Collection*)



Locomotive number 2 *Skipper* - 7 March 2009 (*Chris Drymalik*)



NRM Exhibits Guide

DIESEL-ELECTRIC LOCOMOTIVES

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Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	National Railway Museum
Class Builders	S.A.R. Islington Workshops
Number in class	33
Number series	500 - 533
Entered service	29th December 1966
Entered the museum	2nd June 1992
Total Weight	56 tons (56,896 kilograms)
Length (over coupling points)	41' 4" (12.59 metres)
Engine type	EE 4SRKT
Horsepower	500 hp
Gear Ratio	72:15
Wheel Arrangement	Bo-Bo
Traction Motors	4x
Fuel capacity	700 gallons (3,182 litres)

Table 6.1: Details of 500 class Bo-Bo Diesel-Electric Locomotive No. 515 - South Australian Railways - Broad Gauge

500 class Bo-Bo Diesel-Electric Locomotive No. 515 - South Australian Railways - Broad Gauge



515 and steam locomotive Bub at the museum (*NRM Collection*)

The 500-class locomotives became the South Australian Railways shunting locomotives. Thirty-four were built at the Islington Workshops between 1964 and 1969 using English Electric engines and electricals, and could be found working over virtually all of the broad and standard gauge systems.

Rated at 500 h.p. they proved ideal for use at smaller depots and over the lighter plant found on many branch lines. As their allocation to various depots proceeded they displaced more and more older steam locomotives, particularly the F and Rx classes resulting in their extinction from the South Australian Railways roster.



515 passing through North Adelaide on a goods transfer movement (*NRM Collection*)

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	National Railway Museum
Class Builders	English Electric, Rocklea, Queensland
Number in class	10
Entered service	9th June 1956.
Withdrawn	1992
Entered the museum	1992
Total Weight	72 tons (73,152 kilograms)
Length (over coupling points)	44' 10" (13.66 metres)
Engine type	EE 6SRKT
Horsepower	750 hp
Wheel Arrangement	Bo-Bo
Traction Motors	4x
Gear Ratio	56:15
Fuel capacity	700 gallons (3,182 litres)

Table 6.2: Details of 800 class Bo-Bo Diesel-Electric Locomotive No. 801 - Australian National Railways - Broad Gauge

The 500s were quite distinctive machines, their most outstanding features being their roof-mounted bells and distinctive cabs, reminiscent of those on some steam locomotives.

Engine 515 is in full working order. It arrived at the museum on broad gauge (5' 3"), but was placed on standard gauge bogies on 3 October 2001.



500 class Bo-Bo Diesel-Electric Locomotive No. 515 shunting the museum - 2nd April 2010 (*Chris Drymalik*)

800 class Bo-Bo Diesel-Electric Locomotive No. 801 - Australian National Railways - Broad Gauge

No. 801 was the second of the order, carrying works number A-002, and was placed in service on 9th June 1956.



South Australian Railways 800-class Bo-Bo Diesel Electric Locomotive No. 801 at the old Port Dock office 8.12.1956 (*D. Colquhoun*)



South Australian Railways 800-class Bo-Bo Diesel Electric Locomotive No. 801 hauling a suburban passenger train (*NRM Collection*)

The first orders for broad-gauge diesel-electric motive power placed by the South Australian Railways



South Australian Railways 800-class Bo-Bo Diesel Electric Locomotive No. 801 at the museum - 29th May 2010 (*Chris Drymalik*)

in the early 1950s were for main line locomotives - the 900 and 930-classes. However, ageing steam locomotives were still used for shunting and it was increasingly evident that their replacement was overdue. Therefore, in 1955, an order was placed with English Electric, Rocklea, Queensland, for ten 750 h.p. Bo-Bo machines. These were delivered in 1956-57 and became the 800-class No. 800-809.

Most were allocated to the Port Adelaide depot where they replaced the small P-class 2-4-0 tank engines (No. 117 is preserved in this museum), and provided shunting power for the area for the next thirty years. They were not however restricted exclusively to these duties, but regularly hauled transfer freight trains around suburban Adelaide, and occasionally worked local passenger trains.

All were taken into Australian National ownership on 1st March 1978, but began to be withdrawn from service and cut up in the early 1990s. No. 801 was withdrawn and sold to the railway museum in 1992. It is in full working order and is occasionally used for shunting.

900 class A1A-A1A Diesel-Electric Locomotive No. 900 - *Lady Norrie* - South Australian Railways - Broad Gauge

The first main line diesel electric locomotive to be placed in service on the Australian mainland was South Australian Railways' No. 900, *Lady Norrie*, which entered traffic on 10th September 1951. Of conventional design, with a carbody of pronounced similarity to contemporary Alco (USA) practise, it was built at the Islington Workshops, using English Electric engines and electricals, and was the first of ten 1580 h.p. machines which were to change the face of railroading in South Australia forever.

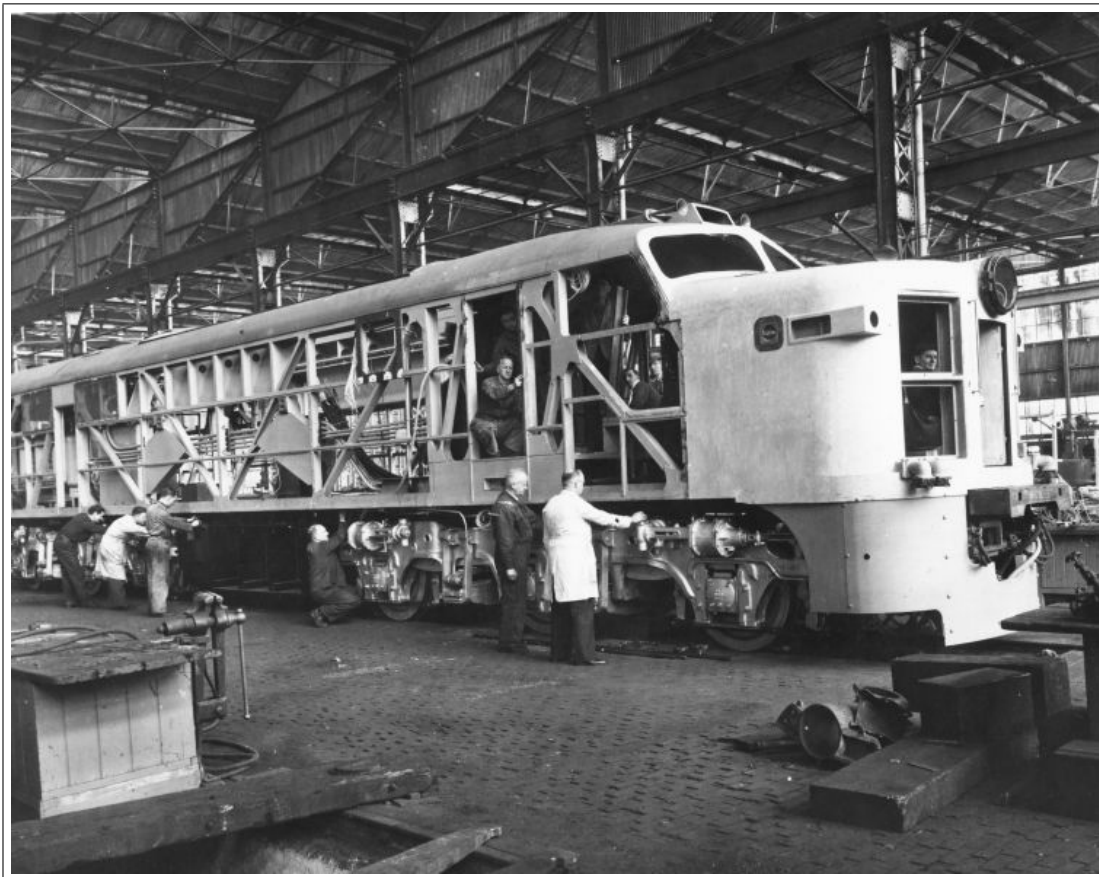
No. 900 made a dynamometer test run with a Port Pirie goods on 10th September 1951 and its first revenue run hauling the down East-West Express between Adelaide and Port Pirie on 12th September. Continuing to work this train until No. 901 entered service on 2nd November and multiple unit trials were run on goods trains through the hills. On the 20th November both engines hauled the Overland between Adelaide and Tailem Bend and as more units became available they began



South Australian Railways 800-class Bo-Bo Diesel Electric Locomotive No. 801 at the museum - 29th May 2010 (*Chris Drymalik*)

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Class Builders	S.A.R. Islington Workshops
Number in class	10
Entered service	12th September 1951
Withdrawn	1st July 1985
Entered the museum	18th August 1985
Length (over coupling points)	66' 2" (20.16 metres)
Total Weight	126 tons (128,016 kilograms)
Traction Motors	4
Wheel Arrangement	A1A-A1A
Maximum Axle Load	21.3 tons (21,640 kilograms)
Gear Ratio	70:19
Tractive Effort (starting)	47,000 lbs (279 kN)
Tractive Effort (continuous)	34,000 lbs at 14.7 mph (151 kN at 23.6 km/h)
Engine type	English Electric 16 SVT
Cylinders	V16
Horsepower	1,760 hp at 750 rpm
Maximum Speed	74 mph (119 km/h)
Fuel capacity	1000 gallons (4,546 litres)

Table 6.3: Details of 900 class A1A-A1A Diesel-Electric Locomotive No. 900 - *Lady Norrie* - South Australian Railways - Broad Gauge



South Australian Railways - 900-class A1A+A1A diesel electric locomotive No. 900 Lady Norrie under construction at the Islington Workshops in 1951 (*NRM Collection*)

working through to Serviceton. Thus were the 500B, 700 and 720B classes displaced from the Adelaide to Tailem Bend line and the 600C class from the section to Serviceton.

The 900s were soon working over all main lines hauling both goods and passenger trains, and were to enjoy a long life beyond that normally allotted to diesel locomotives. They also generated amongst railway enthusiasts an affection akin to that enjoyed by the steam locomotives they had displaced.

After Australian National took over the country lines in South Australia in March 1978 the 900s began to be withdrawn as they became due for major overhauls, but those remaining enjoyed a moment of glory in the early '80s. For a brief period, triple-heading, they returned to working the "Overland". 900 and 909 worked to Coonalpyn on a Steamranger "Last passenger run" on 29th July 1984 but, on 1st July 1985 the axe finally fell and the five left in service were condemned.

No. 900 was placed in the Mile End Railway Museum on 18th August 1985 and Nos. 907 and 909 were acquired by Steamranger. Before being placed in the museum, however, No. 900 made one final journey when it was towed by goods train to Melbourne and placed on display at the Austeam88 celebrations on 23rd October 1988.

930 class Co-Co Diesel-Electric Locomotive No. 930 - South Australian Railways - Broad Gauge

No. 930 was the first ALCO diesel-electric locomotive built in Australia under licence by A. E. Goodwin Ltd, and was the first of an order of six placed by the former South Australian Railways. Placed in service on 20th December 1955, it had been given ALCO's builder's number 81885 (Goodwin did not issue their own) and was one of their model FD-6 units (Goodwin's model DL500G). The FD series of locomotives formed ALCO's "World Model" and could be found working in



South Australian Railways - 900-class A1A+A1A diesel electric locomotive No. 900 Lady Norrie - Loco 900 as built in red/silver livery posed at the Islington Workshops in 1951 (*NRM Collection*)



South Australian Railways - 900-class A1A+A1A diesel electric locomotive No. 900 Lady Norrie
20.10.1988 (*R.E.Fluck*)



Loco 900 during an event at the museum (*Andrew Peters*)

Class operators	South Australian Railways Australian National Railways
Condition	Fair
Provenance	South Australian Railways
Ownership	National Railway Museum
Class Builders	A E Goodwin, Sydney, NSW
Number in class	37
Number series	930 - 966
Model	DL 500 B
Entered service	20th December 1955
Entered the museum	4th May 1990
Total Weight	104 tons (105,664 kilograms)
Length (over coupling points)	58' 10-3/8" (17.94 metres)
Engine type	ALCO 251B
Horsepower	1750 (1305 kW)
Gear Ratio	93:18
Wheel Arrangement	Co-Co
Maximum Axle Load	17.3 tons (17,576 kilograms)
Traction Motors	6x A.G.E. Co. 761
Tractive Effort (starting)	56,000 lbs (249 kN)
Tractive Effort (continuous)	42,900 lbs at 11.3 mph (191 kN at 17.7 km/
Maximum Speed	70 mph (112.6 km/h)
Fuel capacity	1,334 gallons (6,065 litres)

Table 6.4: Details of 930 class Co-Co Diesel-Electric Locomotive No. 930 - South Australian Railways - Broad Gauge



Locomotive 930 at the museum (*Chris Drymalik*)



Builders photo of Locomotive 930 (*NRM Collection*)



Locomotive 930 as delivered to the museum (*NRM Collection*)

Spain, India, Pakistan, Iraq and Peru. This first batch of South Australian locomotives were standard machines in that they were single cab units, but subsequent orders were for double-cab units.

The 930-class was to amount to thirty-seven members, the last, No. 966, being placed in service in June 1967. They were to become the workhorses of the South Australian Railways' broad-gauge lines, and it was not until 1978, when Australian National took over South Australia's country lines, that some of them were placed on the standard-gauge. Their duties varied from shunting and working wayside goods trains to hauling "The Overland" between Adelaide and Serviceton. Under AN ownership they were to work right through to Melbourne and beyond.

Australian National also modified the 930s to allow them to work in multiple-unit with Clyde-GM units so that, as well as working with the GM, AL, BL and CL-classes, they could work in multiple with various Victorian classes. For some time the head-end power for "The Overland" consisted of a V/Line X-class and a 930. Also in later years, though most were double-enders, AN adopted the policy of working them from the A-end only. During 1988 No. 930 was renumbered 967.

The arrival of AN's DL-class Clyde-GMs in 1987-88 meant that some of the earlier GMs and 930s were rendered surplus and were subsequently withdrawn from service. At the request of the museum 930 (alias 967) was earmarked for preservation and was placed in the museum on 4/5/90.

Ruston 0-4-0 Industrial Diesel Locomotive - ICI / Penrice Soda Products - Broad Gauge

This 0-4-0 hydraulic Ruston Hornsby broad gauge shunt locomotive was previously operated by ICI, now Penrice Soda Products at Osborne. Unfortunately the loco does not have an engine, but it was completely restored by the company prior to delivery to the museum.

The loco, never numbered, arrived from England by ship in 1950 and was unloaded on the company wharf at Osborne. Its prime task was to shunt wagons throughout the many sidings which once made up the complex ICI plant. These wagons were mainly carrying limestone from Penrice or soda ash bound for locations throughout Australia.

Class operators	ICI / Penrice Soda Products
Condition	Good
Entered service	1950
Entered the museum	5.12.1991.
Number in class	1
Ownership	National Railway Museum
Provenance	ICI / Penrice Soda Products
Wheel Arrangement	0-4-0
Withdrawn	1991
Model	0-4-0 hydraulic Ruston Hornsby shunt locomotive

Table 6.5: Details of Ruston 0-4-0 Industrial Diesel Locomotive - ICI / Penrice Soda Products - Broad Gauge



Penrice Soda Products -Industrial Locomotive *NRM (Collection)*

The loco has been overhauled at least twice, 1968 and 1977, by the railways at Islington Workshops, however when it came due for its next major overhaul and upgrading in 1988 it was undertaken by private contract at Gepps Cross. Unfortunately due to changed operating practices the engine became unsuitable for the task at hand and was stored. Meanwhile AN shunt loco 516 has been on hire to Penrice Soda Products for a few years, taking up the Ruston's duties.

On Wednesday 4 December 1991, 930 class loco 955 hauled the Ruston from Osborne to Dry Creek, then back to Gillman Yard, ready for shunting into the museum the following day.

Thanks must go to Penrice Soda Products for its generosity in making this locomotive available to the museum.

DE class Bo-Bo Diesel-Electric locomotive No. 91 - Commonwealth Railways - Standard Gauge

During World War II the Commonwealth Government purchased four diesel-electric shunting locomotives from the United States Army Transportation Corps for use at their munitions plant at St Marys, NSW. Built by the General Electric Company, Erie, USA, they were that company's model GE44

Class operators	Commonwealth Railways Australian National Railways
Condition	Good - missing some mechanical parts
Ownership	National Railway Museum
Provenance	New South Wales Government Railways, Commonwealth Railways, Australian National
Built by	General Electric Company, USA
Number in class	2
Number series	DE 90 - DE 91
Model	B-B-88/88-4GE733
Entered service	1945
Entered the museum	1988
Engine type	2x Caterpillar D17000
Cylinders	V8 (4 stroke)
Bore & stroke	5 ³ / ₄ " x 8" (146mm x 203mm)
Horsepower	380/350
Traction Motors	4x GE-733
Gear Ratio	11.25:1
Fuel capacity	210 gallons (954 litres)
Length (over coupling points)	33' 5" (10.18 metres)
Total Weight	44 tons (44,704 kilograms)
Maximum Axle Load	11 tons (11,176 kilograms)
Wheel Arrangement	Bo-Bo
Tractive Effort (continuous)	13,000 lbs at 7.2 mph
Tractive Effort (starting)	26,300 lbs
Maximum Speed	35 mph (56 km/h)

Table 6.6: Details of DE class Bo-Bo Diesel-Electric locomotive No. 91 - Commonwealth Railways - Standard Gauge

Standard 44-ton Switchers, and were powered by two Caterpillar 190 hp. V8 engines which delivered 350 hp. to the traction motors.

In Australia they retained their USATC numbers 7920-7923 and when, at the end of the war, they were handed over to the New South Wales Railways they continued to carry these numbers and became the 79-class. They were employed as coaching shunters in Sydney yard and at the Eveleigh workshops.

In September 1948 the Commonwealth Government, through the Department of Supply, resumed ownership of Nos.7921 and 7922 for use at the Woomera Rocket Range. In 1950 they were sold to the Commonwealth Railways, where they were classified DE, numbered 90 and 91, and put to work shunting at Port Augusta and Port Pirie. Both engines performed these duties until heavier loads required the use of MDH and GM class locomotives. In the 1970s No. 91 regularly worked construction trains for the building of the Port Augusta- Whyalla railway after which both were placed in store at Port Augusta and rarely saw service.

No. 91 was acquired by the Museum in 1986, but was held at Port Augusta until it could be accommodated at Port Adelaide. No. 90 was purchased by the New South Wales Rail Transport Museum at Thirlmere. No. 91 is presently awaiting restoration.

GM1 class A1A-A1A Diesel-Electric locomotive No. 2 - Commonwealth Railways - Standard Gauge

Dieselisation of Australia's major railway systems got away to a slow start because of a lack of local builders capable of manufacturing this type of locomotive. Initially therefore orders were placed overseas, and it wasn't until 1951, when the Clyde Engineering Co., of Granville, NSW, gained the licence to build General Motors EMD locomotives for the Australian market. Thereafter dieselisation proceeded at a rapid rate, checked only by the funds available. Other diesel builders emerged but Clyde retained the largest share of the market.



Commonwealth Railways - DE-class Bo+Bo diesel-electric locomotive No. 91 sits alongside a CR water column - 2nd April 2010 (*Chris Drymalik*)



Commonwealth Railways - DE-class Bo+Bo diesel-electric locomotive No. 91 - 7th March 2009 (*Chris Drymalik*)

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways & Australian National
Ownership	National Railway Museum
Built by	Clyde Engineering, Granville, NSW
Model	ML-1 (F class)
Number in class	11
Number series	GM1 - GM11
Entered service	17th November 1951
Withdrawn	6th March 1990
Entered the museum	2nd August 1991
Total Weight	106 tons (107,696 kilograms)
Length (over coupling points)	60' 10" (18.54 metres)
Wheel Arrangement	A1A-A1A
Engine type	GM EMD 567B
Cylinders	V16 (two stroke)
Bore & stroke	8½" x 10" (215mm x 254mm)
Horsepower	1625/1500 (1212/1120kW)
Traction Motors	4x GM EMD-D 27
Gear Ratio	58:19
Tractive Effort (starting)	41,440 lbs (184kN)
Tractive Effort (continuous)	29,600 lbs at 15 mph (132kN at 24 km/h)
Fuel capacity	1,500 gallons (6819 litres)
Maximum Speed	89 mph (143 km/h)
Maximum Axle Load	18½ tons (18,796 kilograms)

Table 6.7: Details of GM1 class A1A-A1A Diesel-Electric locomotive No. 2 - Commonwealth Railways - Standard Gauge



Commonwealth Railways - GM1-class A1A-A1A diesel-electric locomotive No. 2 (*NRM Collection*)



Commonwealth Railways - GM1-class A1A-A1A diesel-electric locomotive No. 2. - 10 April 2000
(Chris Drymalik)



Commonwealth Railways - GM1-class A1A-A1A diesel-electric locomotive No. 2. - March 2003 (Ryan Hothersall)



Commonwealth Railways GM1-class A1A-A1A diesel-electric locomotive No. 2. - 6.10.2001 (*Chris Drymalik*)

Clyde had built steam locomotives since 1907 and was fortunate in being one of the few steam locomotive builders to successfully make the transition from steam to diesel production. The eleven GM-class locomotives ordered by the Commonwealth Railways (Australian National's Predecessor) were the first diesel-electrics to leave the Granville plant and the forerunners of almost 1300 units built to date.

Based on General Motors-EMD's F-7 model, the design for the local product required considerable modification to conform with Australian loading gauges and axle load restrictions. This job fell to Fred Shea who produced a machine with a carbody both lower and longer than its US counterpart. The resulting A-7 (ML1) model was highly successful and aesthetically pleasing. Also, whereas the North American units were carried on four-wheel bogies, the GMs required six-wheel bogies to distribute the weight for the lighter track then in use, the traction motors being mounted on the outer axles. They were given road numbers 1 to 11.

GM 1 underwent its road trials over New South Wales Railways' tracks on 24th August 1951 and, on its delivery run ran as far as Albury. At Bandiana it was transferred to broad-gauge bogies and hauled the rest of the way to Port Pirie where it was once more lifted onto its own bogies. It was placed in service on 20th September. GM2, the museum's engine, entered traffic almost a month later on 17th November. All eleven were working by 8th July 1952.

Forty-seven GMs were built, though 12-47 were more powerful locomotives rated at 1750 h.p. and equipped with six traction motors. To identify each type, Nos.1-11 became the GM1-class and Nos.12-47 the GM12-class. The Commonwealth Railways also identified them as F-class (four motor) and S-class (six motor) in their Working Timetables.

Originally they were restricted to the Transcontinental route between Port Pirie and Kalgoorlie but, as the standard-gauge network expanded, they ranged further afield. Eventually they were to work in all mainland states except Queensland.

The success of Fred Shea's modifications to the original design can be gauged from the fact that variations of it were ordered by the Victorian Railways, New South Wales Railways and the North-Western Railway of Pakistan. All the GMs passed to the control of Australian National on 1st March 1978, and the first were not condemned until 1988. Most have had a lifespan well in excess of



Commonwealth Railways GM1-class A1A-A1A diesel-electric locomotive No. 2 - 6.10.2001 (*Chris Drymalik*)

Class operators	Electricity Trust of South Australia
Condition	Good
Entered service	1958
Entered the museum	1988
Length (over coupling points)	27' 6
Number in class	2
Ownership	National Railway Museum
Provenance	Electricity Trust of South Australia Port Augusta
Total Weight	53.00 tons
Tractive Effort	545HP
Withdrawn	1988

Table 6.8: Details of ETSA Diesel-Electric Locomotive No. 1 - Electricity Trust of South Australia - Standard Gauge

thirty years and only now are they being displaced by the more powerful DL and EL classes.

GM2 was set aside for the Museum and was placed there on 2.8.1991

ETSA Diesel-Electric Locomotive No. 1 - Electricity Trust of South Australia - Standard Gauge



Engine of E.T.S.A. Diesel Locomotive No. 1 (*Andrew Peters*)

In 1956 the Commonwealth Railways called tenders for four suitable Bo-Bo diesel locomotives with sufficient power to perform an occasional main line haul, and replace all steam on routine transfer and shunting operations. The resulting contract was subsequently altered to six locomotives with a Co wheel arrangement which were classified as the 'MDH' class.

Clyde Engineering Co. Ltd manufactured the locomotives, with the engines and final drives being



Engine of E.T.S.A. Diesel Locomotive No. 1 (*Andrew Peters*)

provided by Maybach Motorenbau of Friedrichshafen, West Germany. Hydraulic transmission equipment was supplied by Mekydro. The six shunters, all entered service by May 1959 and were used at Parkeston (Kalgoorlie), Port Augusta and Port Pirie, although there were occasions when they hauled trains across the Nullarbor.

At the same time as the Commonwealth contract was being called the Electricity Trust of South Australia (ETSA) decided to obtain an engine for use at the Thomas Playford Power-House, Port Augusta. They chose to go with an almost identical unit to that ordered by the Commonwealth Railways. This had the advantage that the Commonwealth Railways could be contracted to maintain the locomotive at the railways Port Augusta workshops, which was not far from the power station.

The unit was unclassified by ETSA, instead only being given the road number of '1'. After being withdrawn from service it spent a number of years stored at Port Augusta before being obtained by the museum.

NSU class A1A-A1A Diesel-Electric locomotive No. 61 - Commonwealth Railways - Narrow Gauge

The NSU class was purchased by the Commonwealth Railways to replace steam locomotives on the narrow gauge Central Australian Railway, with some of the class serving also on the North Australia Railway narrow gauge system.

The Commonwealth Railways placed a contract for fourteen locomotives was placed in early 1951 with the Birmingham Carriage and Waggon Company, England. Each unit would use a Sulzer engine, have a Crompton Parkinson main generator and traction motors, be capable of operating on both narrow and standard gauge and be delivered by the end of 1952.

All fourteen NSU's entered service on the Central Australian Railway, and suffered some minor problems with air and oil filtration equipment, in addition to some voltage regulator repairs done by the component manufactures, but generally they worked well. As work on the standard gauge line

Class operators	Commonwealth Railways Australian National Railways
Entered service	20.3.1955
Condition	Good - missing some mechanical parts
Provenance	Commonwealth Railways & Australian National
Ownership	National Railway Museum
Horsepower	925
Engine type	Sulzer 6LDA28
Traction Motors	4
Gear Ratio	65:14
Fuel capacity	750 gallons
Total Weight	60 tons
Length (over coupling points)	46 ft. 4 in
Number in class	14
Bore & stroke	11 in. x 14.2 in.
Entered the museum	1985
Maximum Axle Load	10? tons
Maximum Speed	50 mph
Tractive Effort (continuous)	15,300 lbs @ 15 ¹ / ₄ mph
Tractive Effort (starting)	22,400 lbs
Wheel Arrangement	A1A-A1A
Withdrawn	Pre 1980

Table 6.9: Details of NSU class A1A-A1A Diesel-Electric locomotive No. 61 - Commonwealth Railways - Narrow Gauge



National Railway Museum - side view of NSU 61 during a shunt operation - 20 October 1996 (*Chris Drymalik*)



Commonwealth Railways - NSU-class A1A-A1A Diesel-electric locomotive No. 61 - NSU 61 and NSU 56. - circa 1960s (*Commonwealth Railways*)

progressed to the stage where trains could work over it to Brachina, mainline steam working was almost discontinued, with the majority of services being handled by the NSUs.

Following the opening of various sections of the Marree standard gauge line, traffic requirements permitted the transfer of two units to the North Australia Railway. These two NSU's were able to handle all traffic on the North Australia Railway for almost the next ten years. Traffic levels dropped dramatically after the closure of the Frances Creek iron ore mine in 1974 allowing both units to be returned Central Australian Railway.



Commonwealth Railways - NSU-class A1A-A1A Diesel-electric locomotive No. 61 (*NRM Collection*)

All fourteen locomotives were transferred to Australian National Railways in 1975 and where gradually withdrawn from service, following the closure of the Central Australian Railway in 1980.



NRM Exhibits Guide

ELECTRIC LOCOMOTIVES

E1 - Electric Locomotive - Broken Hill Proprietary Company - Narrow Gauge	129
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E1 - Electric Locomotive - Broken Hill Proprietary Company - Narrow Gauge

This electric locomotive was the first of eight operated by the Broken Hill Proprietary Company Limited on two little known quarry railways, at Iron Knob and Iron Monarch in the north of the State and at Rapid Bay, south of Adelaide.

All of these locomotives were 3'6" gauge (1067mm), weighed 25 tons, and operated from 600 volts direct current.



Broken Hill Proprietary Co. - Iron Knob Tramway - Electric Locomotive No. E1 - Metro-Vickers built, BHP electric loco No. 1 goes about its business at the Iron Knob quarry c.1930 (*NRM Collection*)

Introduced at the iron stone quarries at Iron Knob in 1928, the three original locomotives E1-E3 built by Metropolitan Vickers Electrical Co. Ltd. of Manchester and Sheffield, England were joined by a fourth locomotive, E4, from the same manufacturer in 1935. These locomotives were used at Iron Knob to haul ore wagons from the quarry face to the crusher at the Iron Monarch quarries.

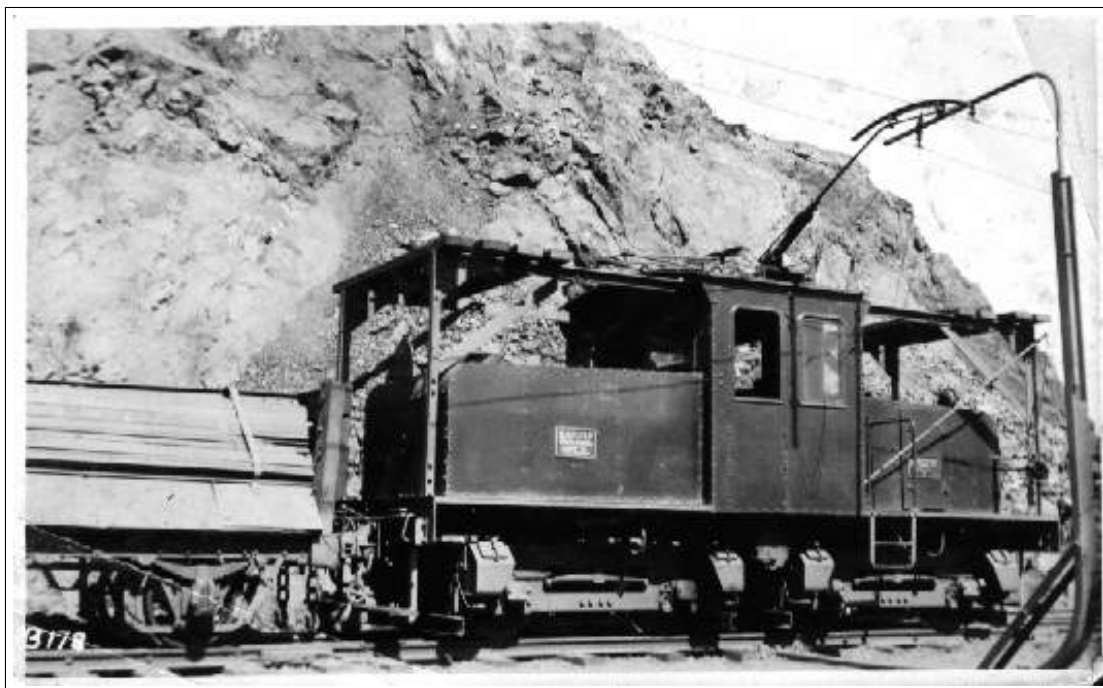
During World War II, the company commenced quarrying for limestone at Rapid Bay and two similar locomotives, E5 and E6, were subsequently supplied to the original design by Perry Engineering Co. Ltd. of Mile End, South Australia in 1942. This company built another two locomotives, E7 and E8, to work at Iron Knob and Iron Monarch in 1954.

Two methods of current collection were used on these vehicles. In the quarries where the wagons were loaded by overhead shovels, side bow collectors were used whilst a conventional pantograph was used on the main line to the crusher.

The locomotives were usually operated in pairs and hauled ten 25 ton ore wagons between them. They were powered by four 35 h.p. motors and geared down to a maximum speed of 11 m.p.h.

After the company replaced the railway systems in its quarries with road transport most of the locomotives were cut up for scrap. No. E1 was withdrawn from service on 12 July 1968 and donated to the Tramway Museum at St. Kilda, South Australia by the BHP.

It was transferred to the Museum in 1999.



Hill Proprietary Co. - Iron Knob Tramway - Electric Locomotive No. E1 - Metro-Vickers built, BHP electric loco No. 1 goes about its business at the Iron Knob quarry c.1930 (*NRM Collection*)

Class operators	Broken Hill Proprietary Company
Condition	Fair
Entered service	October 1928
Entered the museum	1999.
Length (over coupling points)	28' 8.53m
Number in class	8
Ownership	National Railway Museum
Provenance	Broken Hill Proprietary Ltd
Total Weight	25 tons 25.50 tonnes
Wheel Arrangement	Bo-Bo
Withdrawn	12 July 1968

Table 7.1: Details of Electric Locomotive E1 - Broken Hill Proprietary Company - Narrow Gauge



Broken Hill Proprietary Co. - Iron Knob Tramway - Electric Locomotive No. E1 - Metro-Vickers built, BHP electric loco No. 1 goes about its business at BHP smelter Whyalla (*NRM Collection*)



NRM Exhibits Guide

RAILCARS

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Brill Railcar No. 8 - South Australian Railways - Broad Gauge

Early in his career with the South Australian Railways, Commissioner Webb decreed that small country passenger trains should be replaced by passenger motors. The idea was not new there had been the Caldwell Vale rail car that operated between Goolwa and Victor Harbour and a small rail car at Port Lincoln but the scale of the replacement was new.



55 class railcars 8 and 6 (*NRM Collection*)

Mr Webb did not just order one rail car as had been done before, but he initially ordered a fleet of twelve from the Indiana firm of Service Motors. These petrol rail cars came direct from the maker's order book in which they were listed as 'Model 55' the name by which they have been known ever since - to distinguish them from the later Model 75 (see Rail Car 41). The earlier rail cars were not forgotten in the numbering sequence, and the first of these cars was given the road number 4, the remainder of the class going to 15.

The first car to be delivered was painted in a special colour scheme of royal blue and lemon yellow. Others came in the more general colour scheme of lined chocolate. The maiden trip was to Willunga, during which run the car was stopped on the steep grade between Hallett Cove and Reynella, and then restarted to demonstrate to the notable passengers the efficiency of the rail car.

During the 1930's the original 68 h.p. petrol engines were all removed and replaced by Gardiner 102 h.p. diesel engines, except for No. 7, which was given a Deutz 110 h.p. air-cooled diesel engine.

The cars were all built for the broad gauge, but for a time Cars 4 and 10 were active on the narrow gauge lines in the South East. During this period they were re-numbered 112 and 111 respectively. Generally, the class saw service on most broad gauge branches, but were not popular because of their very rough riding. They were later relegated to suburban service, and their last years of service were spent providing the shuttle between Glanville and Semaphore, with occasional trips to the city.

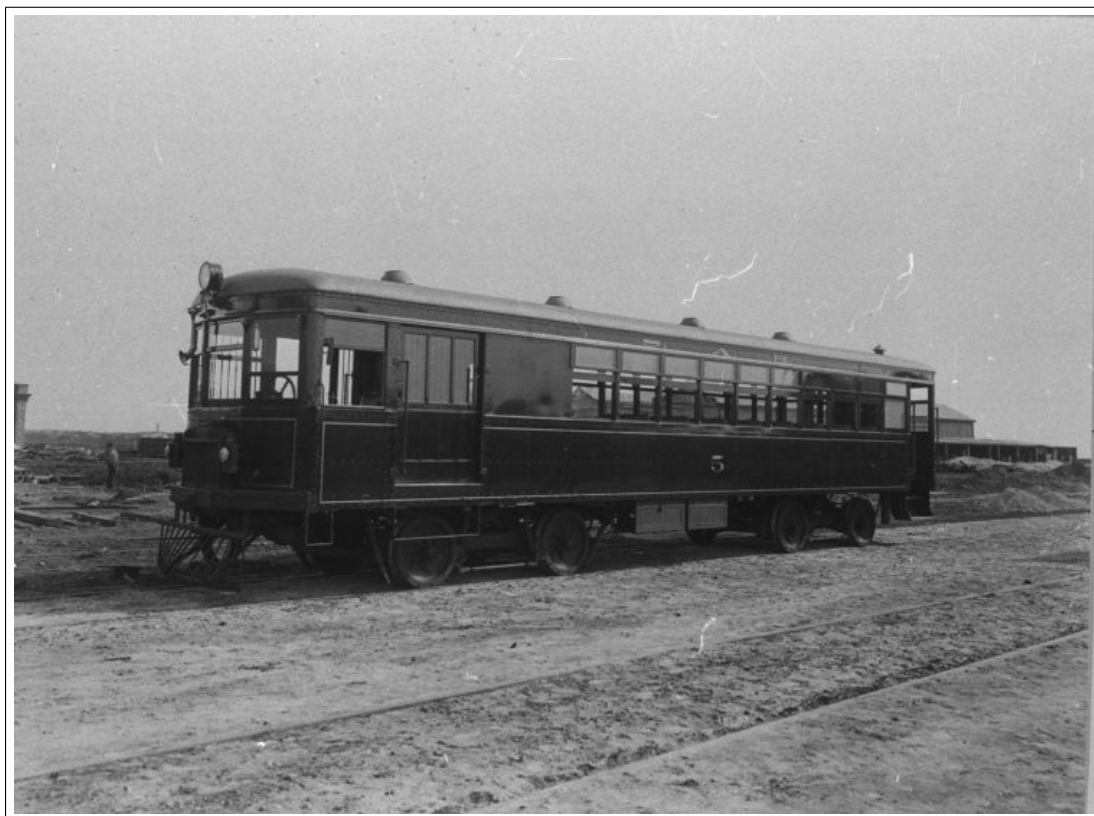
For this service they invariably operated in pairs, using the small automatic couplers with which they had been fitted in 1934. Previously, they had been equipped with small tramway type link and pin couplers.



Interior of 55 class railcar (*NRM Collection*)

Class operators	South Australian Railways
Condition	Good
Provenance	South Australian Railways
Ownership	National Railway Museum
Built by	Brill Car Co, USA
Number in class	12
Model	55 class
Entered service	9th June 1924
Withdrawn	1968
Entered the museum	22nd October 1968
Length (over coupling points)	43' 5" (13.84 metres)
Seating capacity	43
Tare Weight	Petrol: 12 tons 17 cwt (13,055 kilograms) - Diesel: 14 tons 9 cwt (14,681 kilograms)

Table 8.1: Details of Brill Railcar No. 8 - South Australian Railways - Broad Gauge



Builders photo of 55 class railcar Number 5 (*NRM Collection*)



55 class railcars 8 (*NRM Collection*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways
Built by	S.A.R. Islington Workshops
Number in class	39
Model	75
Entered service	1928
Withdrawn	1971
Entered the museum	9th March 1973
Length (over coupling points)	58' 6" (17.83 metres)
Total Weight	27 tons (27,432 kilograms)
Engine type	Cummins diesel
Seating capacity	34

Table 8.2: Details of Brill Railcar No. 41 - South Australian Railways - Broad Gauge

There can be no doubt that the introduction of these small rail cars paved the way for an immense change in the style of railway branch line operations in South Australia, and may even be said to have been the only way that some lines were able to be kept open for as long as they were. Their introduction marked the end of the country branch steam passenger train, and the beginning of a line of rail cars that was to culminate in the luxurious air-conditioned Blue Bird of some thirty years later.

Brill Railcar No. 41 - South Australian Railways - Broad Gauge

Following the introduction of the Model 55 class rail cars, Mr. Webb decided to introduce a fleet of the larger Brill Model 75 rail cars to take over passenger services on the branch lines where lightly-loaded steam-hauled passenger trains were proving to be quite uneconomic.



South Australian Railways - 75-Class Diesel Railcar No. 41 - at Adelaide station with trailer 203 (*NRM Collection*)



Modified 'MilkBar interior' (*NRM Collection*)

The first car, Number 30, was built by the Brill Company in America, but the balance were all built to American plans by the South Australian Railways at Islington. Ultimately, the number series of the cars ranged from 30 to 59 on the broad gauge, with two number 44's having been built, with the first being sold to the Victorian Railways; and 100 to 106 and 487 on the narrow gauge. A series of trailer cars was also built, being numbered in the 200 series on the broad gauge and in the 300 series on the narrow gauge.,

These rail cars and trailers were used mainly as intended on the branch lines, but were occasionally used on some main line services such as those to Port Pirie, and also on some offpeak suburban services. Regrettably, these cars were renowned for their rough riding qualities.

As built, these rail cars seated 61, had petrol engines and a series of small windows similar to those of the 55 class. By the end of their lives, most had seen many changes. Six, including 41, were greatly changed in 1940 by the introduction of high-back semi-compartment type seating, which reduced the number of passengers to 34, and the replacement of the small windows by large main line type windows. These cars were promptly nicknamed the 'MilkBar Cars' because of the high-back seating.

All the rail cars lost their petrol engines after 1957. Most received Gardiner 198 h.p. diesel engines in their stead, but 41 was one of three to be fitted with Cummins diesel engines. At the same time these rail cars were fitted with remote control equipment to allow multipleunit operation.

During the 1960's the cars were clearly near the end of their economic lives, and there were some plans made to replace them. However, instead of this happening, there were large-scale closures of country branch lines. This resulted in a need for fewer rail cars and the more modern Blue Bird air-conditioned cars were able to cope on their own. The last model 75 working was on the 13th October 1971, when 46 and Trailer 216 returned to Adelaide from Victor Harbour.

The preservation of 41 is thanks to the generosity of Mr. Graham Bettany who, in January 1973, gave the rail car into the care of the Museum. He had earlier purchased it from the South Australian Railways.



South Australian Railways - 75-Class Diesel Railcar No. 30 - at the original Adelaide Railcar Depot 1927 (*NRM Collection*)

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways / Australian National
Built by	S.A.R. Islington Workshops
Number in class	12
Model	250
Entered service	13th February 1957
Withdrawn	1995
Entered the museum	3rd May 1995
Total Weight	60 tons (60,960 kilograms)
Engine type	2 x Cummins NT-855-R2 6-cylinder diesel
Auxiliary Power	1 x GM series 3-71 3-cylinder diesel
Fuel capacity	250 gallons (1137 litres)
Maximum Speed	70 mph (112 km/h)
Length (over coupling points)	78' 3" (23.850 metres)
Seating capacity	52 passengers

Table 8.3: Details of Bluebird Diesel Railcar No. 257 - South Australian Railways - Broad Gauge

Bluebird Diesel Railcar *Kestrel* No. 257 - South Australian Railways - Broad Gauge

The first of the Bluebird railcars commenced regular service on the Morgan line in October 1954. A regular service to Moonta began in September 1955 and a month later a Bluebird replaced the regular engine hauled train to Mount Gambier.



Bluebird Railcar 257 at wolseley 28.09.1985 (*NRM Collection*)

As additional cars were constructed, their sphere of operation was extended to Port Pirie in 1958, and Terowie and Gladstone in 1959. They also operated to Taillem Bend and Victor Harbor. Unfortunately they were not able to arrest the slow decline in country passenger numbers. Services to Morgan were the first to cease in 1965, followed by Moonta in 1969, Taillem Bend in 1981, Gladstone in 1982 and Victor Harbor in 1984.

After the regular Mount Gambier and Broken Hill services were withdrawn on 31st December 1990 the only remaining operation was an intermittent special to Broken Hill which ceased on the 31st.

Red Hen Diesel Railcar No. 321 - State Transport Authority - Broad Gauge

In 1954 the Islington Workshops of the South Australian Railways, was commissioned to construct diesel railcars for use on the Adelaide suburban service. Two designs were chosen, the 300 class, with a driving station at one end and the 400 class, which had a driving station at each end.

The body of each car consisted of a fabricated steel framework to which a steel skin was welded. Original livery was satin maroon body, silver roof and black bogies, though this was later changed to standard suburban red. Fabricated bogies manufactured by the Islington Workshops were used, though some cars did receive converted bogies that had previously been under Overland carriages.

Each compartment in the passenger saloon was fitted with cold cathode fluorescent tubes and low voltage emergency lighting above fixed tubular steel framed seating. Until 1961 vinyl was used for seat covering, with the main colours being cherry red and Flanders blue, but green, brown and grey sometimes appeared. From 1968, to match the green side walls, a special blue-green upholstery was used.

Interior walls were lined with plastic laminate in blue linen, tan linen or plain green. Flooring was either red linoleum or blue-yellow chequer board vinyl tiles.



Bluebird Railcars 257 and 251 at naracoorte 27.04.1985 (NRM Collection)

Class operators	South Australian Railways State Transport Authority TransAdelaide
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways
Built by	S.A.R. Islington Workshops
Model	300 Class
Number in class	74
Entered service	12th April 1957
Withdrawn	15th December 1996
Entered the museum	15th December 1996
Length (over coupling points)	65' 8" (20 metres)
Total Weight	40 tons 2 cwt (40,741 kilograms)
Engine type	2x GM (Detroit) series 6/71 diesel model 6086
Cylinders	6x inline
Horsepower	219 horsepower (163 kW)
Maximum Speed	55 mph (88 km/h)
Seating capacity	91
Fuel capacity	250 gallons (1137 litres)

Table 8.4: Details of Red Hen Diesel Railcar No. 321 - State Transport Authority - Broad Gauge



South Australian Railways - Diesel Railcar No 321 after restoration 22.01.2006 (*Andrew Peters*)



South Australian Railways - Diesel Railcar No 321 interior after restoration - 23rd May 2010 (*Chris Drymalik*)

Class operators	South Australian Railways State Transport Authority TransAdelaide
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways / State Transport authority / Trans Adelaide
Built by	S.A.R. Islington Workshops
Model	400 Class
Number in class	37
Entered service	17th September 1959
Withdrawn	15th December 1996
Entered the museum	15th December 1996
Length (over coupling points)	65 foot 8 inches (20 metres)
Total Weight	41 tons 17 cwt (42,519 kilograms)
Engine type	2x GM (Detroit) series 6/71 diesel model 6086
Cylinders	6x inline
Horsepower	219 horsepower (163 kW)
Fuel capacity	250 gallons (1137 litres)
Seating capacity	80
Maximum Speed	55 mph (88 km/h)

Table 8.5: Details of Red Hen Diesel Railcar No. 400 - State Transport Authority - Broad Gauge

Traction power was provided by two six-cylinder diesel engines of the lay-over type. A hydraulic torque converter and gearbox connected the drive shaft to each bogie.

A total of 74 units of the 300 class, and 37 of the 400 class were constructed between 1955 and 1971. Nicknamed Red Hens by the public, this type of railcar exclusively ran the Adelaide suburban service until the late 1970s when new railcars were purchased. Withdrawal of cars commenced in the mid 1980s with the last units remaining in service until late 1996.

Red Hen Diesel Railcar No. 400 - State Transport Authority - Broad Gauge

In 1954 the Islington Workshops of the South Australian Railways constructed diesel railcars for use on the Adelaide suburban service. Two designs were chosen, the 300 class, with a driving station at one end and the 400 class, which had a driving station at each end. The body of each car consisted of a fabricated steel framework to which a steel skin was welded. Original livery was satin maroon body, silver roof and black bogies, though this was later changed to standard suburban red.

Fabricated bogies manufactured by the Islington Workshops were used, though some cars did receive converted bogies that had previously been under Overland carriages.

Each compartment in the passenger saloon was fitted with cold cathode fluorescent tubes and low voltage emergency lighting above fixed tubular steel framed seating. Until 1961 vinyl was used for seat covering, with the main colours being cherry red and Flanders blue, but green, brown and grey sometimes appeared. From 1968, to match the green side walls, a special blue-green upholstery was used.

Interior walls were lined with plastic laminate in blue linen, tan linen or plain green. Flooring was either red linoleum or blue-yellow chequer board vinyl tiles.

Traction power was provided by two six-cylinder diesel engines of the lay-over type. A hydraulic torque converter and gearbox connected the drive shaft to each bogie.

A total of 74 units of the 300 class, and 37 of the 400 class were constructed between 1955 and 1971. Nicknamed Red Hens by the public, this type of railcar exclusively ran the Adelaide suburban service until the late 1970s when new railcars were purchased. Withdrawal of cars commenced in the mid 1980s with the last units remaining in service until late 1996.



Red Hen Railcar (*NRM Collection*)



Operational Red Hen Diesel Railcar No. 400 at rear of the museum - 13th July 2008 (*NRM Collection*)



Operational Red Hen Diesel Railcar No. 400 at rear of the museum - 25th April 2011 (*NRM Collection*)

Budd Railcar CB 1 - Australian National Railways - Standard Gauge

As part of its post war rehabilitation programme the Commonwealth Railways upgraded its short haul passenger services by introducing railcars on the runs between Port Pirie, Port Augusta, and Tarcoola. A contract for the delivery of three air-conditioned railcars was let to the Budd Company, Philadelphia, U.S.A. in October 1950. The railcars arrived in March 1951. They were the standard Budd RDC-1 design, and featured stainless steel bodies and air-conditioning. There were two compartments, with seating for forty-nine in one and forty-one in the other. After entering service buffet facilities were fitted and seating improvements made, reducing the capacity to seventy passengers.

Regular passenger services were introduced from May 1951 when the cars operated between Port Pirie Junction and Pimba. In 1952 the service was extended from Pimba along the military stores siding to the Woomera township. From July 1952 the cars made regular runs to Tarcoola, however this journey involved long stretches of unfenced track and damage was often caused through running down stock and kangaroos. The Budd car service to Tarcoola was discontinued on 25th January 1961, although the service was retained between Port Augusta and Woomera.

Completion of the new standard gauge line to Marree made it possible for Budd cars to work over that line, at first to Brachina, and ultimately to Marree.

Following the opening of the Port Augusta to Whyalla line, Budd rail cars were also introduced on that service.

Alterations in passenger traffic resulted in the cars being removed from service in 1976 and placed in storage until refurbished in 1985 for a new service between Adelaide and Whyalla. The Iron Triangle Limited ran its first regular trip on 21st April 1986. The Iron Triangle Limited was withdrawn from service on 31st December 1990.

Railcar CB1 was donated to the museum by Australian National in 1996.



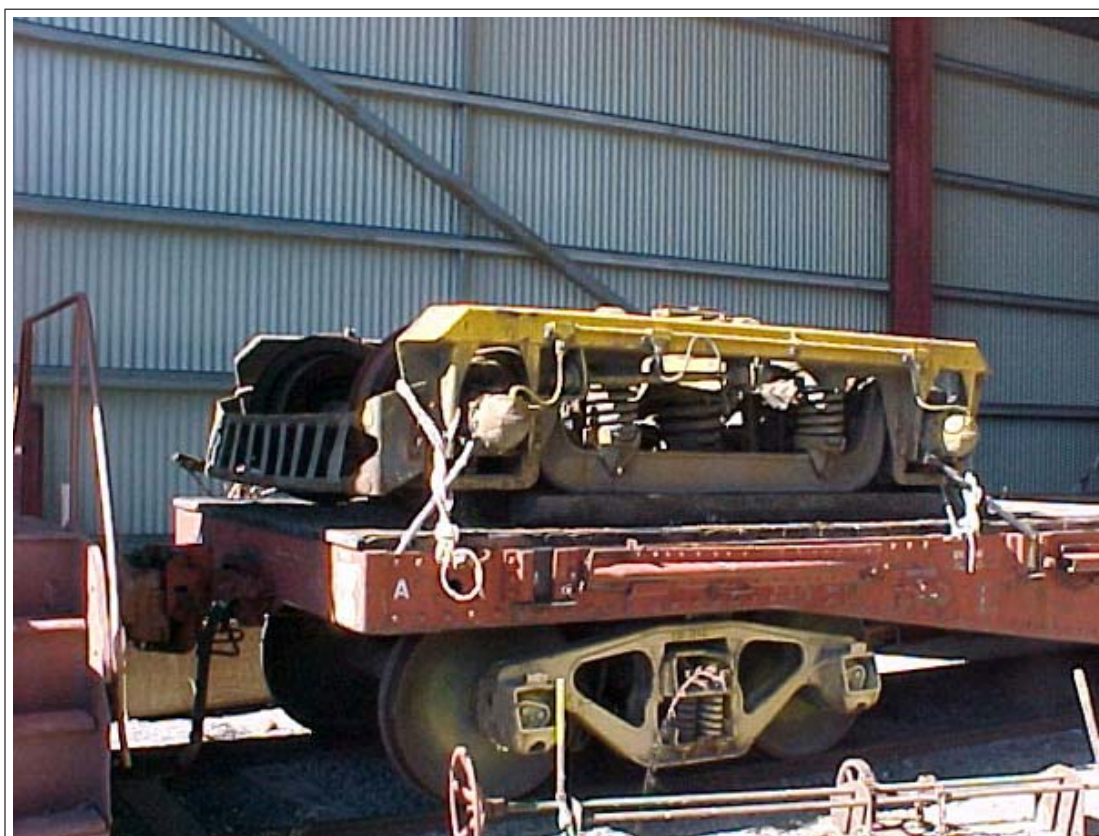
Commonwealth Railways - Budd railcar (*Chris Drymalik*)

Class operators	Commonwealth Railways Australian National Railways
Condition	Very good
Provenance	Commonwealth Railways & Australian National
Ownership	National Railway Museum
Built by	The Budd Co., Philadelphia, Penn, USA
Number in class	3
Model	RDC-1
Entered service	6th March 1951
Withdrawn	31st December 1990
Entered the museum	7th August 1996
Length (over coupling points)	85' (25.908 metres)
Total Weight	49 ¹ / ₄ tons (50,038 kilograms)
Engine type	GM 110 x 2 - 2 stroke
Cylinders	6
Bore & stroke	5" x 5.6" (127mm x 142mm)
Horsepower	275hp x 2 (205 kW x 2)
Wheel Arrangement	1A-A1
Gear Ratio	2.08:1
Tractive Effort (starting)	8,000 lbs (35.5 kW)
Tractive Effort (continuous)	2,000 lbs at 85 mph (8.9 kW)
Fuel capacity	210 gallons (950 litres)
Maximum Speed	85 mph (136.7 km/h)

Table 8.6: Details of Railcar Budd Railcar CB 1 - Australian National Railways - Standard Gauge



Commonwealth Railways Budd Railcar CB 1 being placed on it's standard gauge power bogies - 3.10.2001 (Chris Drymalik)



Commonwealth Railways - Budd Railcar CB 1 - One of the standard Gauge bogies from CB 1. - 18 April 2000 (*Chris Drymalik*)



Commonwealth Railways - Budd Railcar CB 1 (*NRM Collection*)



Commonwealth Railways - Budd Railcar CB 1 (*NRM Collection*)



Commonwealth Railways - Budd Railcar CB 1 (*NRM Collection*)



PASSENGER CARRIAGES

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Class operators	South Australian Railways
Condition	Good
Entered service	21.12.1910
Entered the museum	7/11/1966
Length (over coupling points)	47' 2"
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Seating capacity	50
Withdrawn	1966

Table 9.1: Details of Dogbox 294 - South Australian Railways - Broad Gauge

Dogbox No. 294 - South Australian Railways - Broad Gauge

For many years the standard broad gauge carriages of the South Australian Railways were modelled on the compartment-type British carriage, with side doors to every compartment. These cars, which are very similar to cars that also ran in New South Wales and other states were originally designed for the suburban services. However, in 1898 a variation was provided when the first lavatory-equipped car on the South Australian Railways was built.

Dog Box 294 at Port Dock Station, 1988 (*NRM Collection*)

These lavatory-equipped cars were, like their suburban sister, popularly known as dog-box carriages, and consisted of a series of compartments with a pair of toilets between each pair of compartments. The earliest examples had prominent roof water tanks, but later carriages had the tanks built into the coaches themselves. These cars always had six compartments, but the width of the compartment varied according to the class. Consequently, the first class coaches were longer than the composites or the second class coaches.

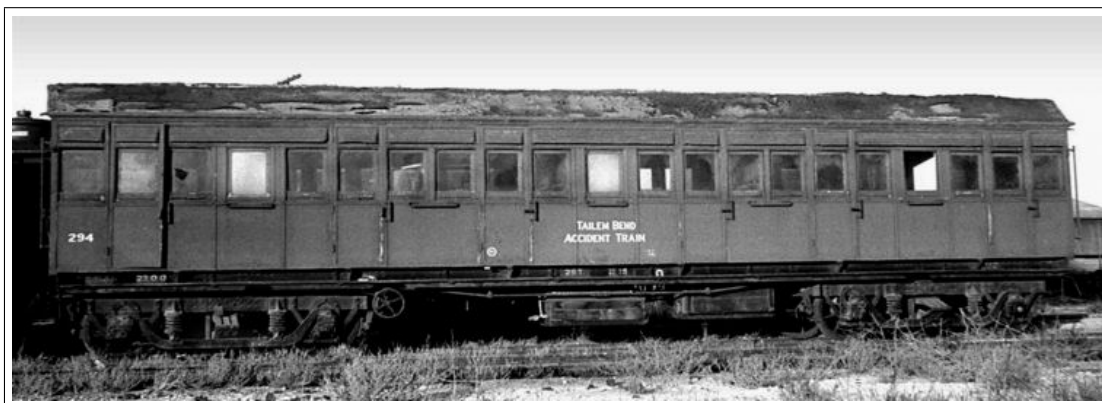
About a hundred dog-boxes were built between 1898 and 1922, and even until the end of the fifties they were to be seen on country trains. Apart from the fact that most of the cars underwent class changes during their lives, there were only three major alterations to the type. In the 1940's most carriages had their screw couplings replaced by the then standard autocoupling, and about the same time a number lost their gas lights in favour of electricity (although some retained gas lights for the whole of their lives.)

The second major change occurred during the Second World War when a number of the older cars

Class operators	South Australian Railways
Condition	Excellent
Entered service	29.8.1913
Entered the museum	19.10.1978
Length (over coupling points)	55' 5"
Number in class	4
Ownership	National Railway Museum
Provenance	South Australian Railways
Seating capacity	43 2nd class passengers
Withdrawn	29th May 1978

Table 9.2: Details of Centenary Baggage No. 376 - South Australian Railways - Broad Gauge

had their lavatories removed and the seats re-arranged to make them suitable for suburban service. At the same time certain cars had baggage compartments provided in the centre. The third and most drastic change occurred between 1950 and 1953 when twenty-three cars were rebuilt for country service as centre-aisle cars with 'improved' seating and with one end vestibule. Known as the 900 class, these cars were unpopular because of their narrow aisles and perpendicular seats.

Dog Box 294 as Taillem Bend Accident Train crew car (*NRM Collection*)

294 was issued to traffic as a second class carriage, but was altered to a composite in December 1920, and then back to second class in 1929. She was fitted with gas lighting in 1936 and auto-couplers in 1940. In 1956 the car was taken out of passenger service and sent to Taillem Bend for further service as a crew car on the Accident Train.

As a second class car, 294 has seated 54 passengers, but during her brief spell as a composite the number was reduced to fifty (fourteen first class and 36 second class.)

Centenary Baggage No. 376 - South Australian Railways - Broad Gauge

Contract CME. N8/1911 of the South Australian Railways covered the construction of 15 suburban passenger cars for use on the South Terrace line to Glenelg (See 'Centenary and Centre Loading Carriages' page 343).

Numbered 364 to 378 inclusive, the cars comprised five 1st class saloon cars, five 2nd class saloon cars, one 1st class baggage car and four 2nd class baggage cars, of which 376 was one. The underframes and bogies were constructed at Islington Workshops, and the bodies by A. Pengelley & Company, the 15 cars being placed in service between November 1912 and September 1913.

No. 376 entered service on 29 August 1913. These 15 cars were a repeat order of 10 similar cars (No. 260 to 269 inclusive, placed in service in 1908 and 1909 on the Glenelg line), which it was stated were to be uniform in appearance with Passenger cars taken over from the Glenelg Railway Company. The company cars were shorter in length but had the familiar clerestory roof, end loading steps to suit the



South Australian Railways - Centenary Baggage No. 376 (*Andrew Peters*)

ground level platforms and centre buffer couplers. The South Australian Railways cars had these features and incorporated hinged flaps over the end steps to suit high level platforms.

The structure gauge of the Glenelg line permitted passenger cars of greater width than the remainder of the System and No. 376 and the other cars had a body width of 10' 6", with a maximum width over extremities of 10' 10".

The Glenelg line cars were the basis for the numerous end and centre loading suburban cars of which a total of 130 (including baggage cars) were constructed. Of generally similar appearance to the Glenelg cars, the end and centre loading cars were longer because of the centre vestibule and their narrower body width, 10' 0", gave them greater route availability. However, none of them were constructed originally with ground loading steps, and the standard screw couplings and buffers were fitted.

As issued, No. 376 had seating for 56 2nd class passengers and in common with the other Glenelg cars was altered in 1927 when a lavatory was fitted for country working and standard screw couplings and buffers provided. Seating capacity was reduced to 52. Further alterations took place to No. 376 in December 1935, when in a programme to improve the Glenelg cars for country running, high backed seats with baggage racks, automatic couplers and steel step down end steps were provided. The green and cream colour scheme for these cars followed the 1936 Centenary Train. The alterations reduced the seating capacity of No. 376 to 43 2nd class passengers, while during 1952 the seating was advised as 19 1st class passengers and 24 2nd class passengers, reverting to all 2nd class again in May 1967.

While saloon Glenelg cars ran to all points where locomotive hauled passenger trains worked on 5' 3" gauge (both suburban and country), the baggage cars such as No. 376 generally worked suburban and nearer country tracks (e.g. Victor Harbour and Angaston). However, for a number of years in their later life, Glenelg baggage cars were used in, a regular Adelaide-Loxton service, while No. 376 was one of the last Glenelg cars in service on Murray Bridge-Tailem Bend local trains until damaged by fire during September 1977, being condemned on 29th May 1978.

Class operators	South Australian Railways
Condition	Good
Entered service	1919
Entered the museum	1995
Number in class	103
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	1976

Table 9.3: Details of Suburban End and Centre Loading Car No. 446 - South Australian Railways - Broad Gauge

Suburban End and Centre Loading Car No. 446 - South Australian Railways - Broad Gauge

Between 1908 and 1924 the South Australian Railways had built 103 centre and end loading carriages, and 27 end loading baggage cars, for use on its suburban steam hauled services. The body design was loosely based on carriages that had been imported from America by the Holdfast Bay Railway Co., in 1880 (See 'Centenary and Centre Loading Carriages' page 343).



South Australian Railways - Suburban End and Centre Loading Car No. 446 (A. Peters)

Car 446 was built by J.S.Bagshaw and Sons and entered service on 16th June 1919. It was altered little during its life, except for auto couplers and through gangways being fitted in 1936.

It was allocated to SteamRanger in 1978. After a number of years out of service, the History Trust of S.A. transferred it to the museum in 1995.

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Built by	S.A.R Islington Workshops
Number in class	8
Number series	600 - 607
Entered service	12th October 1937
Withdrawn	13th October 1981
Entered the museum	11th January 2001
Length (over coupling points)	71' 9" (21.875m)
Seating capacity	64

Table 9.4: Details of Steel Country Passenger Car No. 606 - South Australian Railways - Broad Gauge

Steel Country Passenger Car No. 606 - South Australian Railways - Broad Gauge

During the 1930's, the South Australian Railways began an extensive program of upgrading passenger accommodation. Part of this program involved the construction of 'all steel' first and second class passenger carriages. The first of these new carriages entered in service 1936, painted in the new South Australian Railways colours of green and gold and classified as 500 and 600 class 'main line corridor passenger cars'. Built completely at the Islington workshops, each car measured 21.875m (71ft.9in.) long and 2.890m (9 ft. 6 in.) wide, with a height of 4.025m (13 ft. 2 in.) above the rail.



South Australian Railways Steel Second Class Main Line Corridor Passenger Car No. 606 - 2nd April 2010 (*Chris Drymalik*)

The 4 x first class cars were numbered 500-503 and had seating accommodation for 42 passengers in 7 compartments. The 8 x second class cars were numbered 600-608 and accommodated 64 passengers in



First Class Compartment in South Australian Railways Steel Second Class Main Line Corridor Passenger Car No. 606 - 2nd April 2010 (*Chris Drymalik*)

Class operators	South Australian Railways State Transport Authority
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways / State Transport authority / Trans Adelaide
Entered service	24th July 1945
Entered the museum	9th November 1987
Seating capacity	56 passengers and guard

Table 9.5: Details of Trailer Class 860 Carriage No 875 - State Transport Authority - Broad Gauge

8 compartments. Toilets and vestibules were located at each end, with all compartments leading off a full length side corridor. The interior of each car was fitted out with polished timber panelling, chrome fittings. First class compartments additionally being fitted with mirrors and arm rests between each seat. Each compartment had a single external window and twin wooden sliding doors fitted with large etched glass panels. All windows were originally designed to drop down into the body of the car, but later, due to maintenance problems, these were replaced by half drop windows.

Following excellent public reaction to the new 500 and 600 class cars, the South Australian Railways commenced construction of a modified design, which became the 700, 750 and 780 class. These cars externally were of similar appearance, except for modified window spacings and being only 19.120m (62ft.9in.) in length. The interior design called for a centre aisle with an open plan of passenger seating. Toilets were located in the centre of the carriage, dividing it into a smoking and non-smoking compartment.

The 700 class (No. 700-715) were issued to service as second class cars seating 56 passengers, arranged in groups of 4 (twin seats facing each other). As with the earlier cars, the interiors were panelled in fine timbers with chrome fittings. During the late 1940's, several of the 700 class cars were upgraded for first class service, being fitted with carpet and higher quality seating.

The 750 and 780 class were identical to the 700 class except that the 750 class were composite first/second class cars accommodating 46 passengers (22 first, 24 second), and the 780 class were all first class seating 38 passengers. The first class compartments had 2 seats facing each other to one side of the aisle and 4 in two pairs on the other. The advantage of this arrangement was, a first class passenger travelling alone, did not have to sit along side someone they did not know. At the ends of each compartment, a single seat was provided either side of the doorway, facing a twin seat one side and a single the other. The second class seating arrangement was identical to the 700 class. The 750 class were numbered 750-753 and 780 class 780-783.

Car 606 was withdrawn from service in 1981 and sold to SteamRanger. It eventually became surplus to requirements and was sold to the museum in late 2000, arriving on site on 11.1.2001. The car has been returned to its original South Australian Railway Green and Cream livery.

Trailer Class 860 Carriage No. 875 - State Transport Authority - Broad Gauge

Car No. 875 was built by the South Australian Railways as 'steel suburban trailing car' No. 812 for use on the steam hauled Adelaide suburban system. Nineteen 800 class and five 850 class baggage cars were constructed at the Islington works between 1944 and 1946. They had originally designed for eventual use as electric cars.

End concertinas were originally fitted, but removed in 1958 when the car was modified for use with Red Hen diesel railcars. At this time it was reclassified as 860 class diesel rail car trailer No. 875. The major changes undertaken as part of the conversion was to replace the ordinary Westinghouse braking on the car with S.E.M Electropneumatic air braking, which made it unsuitable for operation with steam or diesel locomotives, and to fit a baggage compartment to the centre of the car. After conversion it had seating for 56 passengers and one guard.



South Australian Railways - Red Hen Trailer Class 860 Carriage No 875 between railcars 400 and 321
(Andrew Peters)

Class operators	South Australian Railways State Transport Authority
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Number in class	1
Entered service	19th May 1928
Withdrawn	6th September 1988.
Entered the museum	6th September 1988
Length (over coupling points)	82' 4" (25.09 metres)
Tare Weight	76 tons (77,216 kilograms)

Table 9.6: Details of Pullman Dining Car *Adelaide* - South Australian Railways - Broad Gauge

Pullman Dining Car *Adelaide* - South Australian Railways - Broad Gauge

George Pullman must be one the best known names in railway history, for it was he who developed the sleeping car and dining car to a point where they be- came the epitome of luxury travel. His Pullman Palace Car Company, founded in Chicago in 1867, provided luxury cars for American railroads and the rest of the world.

His first sleeping car, the Pioneer, has been built for the Chicago & Alton Railroad in 1864 and its immediate success led to the setting up of the company.

His first dining car, the President, was built in 1867 for the Great Western Railway of Canada. Known as an Hotel Car it was a sleeping car equipped with a kitchen and pantry, and portable tables which were set up for meals. The first complete dining car, the Delmonico was built for the Chicago & Alton Railroad in 1868.



South Australian Railways - Pullman Dining Car 'Adelaide' at the museum (*R.Sampson*)

Class operators	Victorian and South Australian Railways V/Line Victorian Railways
Condition	Excellent
Entered service	9.12.1949
Entered the museum	28.11.2008
Number in class	10
Ownership	National Railway Museum
Seating capacity	20
Provenance	V & SAR, VR, V/Line
Built by	South Australian Railways, Islington, SA
Withdrawn	1998

Table 9.7: Details of V&SAR Joint Stock Sleeping Car *Allambi* - Victorian and South Australian Railways - Broad Gauge

Adelaide was ordered from the Pullman company, along with the sleeping cars Mt Lofty and Macedon in 1926, for use on the Melbourne Express, and is a typical example of North American carbuilding practices of the time. At 75 tons it was found to be too heavy. Its inclusion in the train consist (then limited to eleven E-cars over the Mt Lofty Ranges) excluded the use of two standard cars and therefore proved uneconomical. It nevertheless saw service from time to time, and became a favourite on enthusiasts' trains in the 1960s and 1970s.

When Australian National took over South Australia's country services in 1978, Adelaide remained under the ownership of the State Transport Authority who leased it to the museum. It was placed in the museum on the 6th September 1988.

V & SAR Joint Stock Sleeping Car *Allambi* - Victorian and South Australian Railways - Broad Gauge

One of ten roomette Joint Stock sleeping cars used on The Overland service between Adelaide and Melbourne. This type of rolling stock was built progressively from 1949 to replace the wooden



South Australian Railways - Pullman Dining Car 'Adelaide' - 25th April 2006 (*Chris Drymalik*)



Pullman Dining Car *Adelaide* - 20th March 2010 (*Chris Drymalik*)

carriages. Each of the carriages was fully designed and constructed by the South Australian Railways. Exteriors were finished in maroon, with a fluted stainless steel panel on each side of the cars running above and below the window level. The roof and bogies were painted black.



Sleeping car *Allambi* after it's Restoration at the museum (*Chris Drymalik*)

This particular vehicle is one of a batch of four sleeping cars sold to the Victorian Railways in 1972, for use on '*The Vineland*' service between Melbourne and Mildura, after new more modern sleeping cars were constructed and given the same names. When '*The Vineland*' serviced ceased operation on the 12th September 1993, all four sleeping carriages where placed in long term storage.



Builders photo of sleeping car *Allambi* (NRM Collection)

Class operators	South Australian Railways
Condition	Excellent
Provenance	V & SAR
Ownership	National Railway Museum
Built by	S.A.R Islington Workshops
Entered service	29th October 1923
Condemned	16th October 1974
Entered the museum	16th April 1975
Length (over coupling points)	73' 8" (22.453m)
Bogie centres	53' 10" (16.4 metres)
Height	13' 8" (4.16 metres)
Width	9' 6" (2.89 metres)
Seating capacity	72

Table 9.8: Details of V&SAR Second Class Sitting Car BE 42 - South Australian Railways - Broad Gauge

Early in 2008, the museum became aware that the carriage might be surplus to future railway requirements. Contacted was made with VicTrack who gave the museum a favourable response about making it available for the museums collection. VicTrack recommended to the Victorian Minister of Transport that the carriages be made available to the NRM for display. The State of Victoria donated the car, with the museum paying for its transportation from Melbourne to Adelaide. It arrived at the museum by road on 28th November 2008.

Much of the significance of each of the cars lies in its preservation in near original condition as a rare example of operating, design and construction practices no longer practiced in house by current rail passenger operators. There have been no major alterations to the appearance of the cars other than routine maintenance that has involved mechanical repairs, soft furnishing upgrades and repainting.

V&SAR Joint Stock Second Class Sitting Car BE 42 - Victorian and South Australian Railways - Broad Gauge

In the early 1900's a rollingstock programme was agreed upon between the Victorian and South Australian Railways to provide more modern and considerably larger passenger cars for use on the express trains between Adelaide and Melbourne to replace the original jointly owned cars placed in service between 1886 and 1890.

Between 1906 and 1923 a total of 44 vehicles of matching design were constructed at both Newport



Looking down the corridor of V&SAR Joint Stock Sleeping Car *Allambi* after it's arrival at the museum
(Chris Drymalik)



Sleeping car *Allambi* after it's Restoration at the museum (*Andrew Peters*)



Sleeping car *Allambi* after it's Restoration at the museum (*Andrew Peters*)



Old vs New - V&SAR Second Class Sitting Car BE 42 is coupled to V&SAR Sleeping Car *Allambi* - 20th March 2010 (*Chris Drymalik*)

and Islington Workshops. The complement comprised 14 first class sleeping cars, 10 first class sitting cars, 10 second class sitting cars, 6 brakevans, 2 mail sorting vans and 2 mail baggage vans. After the initial construction between 1906 and 1908 of 4 sleeping cars, 6 each first and second class sitting cars, 4 brakevans and the mail sorting and baggage vans, the 1907/1908 South Australian Railways Report stated,

“The new express train, as a whole, so far as accommodation is concerned, forms one of the best in the Commonwealth, and is probably equal to any other train in the world”.

Sleeping cars and first class sitting cars were constructed at Newport Workshops, Victoria, as well as the mail sorting and baggage vans, while the second class sitting cars and brakevans were constructed at Islington Workshops, South Australia (except that the first two jointly owned brakevans were constructed at Newport and exchanged with two constructed at Islington, these latter two became Victorian vehicles).

Whilst the sleeping cars were not numbered or classified, but named after rivers in Victoria and South Australia, the first and second class sitting cars and the brakevans were classified and numbered with similar vehicles which the Victorian Railways built for internal use in Victoria. The mail vans classifications also followed the Victorian Railway's principles. During 1910, the Victorian classification system was simplified and these latter classifications were carried by joint stock vehicles until they were condemned. The original and later classifications were:

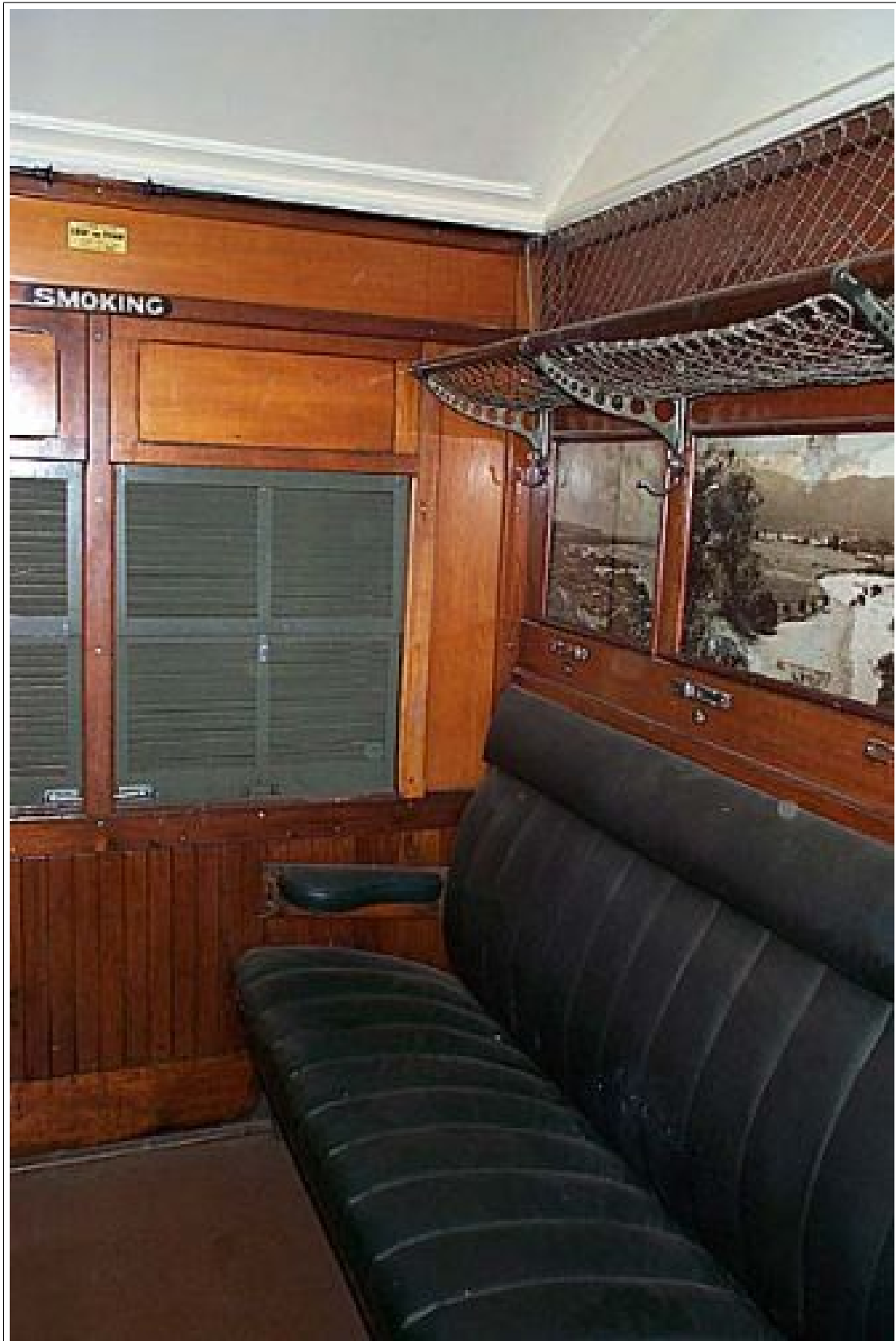
First class sitting cars - 'AVE' then 'AE'

Second class sitting cars - 'BVE' then 'BE'

Brakevans - 'DVE' then 'CE'

Mail baggage vans - 'EEB' then 'D'

Mail sorting vans - 'EES' then 'DS' (later 'D' when mail sorting enroute ceased)



Victorian & South Australian Railways Second Class Sitting Car BE 42 - 21.9.2001 (*Chris Drymalik*)



Victorian & South Australian Railways Second Class Sitting Car BE 42 - 21.9.2001 (*Chris Drymalik*)



South Australian Railways - Passenger Car BE 42. 2-th March 2010 (Chris Drymalik)

Class operators	South Australian Railways Australian National Railways
Condition	Good (not operational)
Entered service	1947
Entered the museum	28/6/1988
Number in class	1
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	1984

Table 9.9: Details of *Cafeteria Car* No. C1 - South Australian Railways - Broad Gauge

Alterations to the passenger carrying cars were few during their life, although the cars built between 1906 and 1908 originally had gas lighting while all cars and vans had underframe alterations for the fitting of automatic couplers in the mid 1930's. Also, for the 1936 Centenary of South Australia, the joint stock vehicles were painted green and yellow and black horizontal lining, this colour scheme being maintained until construction of the air-conditioned cars in 1949. The title *The Overland* in chrome plate letters was affixed to the letter board on each side of the passenger carrying cars when the green colour scheme was introduced.

'BE 42' is one of the later second class cars and was issued to traffic from Islington Workshops on 29th October 1923 and is one of two of the jointly owned passenger carrying cars which had steel protection panels affixed over the original Tongue and Groove timber exterior sheathing. (The Onkaparinga was the other car and the 'CE's' and 'D' vans had partial sheathing).



Exterior of Cafeteria Car, circa 1947 (South Australian Railways) (NRM Collection)

Class operators	South Australian Railways Victorian and South Australian Railways
Condition	Under Restoration
Provenance	South Australian Railways, Victorian & South Australian Railways
Ownership	National Railway Museum
Built by	Victorian Railways Newport Workshop, Victoria
Number in class	14
Entered service	16th June 1911
Condemmed	19th October 1972
Entered the museum	6th June 1988
Length (over coupling points)	75' (22.86 metres)

Table 9.10: Details of Sleeping Car *Onkaparinga* - Victorian and South Australian Railways - Broad Gauge

Cafeteria Car No. C1 - South Australian Railways - Broad Gauge

Built by the South Australian Railways at its Islington Works in 1947, the broad gauge (1600mm) Cafeteria car was the first of a new generation of passenger vehicles introduced to the State. It spent most of its life on the 'East West express' between Adelaide and Port Pirie enabling the elimination of the traditional refreshment stops. After a few years on hire to the Victorian Railways, it was withdrawn in 1984 and stored until purchased by the museum in very poor condition. A major refurbishment, costing many thousands of dollars, restored it to its authentic 1940s decor.

V & SAR Joint Stock Sleeping Car *Onkaparinga* - Victorian and South Australian Railways - Broad Gauge

Fourteen sleeping cars were built between 1906 and 1923 at the Victorian Railways Newport Workshops for use on the nightly express between Adelaide and Melbourne.

The first four cars were named *Lodden*, *Glenelg*, *Finniss* and *Torrens*, after rivers in the states of Victoria and South Australia. In 1911 *Onkaparinga* and *Barwon* were built, followed by *Baderloo*, *Dargo*, *Pekina* and *Tambo* in 1919. The last four cars, named *Angas*, *Coliban*, *Acheron* and *Inman* entered service in 1923.

Externally the cars were 22.8m (75ft.) long timber bodies, mounted on a steel underframe, with 6 wheel bogies, clerestory roofs, vertically boarded sides, paired wooden windows and side doors at either end, being based on typical North American designs. As built this stock was lavishly decorated with elaborate gilt lettering, scroll work and decorative bevel edged mirrors above each window, removed or painted over in later years. Painted VR red-brown with 'VICTORIAN AND SOUTH AUSTRALIAN RAILWAYS' centrally on the letterboard above each window, each carriage carried its name centrally beneath the windows. The exterior was finished with polished door knobs, hand rails and coloured leadlight above a clear glass panel in each door.



An *Overland* Sleeping car interior as built, circa 1911 (NRM Collection)

Internal layout comprised nine compartments, each with two fold up lateral sleeping berths, a folding wash basin and hanging cupboards for clothing. A small smoking saloon at one end of the car, in which two more berths could be made if needed, was known as the Gentlemen's lounge, and had four loose, leather covered, cane arm chairs and a fixed seat for three. The fixed seat was converted into two additional berths by curtaining it off from the rest of the smoking saloon. Two compartments at the opposite end of the coach were reserved for ladies. Toilets and conductor's compartments were located at each end of the carriage.

Finished in Art-Nouveau style, the carved paneling, pressed metal ceiling, frosted glass and lamp pendants were all ornately decorated. A stylised waratah pattern was repeated throughout the design. Displayed on compartment walls and entry vestibule were photographs of scenic South Australia and Victoria.

Externally a row of bevelled mirrors, with an engraved star burst pattern, was placed above each window. The paint work was a red brown with elaborate outlining.

By 1936, the nightly express train had been named *The Overland*, so it was decided to paint the carriages dark green with a chrome '*The Overland*' fitted above the centre windows. From 1943 repainting in standard Victorian Railways red began. Construction of modern steel rollingstock began in 1949 and resulted in the eventual withdrawal of the wooden carriages from *The Overland*. *Onkaparinga* was condemned in 1969 and sold with bogies, but missing most internal metal fittings to Marbury School, Aldgate. In 1988 it was donated to the Railway Museum and moved to the Port Adelaide site.

Post Office Van O18 - Willochra - Victorian and South Australian Railways - Broad Gauge

This small carriage was originally built as Post Office Van O18 for use on the Intercolonial Express that ran nightly between Adelaide and Melbourne. It was jointly owned by the Victorian and South Australian Railways, and was first used in January 1887.



Sleeping car *Onkaparinga* Gentlemans Smoking Saloon during the cars restoration - 27th March 2010
(Chris Drymalik)



Sleeping car *Onkaparinga* when in service as a Overland Sleeping car (*NRM Collection*)



Sleeping car *Onkaparinga* - 20th March 2010 (*Chris Drymalik*)

Class operators	South Australian Railways Victorian and South Australian Railways
Condition	Excellent
Entered service	January 1887
Entered the museum	27.6.1991.
Number in class	3
Ownership	National Railway Museum
Provenance	V & SAR, SAR
Withdrawn	1966

Table 9.11: Details of Post Office Van O18 - *Willochra* - Victorian and South Australian Railways - Broad Gauge



Intercolonial Port Office Van 018 after restoration - 27th March 2010 (*Chris Drymalik*)

Class operators	Commonwealth Railways
Condition	Good
Provenance	Commonwealth Railways
Ownership	National Railway Museum
Built by	Wegmann, Kassell, Germany
Number in class	3
Entered service	15th November 1952
Withdrawn	November 1980
Entered the museum	23rd January 1996
Length (over coupling points)	75' 2" (22.9 metres)

Table 9.12: Details of Trans-Australian Lounge Car AFA 93 - Commonwealth Railways - Standard Gauge

When new Post Office vans were constructed for the Express in 1908 it became the exclusive property of the South Australian Railways who renumber it 258. Having little use as a mail van, it was converted in 1916 to Officers Inspection car Murray. When the new Commissioner's car was named Murray in 1934, the old Murray was given the name Willochra. A name that had previously been used on, at that time, a recently condemned sleeping car.



Intercolonial Port Office Van 018 after restoration (*Andrew Peters*)

After being condemned, in 1966, it was used for accommodation on a farm at Jabuk and eventually ended up at Old Taillem Bend Town Historic Village. In June 1991 it was moved to the Museum.

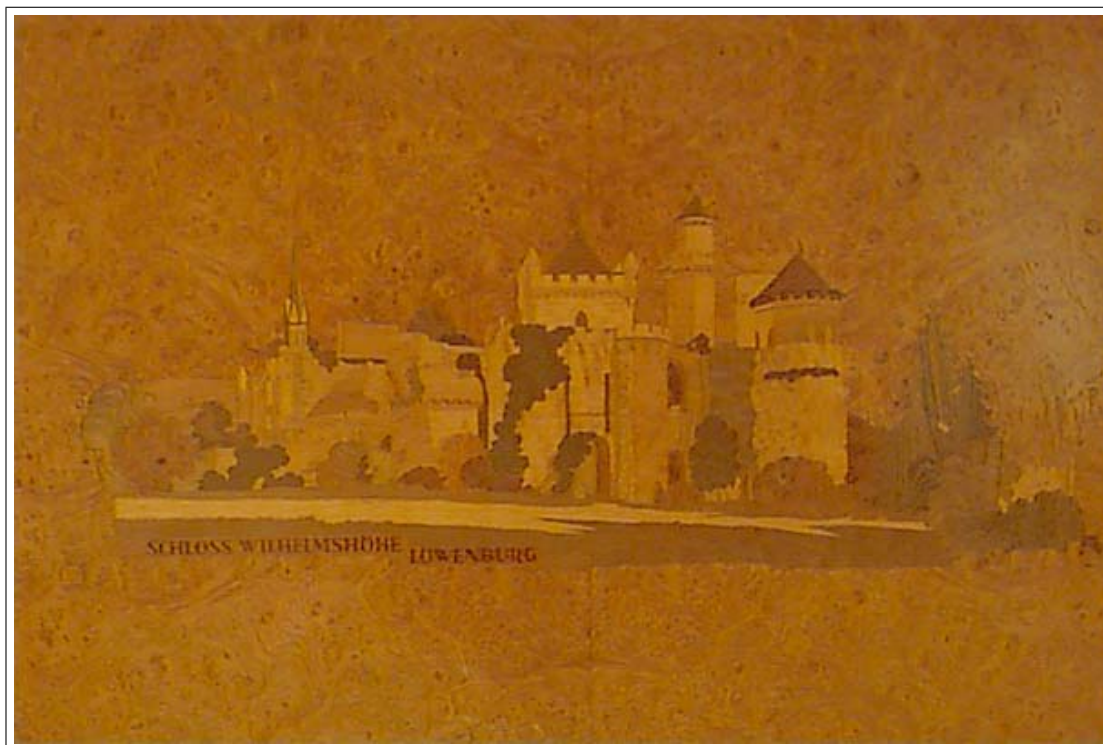
Trans-Australian Lounge Car AFA 93 - Commonwealth Railways - Standard Gauge

The introduction of two luxury train sets on the Commonwealth Railways in 1952 resulted in a marked increase in passenger travel on the Trans-Australian Railway (4 foot 8; inch gauge - 1435mm). Each fully air-conditioned set was constructed by Messrs. Wegmann and Company, of Kassel in West Germany, and consisted of round-end first-class sleeper-observation car, two first class sleeping cars,

Class operators	Commonwealth Railways
Condition	Good (after basic restoration)
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Built by	Commonwealth Railways Port Augusta Workshops
Entered service	28th April 1920
Entered the museum	29th November 1995

Table 9.13: Details of Trans-Australian Turtle Back Roofed First Class Sleeping Car AR 33 - Commonwealth Railways - Standard Gauge

lounge car, dining car, second-class sleeper-lounge car, two second class sleeping cars and combination brake and power van.



Commonwealth Railways - Lounge Car AFA 93 - details of inlaid marquetry wall panel (*NRM Collection*)

The gathering place for first class passengers was the lounge car. AFA 93 is divided into three sections - smoking room, music room and ladies reading room. The panelling throughout was cut from the matched roots of elm trees, and scenes of various castles in the area in which the carriage was constructed are inlaid in various woods on the walls. The seats were upholstered in moquette, except for the smoking saloon which featured red leather. Externally the carriages had maroon sides banded with silver below the window line, a white roof and a black skirt below floor level. The letters C.R. on either side of an Australian coat of arms were attached to every carriage.

In 1964 AFA 93 was transferred to narrow gauge (3 foot 6 inch gauge - 1067mm) for use on the Ghan until services ceased in 1980. Australian National then stored the carriage until it was donated to the Railway Museum in late 1995, arriving on site at the museum on 23rd February 1996.

During 2001 it was fully restored and painted in Commonwealth Railways livery.



Commonwealth Railways - Lounge Car AFA 93 - 21st September 2008 (*Chris Drymalik*)



Commonwealth Railways - Lounge Car AFA 93 - music room (*NRM Collection*)

Trans-Australian Turtle Back Roofed First Class Sleeping Car AR 33 - Commonwealth Railways - Standard Gauge

AR33 was built in 1920 by the Commonwealth Railways for use on its standard gauge 4' 8½" (1435mm) Port Augusta to Kalgoorlie service. It was the first of a new larger style of wooden carriage that featured a turtle back roof, roomy interior and a chocolate and cream livery.



Commonwealth Railways - Trans-Australian Turtle Back Roofed First Class Sleeping Car AR 33 - 21st September 2008 (*Chris Drymalik*)

It remained basically unaltered until 1953 when it was given a major rebuild, fitted with air conditioning and painted maroon.

In 1966 it was fitted with narrow gauge (1067mm) bogies and transferred to Marree. After being on the last narrow gauge Ghan in 1980, it was converted back to standard gauge and allocated to breakdown train at Alice Springs.

By 1990 it had become surplus to requirements and was placed in storage at Port Pirie, where unfortunately it was heavily vandalised. In 1995 it was offered to the Museum, being delivered by road on 29th November 1995.

During 2001 it was fully restored and painted in Commonwealth Railways livery.

Trans-Australian Turtle Back Roofed Dining Car DA 52 - Commonwealth Railways - Standard Gauge

Dining on the Commonwealth Railways Trans-Australian was a luxury event. It featured the best menu and full silver service as the train carried its passengers between Port Pirie and Kalgoorlie. To meet this high standard, the Workshops at Port Augusta constructed dining car DA 52, which entered service on 21st July 1930.

By all Australian standards of the time, it was an impressive vehicle, it measured 76 foot 7 inch (23.42 m) in length, 10 foot 6 inch (3.19 m) in width and was 14 foot 6 inch (4.41 m) high. The



Commonwealth Railways - Trans-Australian Turtle Back Roofed First Class Sleeping Car AR 33 -
21.9.2001 (*Chris Drymalik*)



Commonwealth Railways - Trans-Australian Turtle Back Roofed First Class Sleeping Car AR 33 -
21.9.2001 (*Chris Drymalik*)

Class operators	Commonwealth Railways
Condition	Good (after restoration)
Provenance	Commonwealth Railways
Ownership	National Railway Museum
Built by	C.R. Port Augusta Workshops
Number in class	1
Entered service	21st July 1930
Withdrawn	31st March 1981
Entered the museum	20th December 1995
Length (over coupling points)	76' 7" (21.81 metres)
Seating capacity	48

Table 9.14: Details of Trans-Australian Turtle Back Roofed Dining Car DA 52 - Commonwealth Railways - Standard Gauge



Commonwealth Railways - Trans-Australian Turtle Back Roofed Dining Car DA 52 - kitchen area - 29th May 2009 (*Chris Drymalik*)



Commonwealth Railway Trans-Australian Turtle Back Roofed Dining Car DA 52 - 21st September 2008 (*Chris Drymalik*)

Commonwealth Railways were at that time constructing the largest wooden passenger carriages in Australia. Its exterior was painted in a livery of chocolate and cream with a mustard roof.

The interior featured ornate timber panelling made from Queensland Black Bean and expensive fittings. Monogrammed china, polished silver and flower arrangements adorned each of the 12 twelve tables that seated a total of 48 passengers.

To make dining more comfortable in the hot desert summers, the carriage was fitted with full Carrier refrigerated air-conditioning in 1939.

In 1954 it was fully overhauled, fitted for head end power, and painted in maroon. At that time modern lighting and equipment replaced the original fittings. With the advent of more modern rollingstock in the 1960s and 70s, the car was relegated to less important use, eventually being allocated for departmental use on the standard gauge accident train in 1981, until being placed in storage in 1987.

In 1995 it was donated by Australian National to the Railway Museum, arriving on broad gauge bogies on 20th December 1995.

During 2001 it was fully restored and painted in Commonwealth Railways livery.

Car No. 3 - South Australian Railways - Narrow Gauge

Of particular historic interest is the tiny four-wheeled carriage Number 3, which was built in December 1877, as the first of a series of four-wheel carriages for the then new narrow-gauge lines in the north of the State. Built at the Adelaide Locomotive Shops, Number 3 is only 28 feet 9 inches long with axle centres a mere 11 feet 6 inches apart. It only weighed 5 tons 15 cwt. but was rated to carry 32 second-class passengers on hard longitudinal seats. Other cars in the series that followed were numbered 5, 6, 7, 8, 11, 12 and 13.



Trans-Australian Turtle Back Roofed Dining Car DA 52 set up for a special hiring - 27 October 2007
(Chris Drymalik)



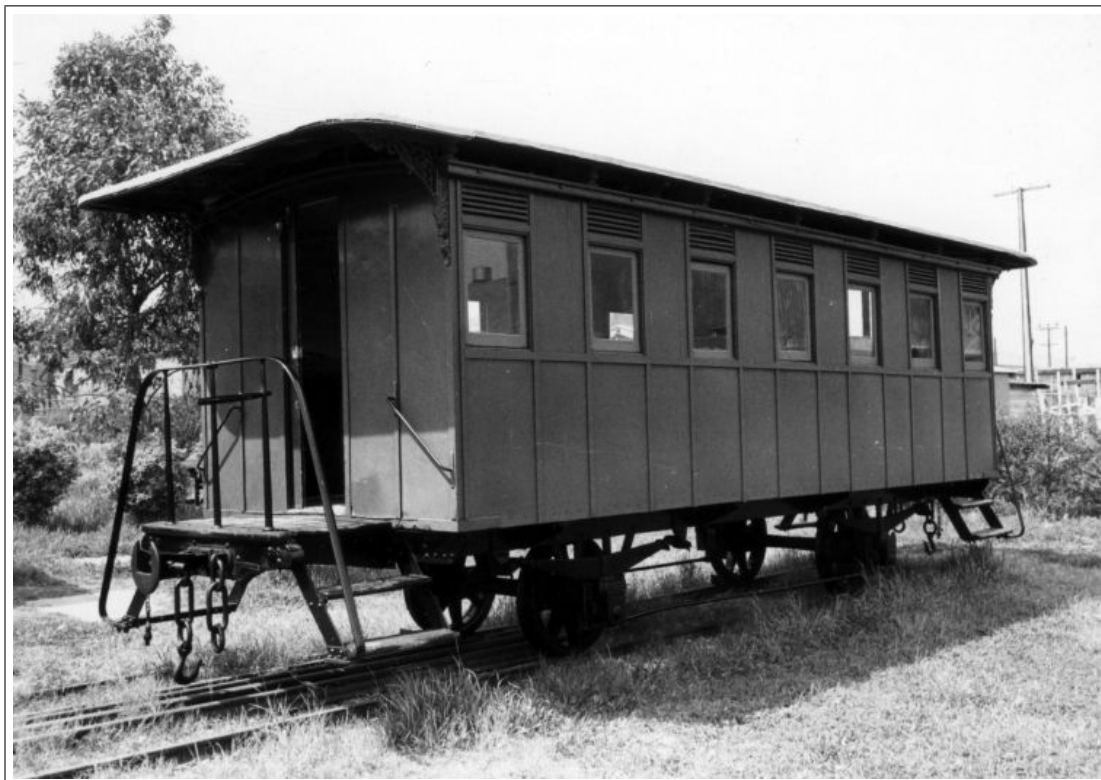
Interior of Commonwealth Railways dining car DA 52 saloon area - 29th May 2009 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Entered service	December 1877
Entered the museum	25.9.1969
Length (over coupling points)	28' 9" (8.763m)
Number in class	8
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Seating capacity	32
Withdrawn	1966

Table 9.15: Details of Passenger Car 3 - South Australian Railways - Narrow Gauge



Interior of Commonwealth Railways dining car DA 52 - 13.3.2000 (*Chris Drymalik*)



South Australian Railways - 4-wheel 2nd-class Saloon Car with end platforms - No. 3 prior to full restoration (*Murray Billett*)

Number 3 was issued new to the Port Pirie section of the narrow gauge line, and spent all its working life on the northern sections. After conversion to a departmental van, it was to be stationed for a long period at Quorn, and also used on the Great Northern line to Oodnadatta.

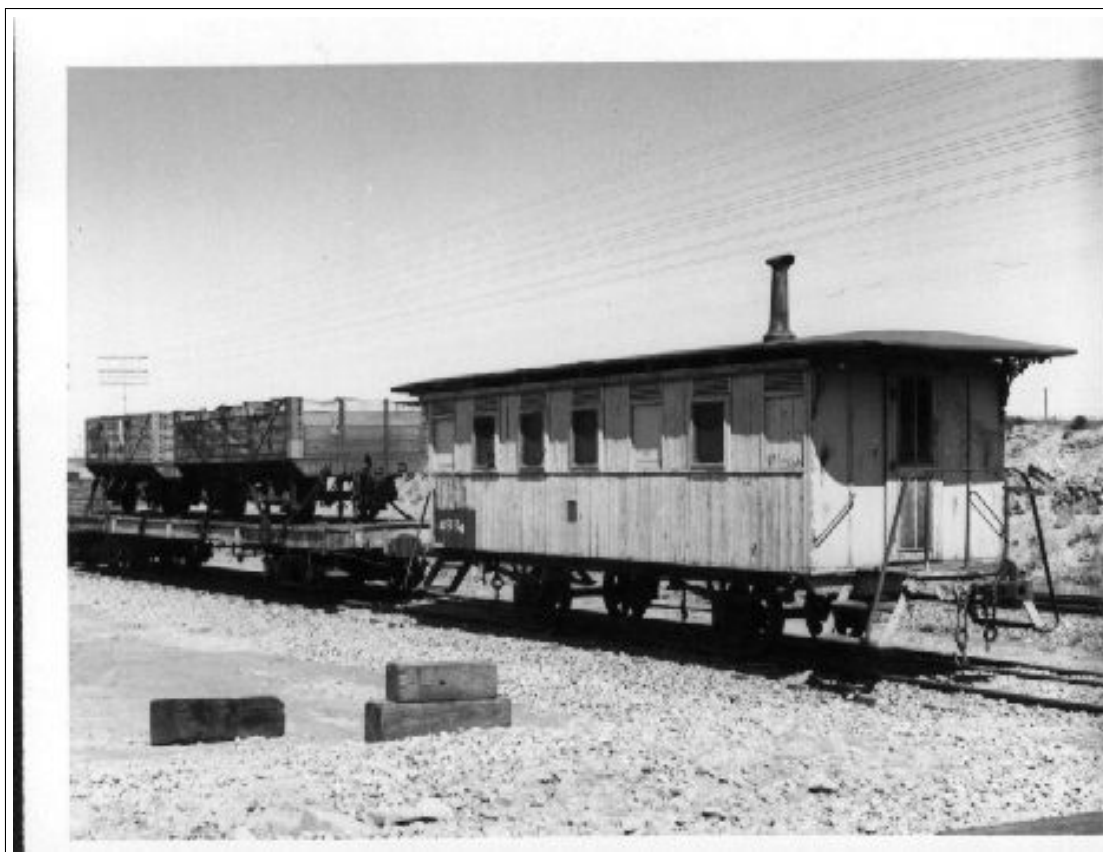
The bogie coaches came fairly soon afterwards, and short vehicles like this one were relegated to a secondary place on the main line. Thus it is not surprising to learn that by 1892 it was no longer purely a passenger car, but had also been provided with accommodation for Enginemmen. By 1895 the records show that Number 3 had been equipped with sleeping accommodation but it is not known whether this was an additional modification, or whether it was part of the original change that allowed the carriage to take off-duty Enginemmen.

In September 1911 the carriage was finally taken off the passenger list, leaving only four still in passenger service. However, the type was to live on for a while, for one of these remaining four was still to be in service well into the 1920's, as were a number of short brakevans for passenger trains. This was not to be the end of Number 3's active life, though, as it was then converted for use as an employees' sleeping van, and was reissued as Number 4884 in the goods rollingstock series. In this role it was to continue to see service until 1966, when at the grand old age of 89, it was finally withdrawn from all service.

This exhibit is the oldest in the Museum, and qualifies as the oldest carriage preserved in South Australia. The car has been beautifully restored by Museum Volunteers to its original layout.

Second Class Sitting Car - No. 144 - South Australian Railways - Narrow Gauge

No. 144 is one of the many 3' 6" gauge passenger cars of the South Australian Railways with 31' 6" long bodies nicknamed Short Toms. Although the narrow gauge passenger cars ran in country areas for journeys occupying many hours duration, amenities provided were few. The original standard layout of these cars was access from each end of the cars with a solid partition dividing the car into two unequal areas. The larger compartment has another internal partition with a door to provide a smaller compartment in the centre of the car for ladies. For composite cars, the smaller area was the 1st class area.



South Australian Railways - 4-wheel 2nd-class Saloon Car with end platforms - No. 3 (as No. 4884) at Peterborough prior to delivery to the Mile End Museum (*Ken Wicker*)



South Australian Railways - 4-wheel 2nd-class Saloon Car with end platforms - No. 3 at Mile End Railway Museum on the crocodile wagon - at this stage it was still numbered '4884' - 25.9.1969 (*R.E.Fluck*)

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	National Railway Museum
Class Builders	Adelaide Locomotive Workshops, S.A.R. Islington Workshops
Built by	S.A.R Islington Workshops
Number in class	7
Number series	7, 9, 126 - 128, 132, 144
Entered service	22nd December 1894
Withdrawn	19th March 1971
Entered the museum	8th November 1982
Length (over coupling points)	38' 10" (11.836m)
Bogie centres	24' 1" (7.34 metres)
Height	10' 5" (3.175 metres)
Width	7' 6" (2.286 metres)
Tare Weight	12 tons 8 cwt (12,598 kilograms)
Seating capacity	44

Table 9.16: Second class car - No. 144 - South Australian Railways - Narrow Gauge



South Australian Railways - Second class car with end platforms No. 144 at the museum 21st September 2008 (*Chris Drymalik*)



Peronne and 144 on another train during a thomas event (*Andrew Peters*)

Amenities in the form of water and lavatories commenced to be provided in 3' 6", gauge cars from 1885 (and ultimately almost all of the Short Toms were fitted), but construction continued for some time of cars without these features.

No. 144 was originally scheduled to be built as a second class car to the standard layout without lavatories and with the solid internal partition and central ladies compartment. A direction in February 1894 stated it was to be second class 'opened throughout from end to end', - i.e. it was built as it was known with no internal partitions and longitudinal seats.

Constructed at Islington Workshops and issued on 18th December 1894 to the Western System of the narrow gauge lines, No. 144 was built to replace No. 10 passenger car when the latter was converted to an ambulance van and forwarded to Palmerston (Darwin) in 1890 in a programme providing ambulance vans on broad and narrow gauges.

Spending all of its life on the northern narrow gauge lines, No. 144 has had few alterations but was fitted with electric lights in July 1909 and air brakes at Quorn in August 1911. In the 1950's No. 144 was used as a trailer for school children behind the Model 75 rail car between Booleroo Centre and Wilmington and as the car was detached and attached at Booleroo Centre every school day, a handbrake was fitted to it during 1958 while an internal partition was also provided.

Condemned on the 19th March 1971 after the standardisation of the Port Pirie to Broken Hill line, No. 144 was purchased by the South Australian Division of the Australian Railways Historical Society and made available for use on the Pichi Richi Railway. It was transferred to the Mile End Museum in 1982.

The car was extensively refurbished by the museum in early 1988, before spending several months on loan to Pichi Richi Railway at Quorn.

Sleeping Car No. 112 - *Baroota* - South Australian Railways - Narrow Gauge

The carriages of the South Australian Railways were to be renowned for their longevity, if for nothing else. Thus, it is not surprising to learn that some of them were seventy years old when the main line to

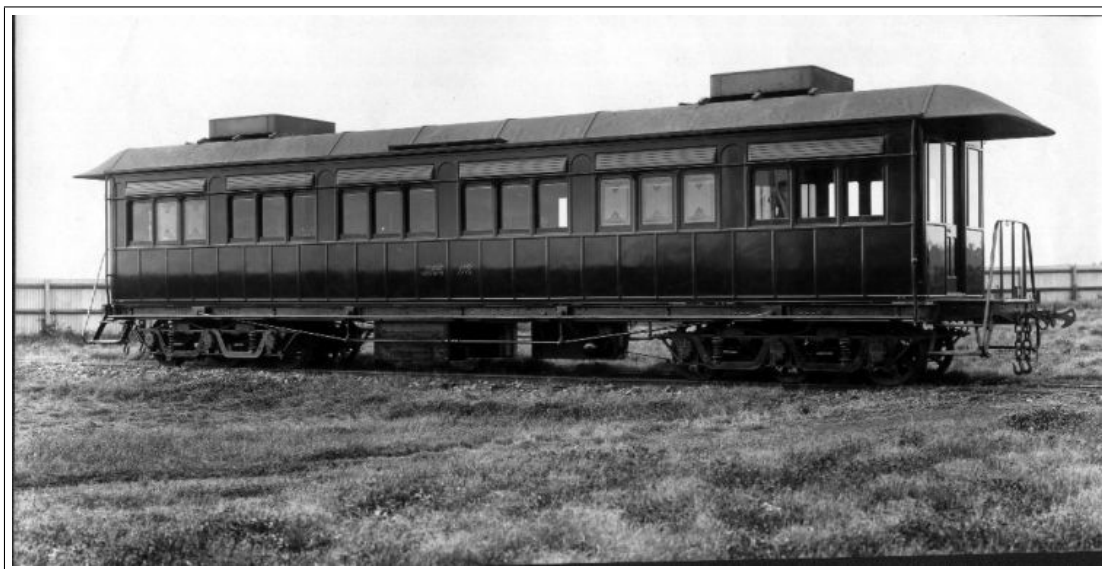


Interior of South Australian Railways - Second class car No. 144 (*Andrew Peters*)



South Australian Railways - Second class car No. 144 (*Andrew Peters*)

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Built by	S.A.R. Islington Workshops
Number in class	4
Number series	109 - 112
Entered service	28th May 1900
Condemned	25th March 1966
Entered the museum	25th March 1971
Length (over coupling points)	46' 7" (14.1986m)
Seating capacity	14 sleeping or 18 day passengers
Tare Weight	21 tons (21,336 kilograms)

Table 9.17: Details of Sleeping Car No. 112 - *Baroota*- South Australian Railways - Narrow GaugeSouth Australian Railways - Sleeping Car Baroota No. 112 (*NRM Collection*)

Broken Hill was finally converted in 1970 from narrow to standard gauge, causing the wholesale condemnation of large numbers of narrow gauge carriages.

Most of these carriages followed the same body pattern - short, mansard type roofs over balcony style bodies. After the first few years when four wheelers were built, almost all had standard four wheel bogies. However, in 1888 it was proposed to build a series of six vehicles with six-wheeled bogies. The first three, 109, 110 and 111 were built as sleeping cars and issued to traffic in 1889 and 1890, but it was to be ten years before the other three saw the light of day. The next to be built was 112 in 1900, and this was completed as a sleeping car, while the last two cars, 113 and 114, were built as sitting up cars.

112 varied from the earlier sleeping cars in the arrangement of the sleeping berths. In the earlier cars a longitudinal seat formed the lower berth, but in 112 two seats facing one another pulled down to form a lower berth in Pullman style. Eighteen first class passengers were carried in sleeping berths.

On 29th July 1907, Number 112, emerged from Islington in the guise of an observation car fitted with Stone's electric light. She now carried either 14 sleeping or 18 day passengers, the end compartment having had its fixed seats removed and a table and four movable chairs fitted in their place. Also, the toilet, which had been in this compartment, was relocated in the adjoining compartment.

In 1913 a speed indicator clock and fan were fitted in this small saloon, and it is believed that the car was thereafter used as a Departmental car for the most part. On 6th June 1917, Number 112 was officially named *Baroota*.

For the remainder of its life Baroota was to retain its layout as an observation car, but having been replaced on the main line by the three new sleeping cars, Alberga, Nilpena and Coonatto, it was to see service in later years only as a standby sleeper or on special trains.

These twelve-wheel vehicles were to be the only such carriages to be built for use on the narrow gauge lines of South Australia, and spent all their lives on the Peterborough to Broken Hill main line.



NRM Exhibits Guide

CHAPTER

10

BRAKE VANS

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12 Wheel Brake Van No. 276 - South Australian Railways - Broad Gauge

Until the 1960's the standard brake van on both passenger and goods trains consisted of the familiar flat-roofed van with a raised cupola in the centre, which enabled the Guard to see over the top of the train. The earliest passenger vans were short vehicles of less than forty feet, but in 1910 construction began on what was to be a class of long vans on two six-wheel bogies. These eleven "twelve-wheel brakevans" were to become the standard main line passenger vans.



A South Australian Railways - 12 Wheel Brake Van (*NRM Collection*)

They were to become well known on the main lines to Terowie, Port Pirie, Barmera, Serviceton, Pinnaroo and Mount Gambier, and during the Second World War even saw some service on Second Division Overland trains to Melbourne.

Early on in their lives the vans were fitted with side lights for platform illumination at wayside halts. Originally fitted with standard tail discs for day use and electric corner markers, the vans were refitted in the 1920's with kerosene marker lamps. In the late 1930's the vans had their hook couplers and side buffers replaced with automatic couplers, and a few years later their ends were again changed when substantial anti-collision beams were installed together with sliding doors.

The vans were originally painted maroon, but in 1936 van 276 was painted hawthorn green to match the Centenary Train, and the other vans were all to follow suit. All remained green for the rest of their lives, except for 307, which was painted regal red in November 1964 to match the new AD and BD cars just issued for use on the Port Pirie line.

The eleven vans were numbered 275 to 277 and 305 to 312, all built between 1910 and 1913. A twelfth van, 487, was built in December 1922 as a replacement for a condemned van. The first of the class to be scrapped was 305, which was damaged in a rear end collision at Port Pirie in March 1960. The rest of the class were all superseded by the new CD class in the mid 1960's, and were condemned by late 1966.

Brake Van No. 4074 - South Australian Railways - Broad Gauge

4074 was built in 1919 by the South Australian Railways as a composite brakevan with accommodation for 20 second class passengers. It as one of 62 similar brakevans that were used at the rear of goods trains.



South Australian Railways 12 Wheel Brake Van No. 276 - 21st September 2008 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Entered service	23.12.1912
Entered the museum	21.1.1966
Length (over coupling points)	62 ft 10 ins.
Number in class	12
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	29.11.1965

Table 10.1: Details of 12 Wheel Brake Van No. 276 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Good
Entered service	29.5.1919
Entered the museum	1.4.1995
Ownership	History Trust of South Australia
Provenance	South Australian Railways

Table 10.2: Details of Brake Van No. 4074 - South Australian Railways - Broad Gauge



South Australian Railways Brake Van No. 4074 (*NRM Collection*)

Class operators	South Australian Railways
Condition	Excellent
Entered service	1925
Entered the museum	8.10.1968
Length (over coupling points)	37' 10
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	8th October 1968.

Table 10.3: Details of Caboose No. 4367 - South Australian Railways - Broad Gauge

Passenger compartments are located either end of the vehicle, with two bench seats in each compartment. Entry into each compartments is by an outward opening side loading door, with no access to the goods area located between the passenger compartments. Luggage racks are provided above each seat.

The goods area is divided evenly by a central guards compartment fitted with an observation lookout. The brakevan was never fitted with a toilet or washroom.

Caboose No. 4367 - South Australian Railways - Broad Gauge

The influence of American born South Australian Railways Railway Commissioner, W.A.Webb, can be seen in the caboose style design chosen for 30 broad gauge (1600mm) brakevans introduced in 1925.

Each van was equipped with bunks, cooking facilities, food cupboards and a guards desk. The central cupola had elevated seats for four with clothes lockers beneath.

They saw regular service on the rear of goods trains until replaced by modern steel brakevans in the 1960s. Their last years were spent being used as employees sleepers on track gang work trains.

Number 4367 was retired to the museum on 8th October 1968.



South Australian Railways Caboose No. 4367 - 25 May 2001 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Good
Entered service	1971
Number in class	94
Entered the museum	1995
Ownership	National Railway Museum
Provenance	South Australian Railways (AN)
Withdrawn	19 November 1994

Table 10.4: Details of Brake Van AVAP 396 (8394) - South Australian Railways - Broad Gauge

AVAP Class Brake Van No. 396 (8394) - South Australian Railways - Broad Gauge

The “AVAP” brake vans were steel goods brake vans built by the South Australian Railways as ‘8300’ type brake vans, numbered from 8300 to 8394. The first brake van (No. 8300) entered service in February 1947 and the last (No. 8394) entered service December 1971.

The first order of 14 brake van was built in 1947, being all steel with wooden doors. Two goods compartments are located either side of central guards compartment, fitted with seat, desk, toilet and observation viewing ports. To one side of the guards compartment is a small passenger compartment.

1961 the South Australian Railways commenced building the remainder of the class numbered 8314 to 8394. The design was modified slightly, producing a narrower vehicle that could run in Victoria. The brake vans lack end communication doors, preventing their use on passenger trains. Brake vans No. 8364 to 8374 and No. 8393 to 8394 were built for standard gauge, with the rest being issued on broad gauge.

Brake Van AVAP 396 was built as number ‘8394’ but was recoded ‘AVAY 396’ in 1983 to meet the new Australian wide classification of freight vehicles. It was later recoded “AVAP” despite no modifications being made.

From the mid 1980’s it was allocated to the CME at Port Pirie until being written off on 19 November



South Australian Railways Brake Van AVAP 396 (*Chris Drymalik*)

Class operators	Commonwealth Railways
Condition	Good
Entered service	2.8.1971
Entered the museum	16.12.1996
Number in class	23
Ownership	National Railway Museum
Provenance	Commonwealth Railways & Australian National
Withdrawn	1996

Table 10.5: Details of Brake and Crew Van AVEP 349 - Commonwealth Railways - Standard Gauge

1994

AVEP Class Brake and Crew Van No. 349 - Commonwealth Railways - Standard Gauge

This brakevan was built by Comeng, of Granville, NSW for the Commonwealth Railways. It entered service as narrow gauge (1067mm) brakevan NHRE 85 on 2nd August 1971 at Darwin. In 1976, when the Darwin operation ceased, it was transferred to Marree.

These brakevans were used on the long haul runs where crews worked in relays, one set being on duty, while the other relaxed or slept. As well as the normal guards area it has a kitchen, shower, toilet and sleeping bunks for 8 staff.

Following the closure of the Marree operation it was converted to standard gauge.

7550-class Bogie Composite Brake Van No. 7553 - South Australian Railways - Narrow Gauge

The necessity of providing passenger accommodation on goods trains over lines which were not normally worked by passenger trains was appreciated quite early by the South Australian Railways



Commonwealth Railways - Brake and Crew Van AVEP 349 - 21st September 2008 (*Chris Drymalik*)



Commonwealth Railways Relay Brake Van No. AVEP 349 - 10 May 2002 (*Chris Drymalik*)



Commonwealth Railways - Brake and Crew Van AVEP 349 - sleeping compartment - 26.5.2001 (*Chris Drymalik*)



Commonwealth Railways - Brake and Crew Van AVEP 349 - sleeping compartment - 21.9.2001 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	National Railway Museum
Provenance	South Australian Railways
Built by	S.A.R. Islington Workshops
Number in class	4, plus 1 for BHP Whyalla
Entered service	September 1938
Withdrawn	9th December 1987
Entered the museum	10th May 1988
Length (over coupling points)	36' 6" (11.12 metres)
Tare Weight	11 tons 1 cwt 2 qtra (11,226 kilograms)

Table 10.6: Details of 7550-class Bogie Composite Brake Van No. 7553 - South Australian Railways - Narrow Gauge

and, in the 1880s, the first of many goods brake vans with passenger compartments were built. This practice ceased only in 1960s when the motor car provided a more convenient mode of transport in sparsely populated areas.



South Australian Railways - 7550-class Bogie Composite Brake Van No. 7553 - 21st September 2008
(Chris Drymalik)

The 7550-class brake vans were the final development of this type of vehicle on the narrow-gauge Peterborough Division, four being built at the Islington Workshops in 1938. Besides the guard, comfortable accommodation was provided for nine passengers and the cars were regularly attached to goods trains to Broken Hill, Terowie, Quorn, Wilmington and Port Pirie.

No. 7553 was last used on the Wilmington line. Acquired by Australian National in March 1978 it saw little subsequent service and was laid aside. It was obtained by the Museum on 9th December 1987 and placed at the museum on 10th May 1988.



South Australian Railways - 7550-class Bogie Composite Brake Van No. 7553 - good compartment and guard area - 21 October 2001 (*Chris Drymalik*)



South Australian Railways - 7550-class Bogie Composite Brake Van No. 7553 - passenger compartment - 21 October 2001 (*Chris Drymalik*)



NRM Exhibits Guide

CHAPTER

11

SERVICE STOCK

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5-ton Travelling Crane No. 2327 - South Australian Railways - Broad Gauge

Travelling cranes were usually manually operated cranes which could be used for lifting light loads around goods yards.

Number 2327 is one of two cranes which were built by Cowans, Sheldon, England, and placed in service by the South Australian Railways in 1882 as Crane Number 3 (Adelaide). Number 2326 became Crane Number 3 (Port Adelaide). The numbers 2326 and 2327 were given circa 1903.

In 1932 each crane was equipped with a match wagon - G-class 4-wheel steel open wagon No. 1101 being added to No. 2326 and G 363 being added to 2327.



South Australian Railways - 5-ton Travelling Crane No. 2327 - 4 April 2000 (*Chris Drymalik*)

Accident Crane No. 3 - South Australian Railways - Broad Gauge

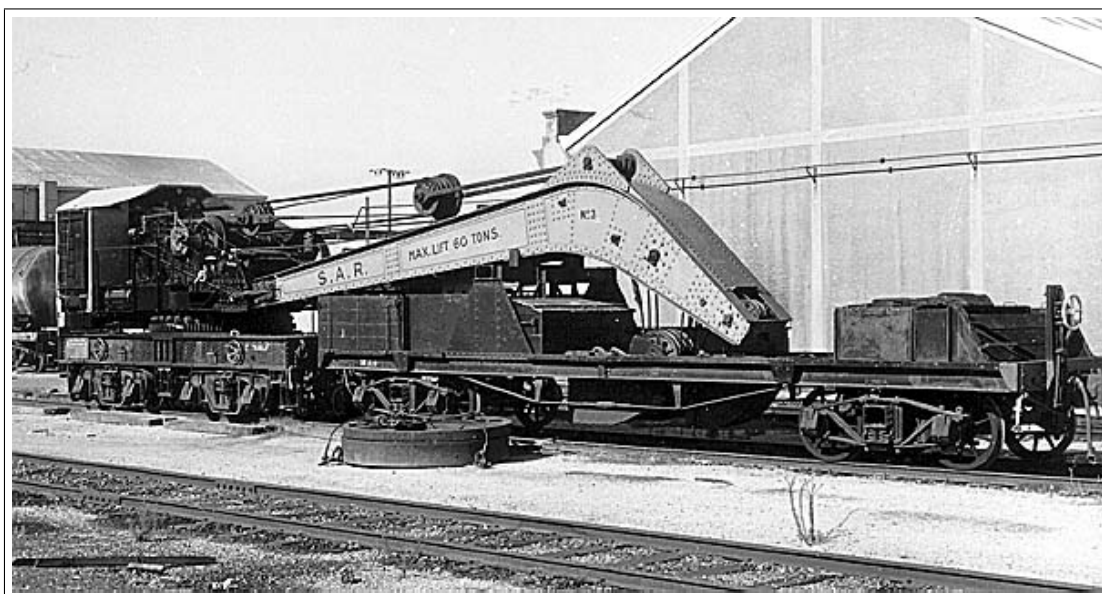
60 ton lift steam crane used on South Australian Railways. Broad gauge system.

Class operators	South Australian Railways
Condition	Good
Entered service	1881
Entered the museum	16.09.1970
Number in class	2
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	1970

Table 11.1: Details of 5-ton Travelling Crane No. 2327 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Good
Entered service	1925
Entered the museum	3/5/1995.
Number in class	1
Ownership	National Railway Museum
Provenance	South Australian Railways / Australian National
Withdrawn	1995

Table 11.2: Details of Accident Crane No. 3 - South Australian Railways - Broad Gauge

South Australian Railways - Accident Crane No. 3 (*NRM Collection*)South Australian Railways - Accident Crane No. 3 (South Australian Railways) (*NRM Collection*)

South Australian Railways - Accident Crane No. 3 (South Australian Railways) (*NRM Collection*)

Class operators	South Australian Railways
Condition	Good
Entered service	1916
Entered the museum	3/5/1995.
Number in class	3
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	1995

Table 11.3: Details of AMW Bogie Match Wagon No. 4015 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National Railways Victorian and South Australian Railways
Condition	Good
Entered service	1932
Entered the museum	3.5.1995
Number in class	1
Ownership	National Railway Museum
Provenance	V & SAR
Withdrawn	3.5.1995

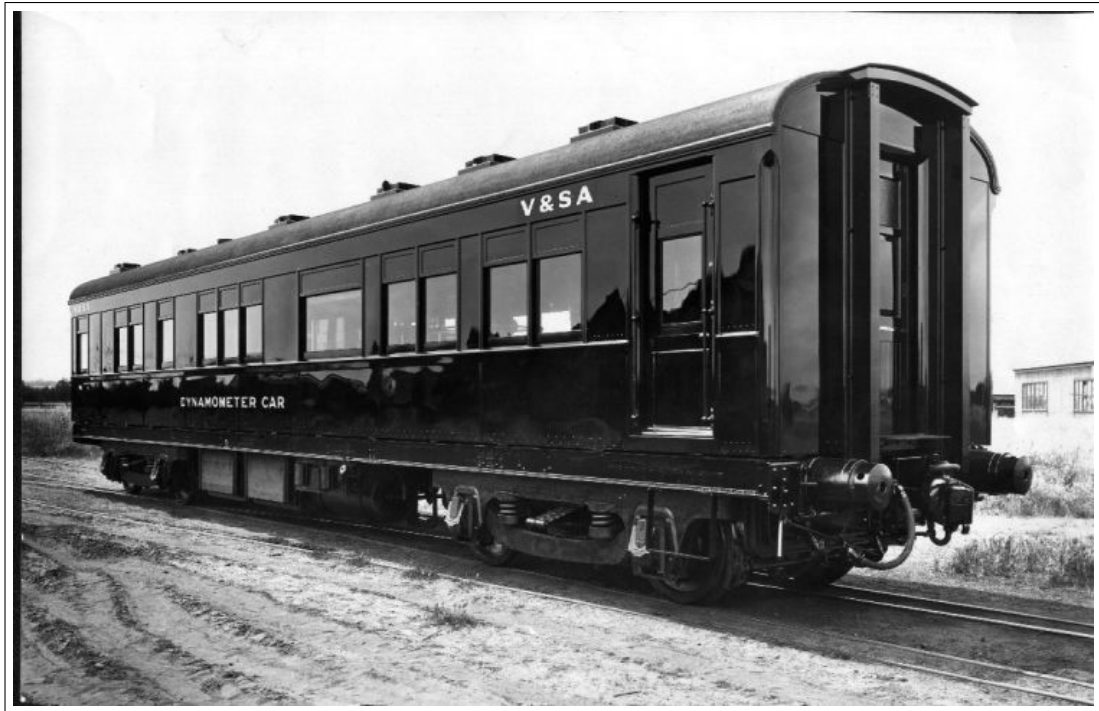
Table 11.4: Details of Dynamometer Car - Victorian and South Australian Railways - Broad Gauge

AMW Bogie Match Wagon No. 4015 - South Australian Railways - Broad Gauge

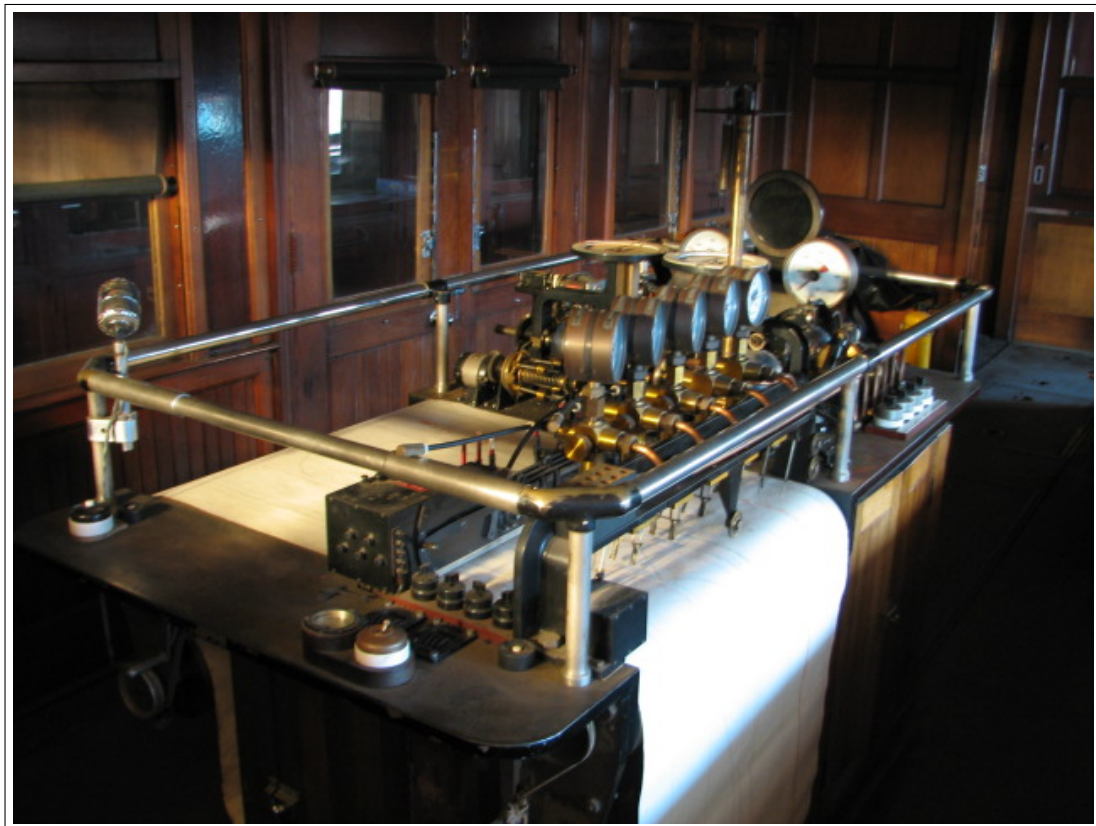
Bogie match wagon built by Gray Brothers, Port Adelaide in 1916. It was converted to use with Accident Crane No. 3

Dynamometer Car - Victorian and South Australian Railways - Broad Gauge

Salvaged parts from wooden Melbourne-Adelaide Express carriages, destroyed in an accident at Callington in 1929, were used by the South Australian Railways as the basis for the building of a modern Dynamometer car. The carriage entered service in 1932, with construction costs being shared with the Victorian Railways.



Dynamometer car shortly after being built. (South Australia Railways) (*NRM Collection*)

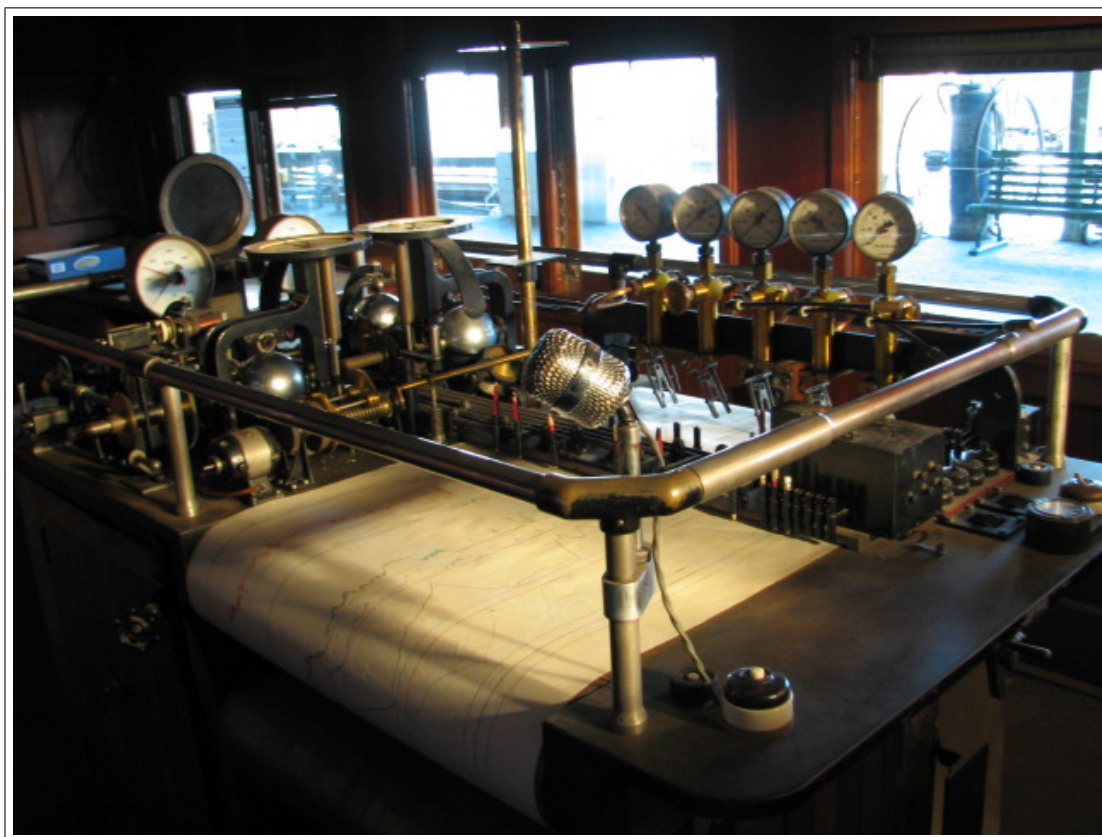


South Australian Railways - Dynamometer Car (*Andrew Peters*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1963

Table 11.5: Details of ESV Workmen's Van No. 8131 - South Australian Railways - Broad Gauge

All buffing and pulling forces are transmitted through the centre coupler to the hydraulic dynamometer mounted below floor level. Hydraulic fluid then travels through a system of pipes and valves to the measuring apparatus on the instrument table. A paper tape can be used to make a permanent record of any tests. At one end of the car is a small vestibule, with wash basin, to protect the main instrument room from the entry of dirt and dust. Next is the instrument room containing the main table operators' writing desk and a table for the examination of charts. Adjoining the instrument room is a conference room and workshop. A small kitchen and toilet make up the remainder of the carriage.



South Australian Railways - Dynamometer Car (*Andrew Peters*)

Original livery appears to have been a deep red, but it was repainted yellow in 1945 and used regularly up until the 1950s when it was stored except for occasional runs. Australian National obtained full ownership of the carriage, but loaned it to Victoria in the 1980s where it remained until arriving at the Railway Museum during April 1995.

ESV Workmen's Van No. 8131 - South Australian Railways - Broad Gauge

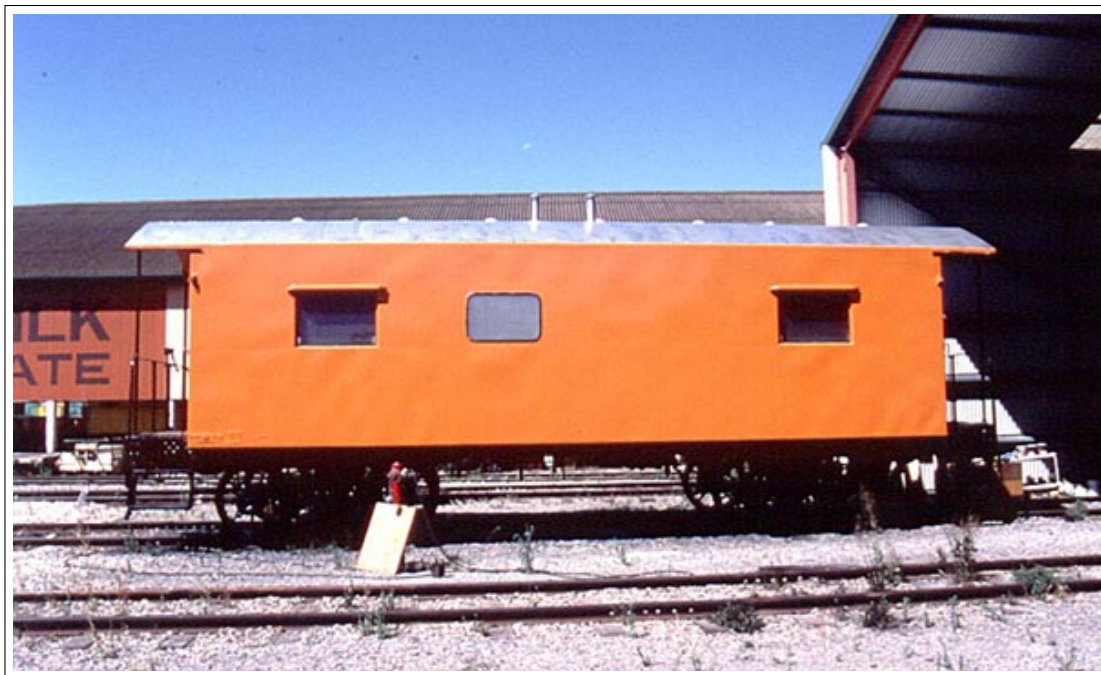
Used at country depots to accommodate workers on various projects on the railway system on South Australia's broad gauge system.



South Australian Railways - Dynamometer Car - 2nd April 2010 (*Chris Drymalik*)



South Australian Railways - Workmen's Van No. 8131 - 28 January 1996 (*Chris Drymalik*)



South Australian Railways - Workmen's Van No. 8131 - 28 January 1996 (*Chris Drymalik*)



South Australian Railways - Workmen's Van No. 8131 (*NRM Collection*)

Class operators	South Australian Railways
Condition	Excellent
Entered service	September 1950
Entered the museum	23.7.1976
Length (over coupling points)	15' 0
Number in class	3
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	March 1976.

Table 11.6: Details of Matisa Tamper No. RP73/72 - South Australian Railways - Broad Gauge

Matisa Tamper No. RP73/72 - South Australian Railways - Broad Gauge

Early in 1949 the South Australian Railways became interested in automatic tamping machines, which compact the stone ballast under the sleepers of the track automatically by vibration with horizontal compression through tamping tools. At this stage the Commonwealth Railways had placed an order for one standard gauge tamper and the Victorian Railways had ordered two broad gauge tampers.

South Australian Railways - Matisa Tamper No. RP73/72 (*NRM Collection*)

In mid 1949 an order was placed upon the Matisa Equipment Co., London, (agents for Materiel Industriel SA, Lausanne, Switzerland) for a broad gauge tamper which was constructed in England and placed in service in September 1950. Compared with the manual methods then in use for compacting ballast, considerable savings in manpower were envisaged. This tamper had a diesel engine for propulsion of the unit and for powering the air compressor which supplied air for the vertical reciprocation of the 16 tamping tools while the vibratory and packing movements of the tamping tools were by means of chain drives. The tamper was fitted with a Leyland diesel engine of approximately 70 hp capacity and had four forward and four reverse speeds up to a maximum speed of 25 mph.

Two further similar tampers were ordered in April 1950 and placed in service early in 1952. The first tamper was known as Gang Tamper No. 1 and No. RP796, while the other two tampers were Gang



South Australian Railways - Matisa Tamper No. RP73/72 - 29th March 2009 (*Steve Gordon*)

Class operators	South Australian Railways Australian National Railways State Transport Authority
Condition	Good
Built by	S.A.R. Islington Workshops
Entered service	1st October 1934
Withdrawn	11th June 1997
Entered the museum	11th June 1997
Number in class	1
Ownership	History Trust of South Australia
Provenance	South Australian Railways

Table 11.7: Details of South Australian Railways Commissioners Car *Murray* - South Australian Railways - Broad Gauge

Tamper No. 2 (No. RP797) and Gang Tamper No. 3 (No. RP798). No. RP797 was later converted to 3'6" gauge and used on the Port Lincoln Division.

After nearly 20 years of service, mainly on main lines north and south of Adelaide, No. RP796 was retired in June 1970 but was reinstated in October 1972 and renumbered No. RP73/72 (after some repairs) for tamping rail joints only in the metropolitan area (as opposed to its former use for tamping of main line running track). It was finally retired in March 1976.

South Australian Railways Commissioners Car *Murray* - South Australian Railways - Broad Gauge

In May 1933, the South Australian Government authorized the expenditure of \$15,000 for the construction of a new inspection car for the Railways Commissioner.



South Australian Railways Commissioners Car 'Murray' (*NRM Collection*)

The Murray car was the last timber bodied car built at Islington Works and when introduced on 1.10.1934 was claimed to be the most up to date car of its kind in the Commonwealth. The frame work is Tasmanian Blackwood and the internal panels are sliced Queensland Walnut. The car rides on two six-wheeled bogies imported from the U.S.A and weighs 52 tons. Sleeping accommodation is provided for 10 persons.

When introduced, the actual cost had risen to \$19,954. This additional cost was incurred by providing a fairly high grade of equipment, fitting up and finish to make *Murray* suitable for use by HRH the Duke of Gloucester on his visit to Australia in 1934. Murray was also included in the Royal train for HRH the Duke of Edinburgh, when he travelled from Murray Bridge to Adelaide in March 1974. A passenger brakevan (No. 391) was also fitted with a generator to provide auxiliary power for Murray. In the last days of steam, engine 621 was the Commissioner's Engine and used to haul Murray.

The car is fitted with a speed indicator. In 1972, Murray was altered to operate on standard gauge for inspection trips between Peterborough, Port Pirie and Broken Hill. When the Murray car is attached to any train, the observation end must be trailing whenever practicable. When the observation end is not trailing, the curtains must be drawn round such end and secured.

It was retained by the South Australian State Transport Authority when the South Australian Railways were sold to the Commonwealth Government, and store in the Adelaide Rail Yards north car sheds. In 1987 it was transferred to Australian National, entering Islington on 10.9.1987 to be upgraded. This did not happen and it was transferred to Port Augusta in 1991 for storage. Following an application by the History Trust of South Australia, in 1997, it was transferred to Islington for conversion to broad gauge in preparation for returning to South Australian Government control.

On 11.06.97 it was delivered to the Museum.

G-class 4-wheel Steel Open Wagon No. 363 - South Australian Railways - Broad Gauge

This is the match-wagon for the crane No. 2327. Built at the Islington Workshops in April 1902, it is one of forty-seven 36" sided steel open wagons built between 1894 and 1903. Used to carry 11 tons of general freight they were soon eclipsed by the larger Y-class which were introduced in 1909. Most were converted to F-class flat wagons in 1932, and the remainder used for departmental purposes.



South Australian Railways Commissioners Car 'Murray' private compartment wash facilities - 17th March 2007 (*Chris Drymalik*)



South Australian Railways Commissioners Car 'Murray' dining saloon - 17th March 2007 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Reasonable
Entered service	April 1902
Entered the museum	16.09.1970
Length (over coupling points)	20' 10
Number in class	47
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	1969

Table 11.8: Details of G-class 4-wheel Steel Open Wagon No. 363 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Number in class	1
Built by	S.A.R. Islington Workshops
Entered service	2nd April 1940
Withdrawn	28th July 1988
Entered the museum	28th July 1988

Table 11.9: Details of Vice Regal Car - South Australian Railways - Broad Gauge

No. 363 assumed its role as match-wagon in 1932, was written off in 1969, and placed in the Mile End Railway Museum on 10th September 1970. It was moved to the Museum on 18th June 1987.

Vice Regal Car - South Australian Railways - Broad Gauge



South Australian Railways - Vice Regal Car at Adelaide Station (*NRM Collection*)

Constructed at Islington Workshops, the Vice Regal car was built to accommodate the Governor and members of the Royal Family when travelling on the South Australian Railways broad gauge network.



Detail view of South Australian Railways Vice Regal Car's round observation end - 2nd April 2010
(Chris Drymalik)

Class operators	Commonwealth Railways
Condition	Good
Entered service	20.11.1944
Entered the museum	2.8.1988
Number in class	2
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Withdrawn	11.9.1982

Table 11.10: Details of Tea & Sugar Butcher's Van FA 640 - South Australian Railways - Standard Gauge

The car features seperate bedrooms for the Governer and his wife seperated by a common bathroom, a compartment for the Aide-de-camp, a dining saloon and kitchen area, and rounded end that acts as a lounge and observation area. It also noted for being the first air-conditioned car in service for the South Australian Railways.

Tea & Sugar Butcher's Van FA 640 - Commonwealth Railways - Standard Gauge

The *Tea and Sugar* was the life line of the Nullarbor. It began life very early this century during the construction phase of the Trans Australia Railway (TAR) which links Port Augusta to Kalgoorlie. Initially an ad-hoc service using a brake van to transport goods was implemented with the exact inauguration of the *Tea and Sugar* as a regular service being a bit of a mystery. Certainly by 1915 it had been formally recognised with the provision of dedicated vehicles for use as a travelling supply van, butcher shop and a fruit and vegetable van.

Whilst construction was taking place two sets of vehicles were provided, one for the Kalgoorlie construction crews and the other based at Port Augusta. The original butcher cars transported live



South Australian Railways - Vice Regal Car (*NRM Collection*)



Tea & Sugar Butcher's Van FA 640 - 21st September 2008 (*Chris Drymalik*)

Class operators	Commonwealth Railways
Condition	Excellent
Entered service	24.3.1972
Entered the museum	16.2.2006
Number in class	3
Ownership	National Railway Museum
Provenance	Commonwealth Railways & Australian National
Withdrawn	approx 1995

Table 11.11: Details of Tea & Sugar Pay Car PA 281 - Commonwealth Railways - Standard Gauge

sheep that were killed enroute, as no suitable method of refrigeration was available to keep meat fresh for long periods.

In 1944 two new bodies were built for use as mobile Butcher cars, one of these was van FA 640, which entered service on 20th November 1944. It was constructed on a 45 foot (13.71 metre) flat wagon that originally had been built in 1916.

Apart from new refrigeration units fitted in 1963 both vans remained basically unaltered, apart from minor overhauls, until being written off on 11th September 1982. They were stored at Port Augusta and Stirling North for six years until FA 640 was delivered to the museum on 2nd August 1988 and the other tendered for disposal. Prior to being obtained by the Museum FA 640 was badly vandalised and many fittings stolen, but has since been fully restored.

Tea & Sugar Pay Car PA 281 - Commonwealth Railways - Standard Gauge

Pay car 'P 281' - 1972 (Commonwealth Railways photo) (*NRM Collection*)

Pay car PA281 was one of three identical vehicles constructed by Commonwealth Engineering for the Commonwealth Railways. It entered service on 24th March 1972 on standard gauge bogies and was principally used on the Tea & Sugar service that operated out of Port Augusta across the Trans-Australian Railway line to Kalgoorlie. One of the other pay cars also operated on the Tea & Sugar in rotation with PA281, with the remaining vehicle being operated on the narrow gauge Central Australian Railway.

Class operators	Commonwealth Railways
Condition	Good
Entered service	14.12.1955
Entered the museum	2.8.1988
Number in class	2
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Withdrawn	3.5.1986

Table 11.12: Details of Tea & Sugar Provision Van VPA 1340 - Commonwealth Railways - Standard Gauge

As built, the vehicle provided non-air conditioned accommodation for two people between Port Augusta and Kalgoorlie. It has an open end platform at one end that leads into the customer service waiting and service area. This is fitted with a security screen and counter that separates the pay master from the customer. The next compartment, which is separated for the customer and service area by a wall containing a door, is the kitchen dining area which contains a stove, sink, table, seating and fridge. A corridor leads off one side of this compartment from which access to the two sleeping compartments is obtained. These compartments each contain a fixed bed, wash basin and cloths hanging space. Beyond the sleeping compartments, either side at the end of the corridor, is a shower compartment and a toilet compartment. The corridor ends at centre mounted end door that allows for access to new vehicle coupled to the pay car.

Externally all three pay cars were painted all over white with black bogies and underframe. Its classification and road number was displayed in raised white lettering on the right hand end of the underframe on each side of the vehicle.

In addition to the pay function, pay car PA281 also acted as a mobile agency for the Commonwealth Bank.

Few major changes where made PA281 until 1986 when it was fitted with a split air conditioning system followed in 1988 by hot water being connected to the hand basins and kitchen sink. Modifications where also made to the vehicles running gear in 1989.

Withdrawal from service date is uncertain, but it is likely to have occurred in 1995 when the Tea & Sugar service ceased operation. The vehicles TIMS rolling stock record shows it last being service/repared on 24th October 1995.

In 1995 the museum approached Australian National (AN) about selling the pay car. Unfortunately they declined the request and the vehicle remained in the open at Port Augusta, in the Spencer Junction yard. As part of the sale of AN, on 28th August 1997, the vehicles ownership passed to Australian Southern Railroad (ASR) who initially considered the possibility of returning it to service as a crew car. It remained at Port Augusta until August 2001 when, along with a number of other out of service vehicles that had been subject to vandalism, it was move to the Islington Workshop for storage.

In February 2006 the museum purchased the vehicle. It was transferred by road to Port Adelaide on 16th February 2006.

Tea & Sugar Provision Van VPA 1340 - Commonwealth Railways - Standard Gauge

This van was used to service railway settlements weekly on the Tea & Sugar train Port Augusta-Kalgoorlie on Trans-Australian Railway. Groceries, hardware, etc. were supplied from the Provision store at Port Augusta.

In 1955 the two purposed built brand new all steel framed vehicles were constructed for use as Provision Vans on the Tea & Sugar. Entering service on 14.12.1955, VPA 1340 provided a far superior service and facilities to that of the then existing vans.

Both vans were recoded from "VPA" to "OPA" on 30 November 1984 and officially written off on 3 May 1986 with VPA 1340 being transported to Museum on 2 August 1988. The vans had become surplus



Pay Car PA 281 gets shunted with the rest of the Tea & Sugar - 21st September 2008 (*Chris Drymalik*)



Commonwealth Railways - Tea & Sugar Provision Van - shop area - 11 September 2001 (*Chris Drymalik*)

Commonwealth Railways - Tea & Sugar Provision Van (*NRM Collection*)

Class operators	Commonwealth Railways
Condition	Good
Entered service	1915
Entered the museum	26.10.1993.
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Withdrawn	?

Table 11.13: Details of TSB-Class Tank Wagon No. 691 - Commonwealth Railways - Standard Gauge

due to Pullman sleeping cars Macedon and Mount Lofty (the museum has Pullman dining car Adelaide being converted to new provisions store cars. The Macedon and Mount Lofty cars had originally been imported from America in 1928 for use as sleeping cars on the Adelaide to Melbourne Express (later named "The Overland").

TSB-Class Tank Wagon No. 691 - Commonwealth Railways - Standard Gauge

Used to transport water for domestic or railway purposes on the standard gauge Trans-Australia railway of the Commonwealth Railways. Water capacity 18,000 litres.

Water Tank Wagon No. 5506 - South Australian Railways - Narrow Gauge

Drought is not an uncommon occurrence in South Australia and, in times past, it often became necessary for the Railways to transport water to badly affected areas. This required the building and maintaining of a large fleet of water tank cars to be held for such emergencies - Peterborough alone was once home for 120 such vehicles, which ranged in capacity from 1,200 to 3,000 gallons. However exceptional circumstances sometimes required additional tanks and Temporary Travelling Tanks were sometimes fitted to the underframes of existing wagons. No. 5506 is in this category having been built as a Y-class open wagon, by J. S. Bagshaw & Co., in July 1914. The 2,000 gallon tank was fitted in March 1923.



Commonwealth Railways Tea & Sugar Provision Van and Butcher's Van FA 640 - 21 September 2001
(Chris Drymalik)



Commonwealth Railways - TSB-Class Tank Wagon No. 691 - 20th March 2010 (Chris Drymalik)

Class operators	South Australian Railways
Condition	Good
Entered service	July 1914
Entered the museum	1.9.1977
Length (over coupling points)	17' 9
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Withdrawn	13th April 1977

Table 11.14: Details of Water Tank Wagon No 5506 - South Australian Railways - Narrow Gauge

Water tank WT 5506 - 29 March 2000 (*Chris Drymalik*)

Originally used on the Peterborough Division No. 5506 was sent to the South-East in January 1945, returning to Peterborough in January 1958. With the building of the standard-gauge line it was isolated on the Gladstone-Wilmington branch, where it remained until condemned on 13th April 1977. On 1st September of the same year it was placed in the Mile End Railway Museum, being transferred to the museum on 23rd September 1988.



FREIGHT WAGONS

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AOWF Bogie Timber Open Wagon No. 58 - ex OW class No. 5840 - South Australian Railways - Broad Gauge

Timber bogie open wagon built by the South Australian Railways at its Islington Workshops. It was originally built as OW 5840.



South Australian Railways/ANR AOWF Bogie Timber Open Wagon No. 58 - ex OW class No. 5840 - 25.5.2001 (*Chris Drymalik*)

AOWF 58 was obtained by the museum in 1995.

Cf Class 4-wheel Cattle Van No. 26 - South Australian Railways - Broad Gauge

Like the Sf Class the Cf Class was a 4-wheel version of larger bogie vans built in 1929. As with sheep the need arose for vehicles in which smaller numbers of animals could be shipped, and the first Cf van was placed in service in October 1953. The hundred vans of this class were unusual in that all wooden components were produced by the Islington Workshops while the steel underframes were manufactured by the Perry Engineering Co., Mile End. All passed into Australian National ownership in March 1978.

No. 26 was condemned on 23rd November 1982 and passed to the Mile End Railway Museum on 24th January 1983. It was forwarded to the museum 5th June 1987.

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1944
Entered the museum	1995

Table 12.1: Details of Freight AOWF Bogie Timber Open Wagon No. 58 - ex OW class No. 5840 - South Australian Railways - Broad Gauge



South Australian Railways/ANR AOWF Bogie Timber Open Wagon No. 58 - ex OW class No. 5840 - 18.4.2001 (*Chris Drymalik*)



South Australian Railways - Cf Class 4-wheel Cattle Van No. 26 (*NRM Collection*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	January 1954
Entered the museum	26th January 1983
Number in class	100
Tare Weight	7 tons 15 cwt
Load Weight	9 head
Length (over coupling points)	20' 10" (6.35m)

Table 12.2: Details of Freight Cf Class 4-wheel Cattle Van No. 26 - South Australian Railways - Broad Gauge

DA Class Covered Van No. 4346 - South Australian Railways - Broad Gauge

The seventy-one vans in this class were built by various builders between 1900 and 1923, and were used for the carriage of goods of non-perishable nature but requiring ventilation. Originally classed A they were reclassified DA during the 1920s.



South Australian Railways - Da Covered Van No. 4346 (*NRM Collection*)

No. 4346 was the second last of the series, in May 1923, by the Perry Engineering Co., Mile End. In 1964 it was sent to Gillman Yard for use as a toolvan, replacing N 251, until written off. It was placed in the museum on 28th May 1987.

DWf Class 4-wheel Louvred Van No. 4724 - South Australian Railways - Broad Gauge

The practice of the South Australian Railways of building 4-wheel versions of larger bogie cars, and vice versa, extended to many types. When this occurred the 4-wheel version was given the same classification as the bogie wagon but with the suffix 'f' added. The DW Class was a bogie Louvred Van

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Entered service	May 1923
Entered the museum	28th May 1987
Ownership	National Railway Museum
Number in class	71
Length (over coupling points)	23' 2" (7.0612m)
Tare Weight	10 tons 3 cwt
Load Weight	12 tons

Table 12.3: Details of Freight DA Class Covered Van No. 4346 - South Australian Railways - Broad Gauge

and the DWf its 4-wheel counterpart. Built to carry produce which needed ventilation but not refrigeration, 550 were built by the Islington Workshops between December 1944 and February 1955.



South Australian Railways - DWf Class 4-wheel Louvred Van No. 4724 (*NRM Collection*)

No. 4724 was one of the first batch of fifty and was placed in service in January 1945. Most of the class survived to be taken into Australian National ownership in 1978 but, thereafter, they were condemned in large numbers. 4724 placed in the Mile End Railway Museum on 24th July 1986. It was sent to the museum on 5th June 1987.

FB Class Flat Cars Nos. 8500, 8536, and 8657 - South Australian Railways - Broad Gauge

Built in the 1920s in the Commissioner Webb era for carrying general freight. These wagons ran on most the South Australian Railways broad gauge system. After being taken over by Australian National Railways in 1975 the remaining wagons gradually got retired. Those that still remaining in the late 1970s got recoded as AFFA class in the new National Freight Classifications System. Some, such as No. 8657 got rebuilt as AFBF class.

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Entered service	January 1945
Entered the museum	24th July 1986
Ownership	National Railway Museum
Number in class	550
Length (over coupling points)	22' 10"
Tare Weight	9 tons 12 cwt
Load Weight	15 tons

Table 12.4: Details of Freight DWf Class 4-wheel Louvred Van No. 4724 - South Australian Railways - Broad Gauge

Flat wagon FB No. 8536 was converted in 1941 to carry Air Craft Wings.



South Australian Railways - Flat Car FB - 17.9.2000 (*Chris Drymalik*)

The museum has FB No. 8500, 8536 and 8657.

M Bogie Steel Vans No. 7436, 7038, 7299, 7350 & MG 39 (ex M 7497) - South Australian Railways - Broad Gauge

A total of 500 M vans were built during Commissioner Webb's rehabilitation scheme of South Australian Railways in the mid 1920s. They were used for general freight on the broad gauge system of the South Australian Railways.

At various times some vans got converted to carry special traffic and other minor body modifications. This resulted in them being recoded to MRP or MG class, and sometimes receiving different road

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Very good
Ownership	National Railway Museum
Entered service	1927
Entered the museum	28th June 1988 (No.8500 and 8657)
Length (over coupling points)	46'
Tare Weight	16 tonne

Table 12.5: Details of Freight FB Class Flat Cars Nos. 8500, 8536 and 8657 - South Australian Railways - Broad Gauge



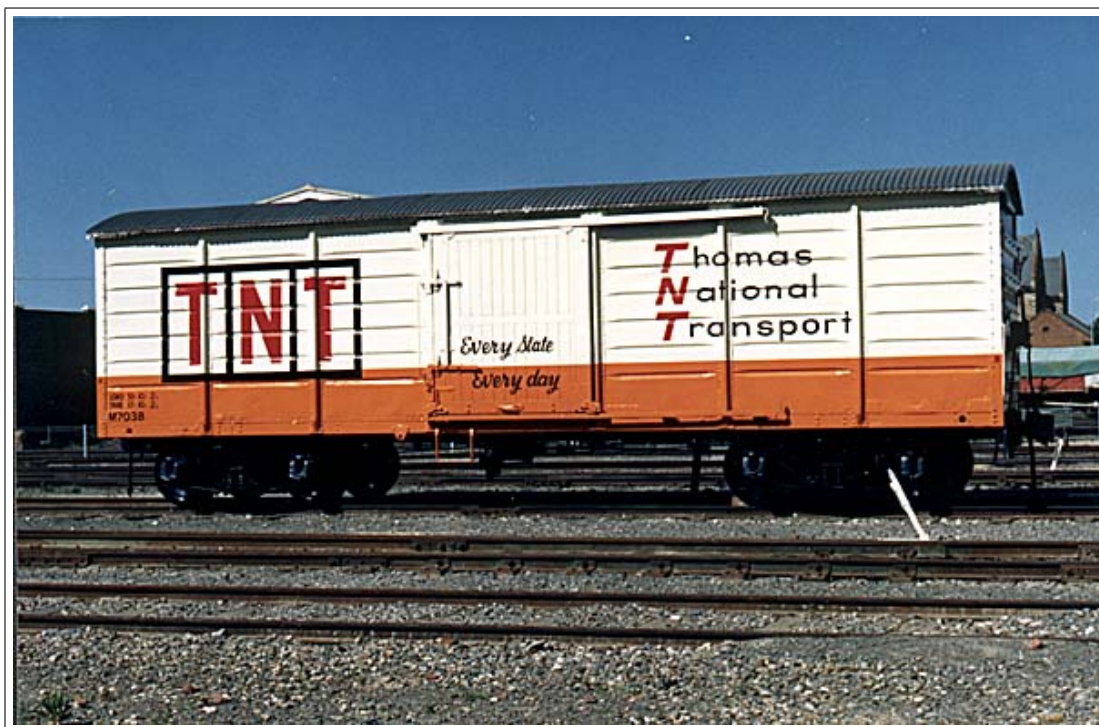
South Australian Railways - Flat Car FB (NRM Collection)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1925
Number in class	500

Table 12.6: Details of Freight M Bogie Steel Vans No. 7436, 7038, 7299, 7350 & MG 39 (ex M 7497) - South Australian Railways - Broad Gauge

numbers. Between 1978 and 1981, all the van remaining in service got recoded into the new national freight coding system becoming ABAA class goods van.

The museum has M vans No. 7436, 7038, 7299, 7350 and MG 39 (ex M 7497). Some of the museum's vans have been painted with the original advertising liveries that many of the vans carried in general traffic. M736 carries West End livery, M7038 TNT livery and MG39 Famer Union livery. Vans ABAA7350 and ABAA7299 still carry the red livery they had when withdrawn from service in the 1980s.



South Australian Railways - M Bogie Steel Van No. 7038 - November 1989 (*R.Fluck*)



South Australian Railways - M Bogie Steel Van No. 7038 - November 1989 (*R.Fluck*)



South Australian Railways - M Bogie Steel Van No. 7038 - November 1989 (*R.Fluck*)



South Australian Railways - M Bogie Steel Van No. 7038 - November 1989 (*R.Fluck*)

Class operators	South Australian Railways
Entered service	October 1901
Condition	Good
Provenance	South Australian Railways
Ownership	National Railway Museum
Number in class	10
Length (over coupling points)	19' 3"

Table 12.7: Details of Freight N class 4-wheel Wooden Van No. 251 - South Australian Railways - Broad Gauge

N class 4-wheel Wooden Van No. 251 - South Australian Railways - Broad Gauge

This is an excellent example of a wooden outside trussed covered van, a type once common on our railways. Placed in service on 29th October 1901 it was the last of a series of ten built at the Islington Workshops. Its low stock number can be attributed to the programme of 'Wagon Renewal' (newly constructed wagons taking the numbers of recently scrapped older vehicles) which was then a common practice.



South Australian Railways - N Class 4-wheel Wooden Van No. 251 - 21.9.2001 (*Chris Drymalik*)

At some time during its career it was sent to Gillman Yard, Port Adelaide for use as a tool van, thus surviving the remainder of the class. On its replacement with DA Class van No. 4346 in 1964 it was offered to the Mile End Railway Museum and, along with P Class 2-4-0T locomotive No. 117, became the first exhibit placed on site on 18th June 1964. It was transferred to the Museum on 8th December 1988.

OB Open Wagon No. 32 - South Australian Railways - Broad Gauge

Bogie steel open wagon built by the American Car Company, USA, in the 1920's for the South Australian Railways.

OB 32 was obtained by the museum in 1988.

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1925
Entered the museum	1988

Table 12.8: Details of Freight OB Open Wagon No. 32 - South Australian Railways - Broad Gauge

South Australian Railways OB Open Wagon No. 32 - 25.5.2001 (*Chris Drymalik*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Very Good
Entered service	1948
Entered the museum	15th April 1988
Ownership	National Railway Museum

Table 12.9: Details of Freight OBF Class Open Wagon No. 18 - South Australian Railways - Broad Gauge

OBF Class Open Wagon No. 18 - South Australian Railways - Broad Gauge

Four wheel open wagon used for transport of general goods on the broad gauge South Australian Railways network. Originally OBF 18, then OF 96.

OF class Steel Open Wagon No. 439 - South Australian Railways - Broad Gauge

The OF class of open wagons was a general traffic wagon used by the South Australian Railways. A total of 501 wagons were constructed between 1947 and 1952 with road numbers from 1 to 501.



South Australian Railways - OBF Class Open Wagon No. 18 (*NRM Collection*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Fair
Ownership	National Railway Museum

Table 12.10: Details of Freight OF class Steel Open Wagon No. 439 - South Australian Railways - Broad Gauge

RBP Class bogie refrigerator car No. 9003 - South Australian Railways - Broad Gauge

RB Class bogie refrigerator car No. 9003 was built at South Australian Railway’s Islington Workshops in 1933. It was transferred to the Barmera - Adelaide milk traffic on 6 July 1937. Fitting of high speed bogies on 2 October 1967 resulted in it being reclassified RRP 9003, and later being reclassified RBP.9003 on 19th November 1971 when passenger car bogies were fitted (Wagons 9002 - 9028 were built as RB Class, 9029 - 9044 as RBP Class).

Wagons 9002 - 9004 were built with a single door each side, but later rebuilt with two. Under South Australian Railway ownership, they were painted Aluminium and Royal Blue, and equipped with SME brake gear for use behind 250 Class railcars.

No. 9003 became Australian National Railway property during the sale the South Australian Railway’s country operations to the Commonwealth. On 28 May 1980 it was reclassified ARPY 9003 and condemned on 20 February 1980.

Steamranger (Australian Railway Historical Society SA Division) obtained the vehicle on 12 November 1986 and it was transferred to National Railway Museum on 31 March 2004.

Sf Class 4-wheel Sheep Van No. 160 - South Australian Railways - Broad Gauge

This class of van is a 4-wheel version of the S Class bogie sheep vans which had been introduced in 1930. The 180 Sf Class, were built between 1938 and 1953 at the Islington Workshops, and with a



South Australian Railways - OF Steel Open Wagon No. 439 - 18.4.2000 (*Chris Drymalik*)



South Australian Railways - OF Steel Open Wagon No. 439 - 21.9.2001 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Good
Entered service	7-10-1933
Entered the museum	31 March 2004
Length (over coupling points)	38' 10
Load Weight	33 tons
Number in class	44
Ownership	National Railway Museum
Provenance	South Australian Railways / Australian National
Tare Weight	19t 12c 0q
Withdrawn	20 February 1980

Table 12.11: Details of Freight RBP Class bogie refrigerator car No. 9003 - South Australian Railways - Broad Gauge



RBP Class bogie refrigerator car No. 9003 (*NRM Collection*)

capacity of 80 sheep, provided the means by which farmers could ship smaller numbers of sheep - 40 per deck.

The museum's vehicle, No. 160, was placed in service in December 1952, taken into Australian National stock in March 1978, and condemned on 23rd November 1982. It was placed in the Mile End Railway Museum on 24th January and sent to the museum on 5th June 1987.

TC Class Fuel Tank No. 8463 - South Australian Railways - Broad Gauge

South Australian Railways 4 wheel fuel tanker built by the Victorian Railways at the Newport Workshops in 1926. It was transferred to the South Australian railways in 1961.

It was obtained by the museum in 1995.



South Australian Railways - Sf Class 4-wheel Sheep Van No. 160 (*NRM Collection*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Entered service	December 1952
Entered the museum	24th January 1983
Ownership	National Railway Museum
Number in class	180
Tare Weight	9 tons 6 cwt
Load Weight	80 sheep
Length (over coupling points)	20' 10"

Table 12.12: Details of Freight Sf Class 4-wheel Sheep Van No. 160 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1926
Entered the museum	1995

Table 12.13: Details of Freight TC Class Fuel Tank No. 8463 - South Australian Railways - Broad Gauge



BP 4 wheel tanker TC 8463 - 13.3.2000 (*Chris Drymalik*)



BP 4 wheel tanker TC 8463 - 17.9.2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1929
Entered the museum	24th October 1989

Table 12.14: Details of Freight TV Class Tank Car No. 4872 - South Australian Railways - Broad Gauge

TV Class Tank Car No. 4872 - South Australian Railways - Broad Gauge

Used by Mobil Oil (formerly Vacuum Oil) for carriage of petroleum products to various depots on the broad gauge South Australian Railways network.

South Australian Railways - TV Class Tank Car No. 487 - November 1989 (*R. Fluck*)**WL Class Bogie Well Wagon No. 8200 - South Australian Railways - Broad Gauge**

In 1874 the South Australian Railways had begun the construction of narrow (3' 6") gauge lines throughout the colony. There subsequently arose the necessity of transporting narrow-gauge locomotives and rollingstock over the broad-gauge to and from the workshops in Adelaide. Plans were drawn up for an Engine Carriage Bogie Truck, and the vehicle, which was given the number 19, was outshopped by the Adelaide Locomotive Works in 1884. Of traditional Well Wagon pattern it was unusual in that, instead of normal bogies, the driving wheels and portions of the frames from two of the original locomotives were used. It is possible that they came from Nos.2 and 3, however no records have been found to support or disprove this supposition.

When classification letters were allocated to rollingstock in 1888, No. 19 was classified WL. At some time during its career it also acquired the nickname The Crocodile, which eventually gained official recognition. It found considerable employment, the conversion to broad-gauge of the old Western System during the 1920s notwithstanding. In 1931 Islington Works outshopped a similar vehicle, this time equipped with conventional bogies, which became WL.8200, and 19 was renumbered 8202.

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	National Railway Museum
Entered service	1931
Entered the museum	22nd December 1988
Number in class	2

Table 12.15: Details of Freight WL Class Bogie Well Wagon No. 8200 - South Australian Railways - Broad Gauge



South Australian Railways - WL Class Bogie Well Wagon 8200 - 17.9.2000 (*Chris Drymalik*)

However, with the conversion to broad-gauge of the South Eastern System in the 1950s and the standardisation of the Port Pirie to Broken Hill line in the late 1960s, both vehicles were used less and less. No. 8202 was condemned on 2nd May 1977 and broken up, one bogie going to the Mile End Railway Museum and the other to Steamranger.

No. 8200 survived complete and was used to transport several locomotives to the Museum before being placed in the collection on 22nd December 1988.

Y Class 4 wheel steel open wagon No. 3582 - South Australian Railways - Broad Gauge

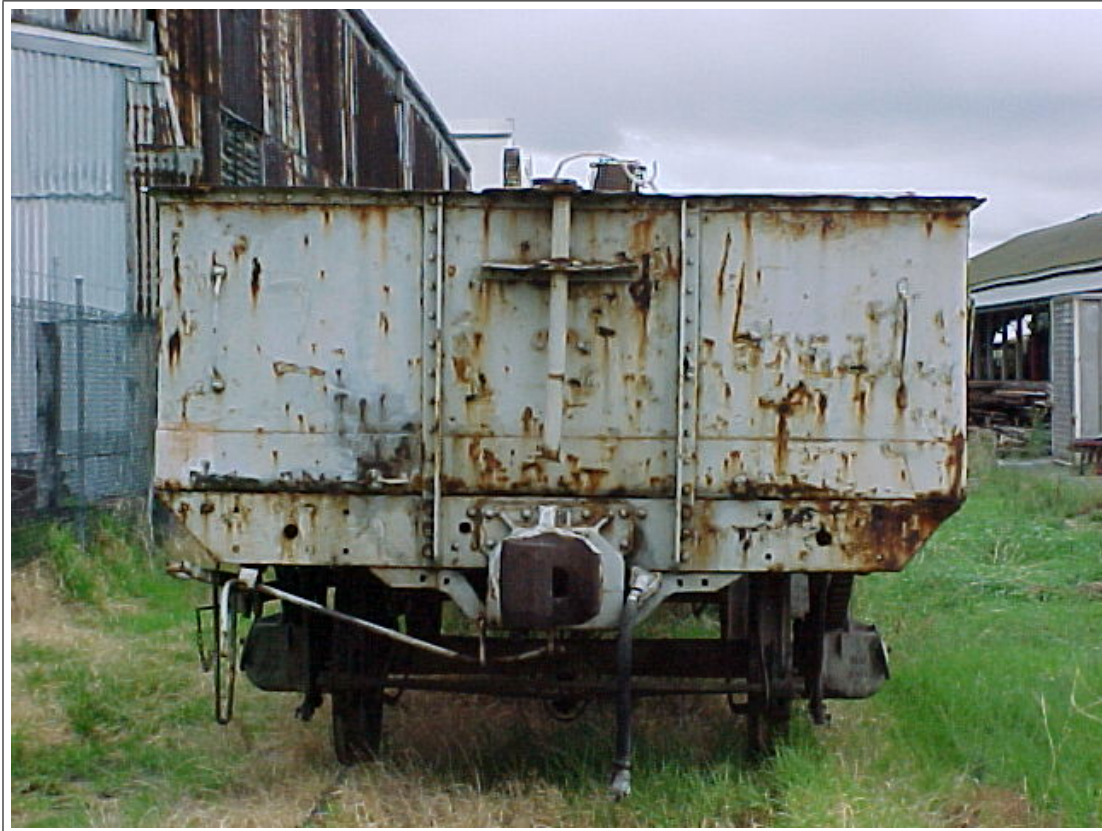
The most numerous of all wagon types is the open wagon and in South Australia, until comparatively recent times, it outnumbered the combined totals of all other types. The Y Class became the standard broad-gauge open wagon on the South Australian Railways in the years before the Webb rehabilitation, 1262 having been built by various builders between 1909 and 1923. In later years the class became much diminished by rebuilding to other types and conversion to narrow-gauge, and the remainder were largely displaced by the OF Class introduced in the early 1950s.



South Australian Railways - WL Class Bogie Well Wagon 8200 - 17.9.2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Very good
Ownership	National Railway Museum
Entered service	November 1913
Number in class	1262
Tare Weight	8 tons 9 cwt
Load Weight	17 tons
Length (over coupling points)	22' 10"

Table 12.16: Details of Freight Y Class 4 wheel steel open wagon No. 3582 - South Australian Railways
- Broad Gauge



South Australian Railways - 4 wheel steel open wagon Y 3582 - 4.4.2000 (*Chris Drymalik*)

No. 3582 was built by Gray Bros. of Port Adelaide in 1913. It was acquired from Australian National by the Mile End Railway Museum on 24th July 1986 and moved to the museum on 5th June 1987.

Z Class 4-wheel Steel Hopper Wagon No. 3236 - South Australian Railways - Broad Gauge

Hopper wagons are used to carry bulk commodities such as grain, coal or iron ore, which is usually loaded from overhead conveyors or bins and unloaded through doors in the bottom of the wagon into bins or silos. Today's hoppers are large vehicles carrying up to 100 tons but, in 1913, when the Z Class were introduced, 16 tons was an average load. Ninety-three were built between 1913 and 1916 and were primarily used for the carriage of coal. In later years they were used as ballast wagons, and this is how No. 3236 finished its days working for the State Transport Authority where it was used to store stone for ballasting work.

After being held in storage at the Penfield sidings for some time it was acquired by the Mile End Railway Museum on 30th April 1983, and eventually moved to the museum on 5th June 1987.

Built by James Martin & Co. of Gawler in 1916, No. 3236 is the only representative of the large number of goods wagons built by this company to be placed in the museum.

BAS Class Ballast Wagon No. 615 - Commonwealth Railways - Standard Gauge

One of 125 Ballast Wagons used on the standard gauge Trans-Australia railway of the Commonwealth Railways. In 1965 it was sold to BHP for use on its operation at Proper Bay, including the Coffin Bay tramway, near Port Lincoln South Australia.

Around 1999 it was sold as scrap to Lukins of Port Lincoln. Museum member Nic Doncaster saved it from being scrapped, in 2000, by purchasing it and donating it to the museum. It arrived on site on 6.3.2001.



South Australian Railways - 4 wheel steel open wagon Y 3582 - 4.4.2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Very Good
Ownership	History Trust of South Australia
Entered service	November 1916
Entered the museum	30th April 1983
Number in class	93
Tare Weight	9 tons 5 cwt
Load Weight	16 tons
Length (over coupling points)	24' 4

Table 12.17: Details of Freight Z Class 4-wheel Steel Hopper Wagon No. 3236 - South Australian Railways - Broad Gauge

Class operators	Commonwealth Railways
Condition	Good
Entered service	11.3.1916
Entered the museum	6.3.2001.
Length (over coupling points)	20? 6?
Load Weight	50 tons
Number in class	125
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Tare Weight	6 tons 15 cwt

Table 12.18: Details of Freight BAS Class Ballast Wagon No. 615 - Commonwealth Railways - Standard Gauge



South Australian Railways - Z Class 4-wheel Steel Hopper Wagon No. 3236 (*NRM Collection*)



South Australian Railways - Z Class 4-wheel Steel Hopper Wagon No. 3236 - 17.9.2000 (*Chris Drymalik*)



Commonwealth Railways - 4' 8" gauge BAS Class Ballast Wagon No. 616 (identical to No. 615) sits in the Port Augusta Yard in 1964 (*Chris Drymalik collection*)



Commonwealth Railways - 4' 8" gauge BAS Class Ballast Wagon No. 615 shortly after arriving at the museum - 8 March 2001 (*Chris Drymalik*)

Class operators	Commonwealth Railways
Condition	Excellent
Entered service	October 1914
Entered the museum	24th May 1988.
Length (over coupling points)	37' 6
Load Weight	35 tons
Ownership	National Railway Museum
Provenance	Commonwealth Railways
Tare Weight	17 tons 15 cwt 3 qr
Withdrawn	1988

Table 12.19: Details of Freight V Class bogie Covered Van (outside frame), No. 260 - Commonwealth Railways - Standard Gauge

V Class bogie Covered Van (outside frame), No. 260 - Commonwealth Railways - Standard Gauge

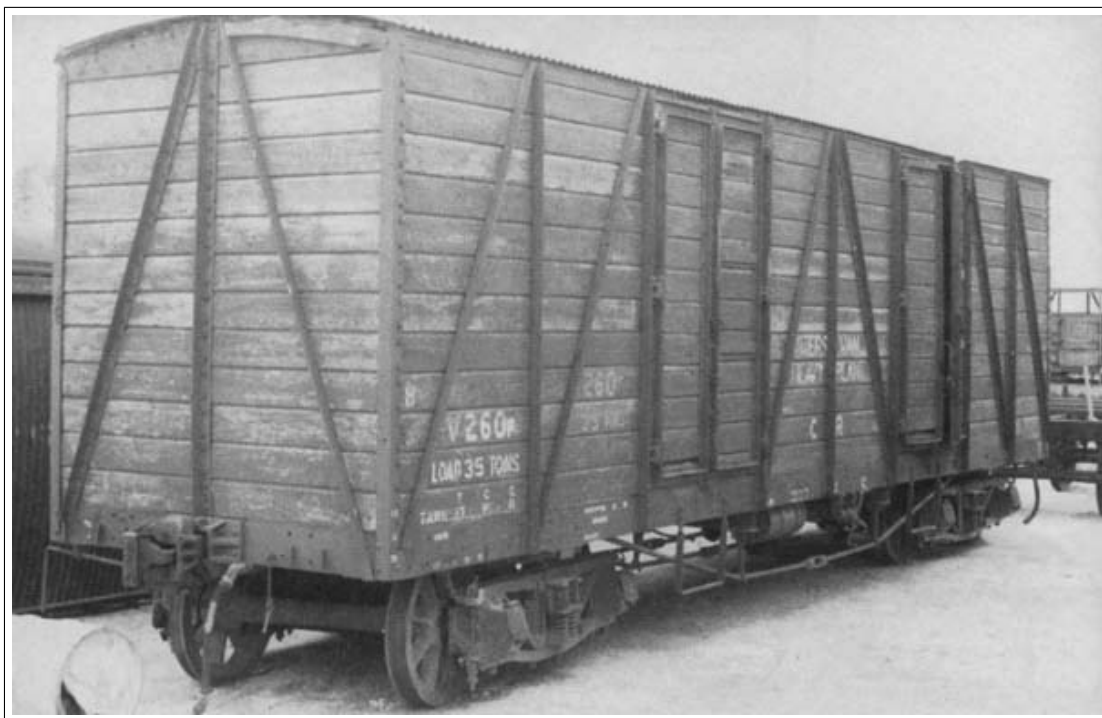
This van was built by Gray Bros. of Port Adelaide as an R Class Flat Wagon, and would have probably been used to carry rail for the construction of the Transcontinental Railway. A year or so later it was rebuilt as a G Class Open Wagon, and ran as such until 1940 when it was again rebuilt; this time to a VZ Class Covered Van. Some time thereafter the Z was dropped and it ran as V.260 until reclassified ABGY by Australian National about 1980. It was donated to the Museum; being delivered on 24th May 1988.



Commonwealth Railways V Class bogie Covered Van No. 260 - 6.10.2001 (*Chris Drymalik*)

FNT Class Bogie Flat Wagon No. 7850 - South Australian Railways - Narrow Gauge

Narrow gauge flat wagon built by the South Australian Railways at the Islington Workshops during 1942. It was obtained by the museum in 1989.



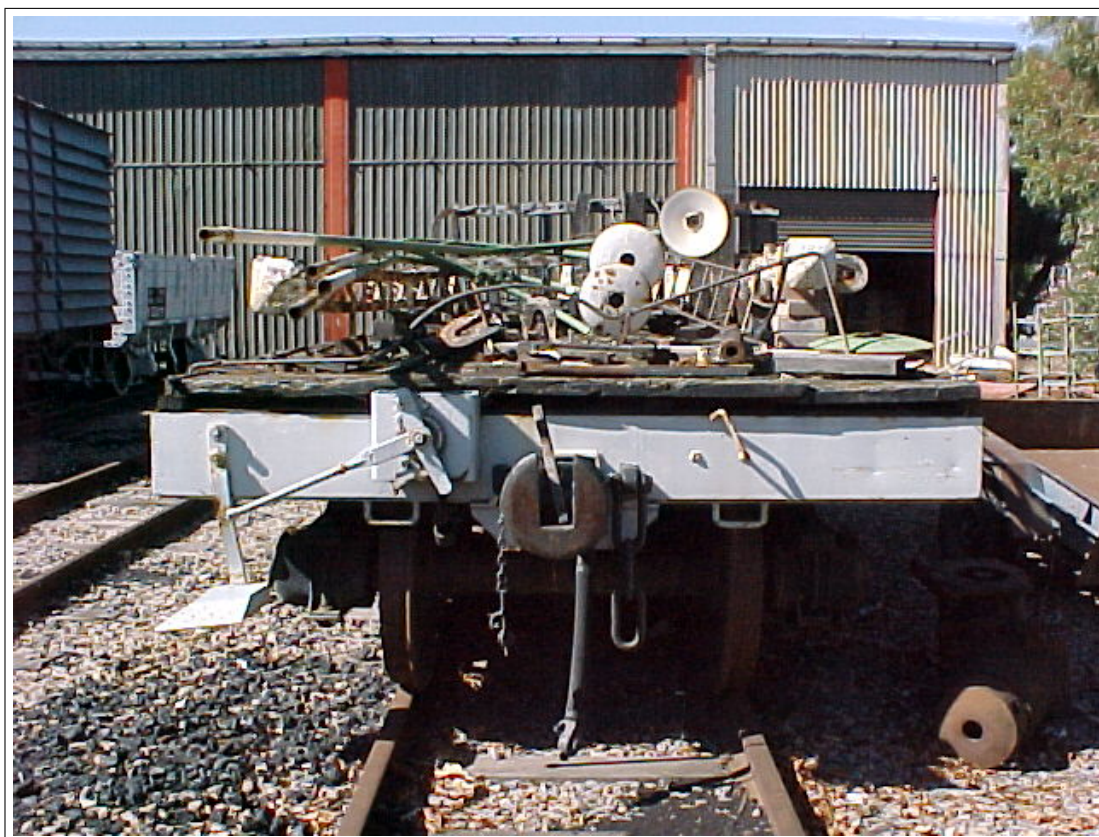
Commonwealth Railways - V Class bogie Covered Van (outside frame), No. 260. - It is shown here at Stirling North, off rail, awaiting despatch to the Railway Museum - 1987 (*Ron Fluck*)



FNT 7850 South Australian Railways Flat Wagon - 29 March 2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Good
Entered service	1942
Entered the museum	1989
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	1989

Table 12.20: Details of Freight FNT Class Bogie Flat Wagon No. 7850 - South Australian Railways - Narrow Gauge



FNT 7850 South Australian Railways Flat Wagon - 29 March 2000 (*Chris Drymalik*)

Hfn Class 4-wheel Hopper Wagon No. 5108 - South Australian Railways - Narrow Gauge

Originally classed Z, this wagon is one of twenty-five built by James Martin & Co. of Gawler between September and December 1912. It is a smaller version of the broad-gauge Z Class wagon, and was used for the carriage of coal and ballast. No. 5108 was used on the Peterborough Division and finally on the Gladstone-Wilmington branch. Acquired by the museum, it was on loan to the Pichi Richi Railway during 1989.

ON Class Bogie Ore Hopper No. 929 - Silverton Tramway Company - Narrow Gauge

This narrow gauge bogie ore wagon is one of hundreds built and operated by the Silverton Tramway Co Ltd. Many of the 1920s built ON wagons were rebuilt and strengthened in the mid-1950s. The ONs were used to convey lead/zinc ore concentrate between the mines at Broken Hill to Port Pirie. This traffic was progressively converted into larger and modern wagons, using the standard gauge railway, culminating in ON 929 being placed out of use in January 1970.



HFN 5108 hopper wagon sits in front of the *Woodville* Signal Cabin - 7th March 2009 (*Chris Drymalik*)



HFN 5108 hopper wagon- 29 March 2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Good
Entered service	December 1912
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	1989
Length (over coupling points)	17' 9
Tare Weight	5 tons 3 cwt
Load Weight	11 tons

Table 12.21: Details of Freight Hfn Class 4-wheel Hopper Wagon No. 5108 - South Australian Railways - Narrow Gauge



Silverton Tramway ON at Peterborough - 6.2.2008 (*Chris Drymalik*)

Class operators	Silverton Tramway Company
Length (over coupling points)	7.9m
Condition	Good (after basic restoration)
Ownership	National Railway Museum
Tare Weight	9.5t
Load Weight	31.0t
Provenance	Silverton Tramway Company
Withdrawn	1.1970

Table 12.22: Details of ON Class Bogie Ore Hopper No. 929 - Silverton Tramway Company - Narrow Gauge

Class operators	South Australian Railways
Condition	Good
Entered service	October 1899
Entered the museum	23rd September 1988.
Length (over coupling points)	19' 10
Load Weight	6 tons
Number in class	60
Ownership	National Railway Museum
Provenance	South Australian Railways
Tare Weight	6 tons 13 cwt
Withdrawn	10th October 1979

Table 12.23: Details of Freight V Class Steel 4-wheel Louvred Van No. 1990 - South Australian Railways - Narrow Gauge

It is an example (the only one) of a typical wagon used to convey ore via narrow gauge between Broken Hill and Port Pirie for more than 50 years. It would have been hauled by many of the locomotives on display at the museum, of the Silverton Tramway Co Ltd.

V Class Steel 4-wheel Louvred Van No. 1990 - South Australian Railways - Narrow Gauge

At a time when covered freight vans had wholly wooden bodies and passenger cars had wooden framed bodies (although almost invariably on the South Australian Railways with protective steel sheathing panels), the narrow 'V' class louvre cars were unusual in having steel bodies, including louvres and doors. Concurrently with the construction of the first narrow gauge 'W' vans, similar but larger 'A' vans (later classified 'DA') were constructed. Utilising the same principles of construction for bodies, louvres and doors, the broad gauge 'A' vans were big brothers to the narrow gauge 'V vans' and the initial vehicles of both classes were described as being for the *'carriage of dead rabbits'*.



South Australian Railways - V Class Steel 4-wheel Louvred Van No. 1990 (*NRM Collection*)

Constructed to five separate orders, nine vans were constructed at Islington Workshops during 1899

Class operators	South Australian Railways
Entered service	November 1912
Condition	Excellent
Entered the museum	24th July 1986
Length (over coupling points)	17' 9
Load Weight	12 tons
Ownership	National Railway Museum
Provenance	South Australian Railways
Tare Weight	5 tons 5 cwt
Withdrawn	1986

Table 12.24: Details of Freight Y Class 4-wheel Open wagon (drop-sides) No. 5019 - South Australian Railways - Narrow Gauge

and 1900, to be followed by eleven and ten in two orders from Islington between 1906 and 1908. J. Martin and Co. Gawler, built a further fifteen in 1911 and the final fifteen followed in 1923 from the Perry Engineering Co., Gawler, giving a total of 60 vans. The first nine vans were placed in service on the northern and south-east narrow gauge systems, while in June 1916 the first 'W' van was transferred to the Eyre Peninsula lines. In 1921, the 45 van then in service were distributed - 36 to the northern lines, 8 in the south-east and 1 on Eyre Peninsula. By 1946 a total of 41 were in service on the Peterborough Division. With the broadening of the south-east lines, the 10 vans there were transferred to Port Lincoln in November 1952. During 1953 four Peterborough vans were fitted with internal padding for explosives traffic and classified 'EFN', later being reclassified 'MFN' when used as ordinary covered vans.

No. 1990 was one of the first ordered and was placed in service in October 1899 on the northern lines, where it spent all its working life. With the standardisation of the Port Pirie to Broken Hill line in 1970 and the isolation of the Quorn and Wilmington lines, V 1990 was located on the Wilmington line. An early alteration was in 1905 when axles of larger capacity were provided and the payload increased from the low figure of 4 tons to 6 tons, this still being less than the tare weight. In July 1917 air brakes were fitted to V 1990.

After being in service nearly 80 years, V 1990 was written off on 10th October 1979, after purchase by the Museum. It was transferred to the Museum on 23rd September 1988.

Y Class 4-wheel Open wagon (drop-sides) No. 5019 - South Australian Railways - Narrow Gauge

General freight was carried over the narrow-gauge rails of the South Australian Railways in large numbers of small 4-wheel wooden open wagons. Wagons 5017 and 5019 belong to this type and were built at the Islington Workshops in November 1912.

Known as the Y Class these wagons were the final development of this type of wagon on the 3' 6" gauge. Built for the Northern System, later the Peterborough Division, they were finally isolated on the Gladstone - Wilmington line with the opening of the standard-gauge line between Port Pirie and Broken Hill in January 1970.

5019 was placed in the Mile End Railway Museum on 24th July 1986, but 5017 came under Australian National ownership on 1st March 1978 and was not obtained by the museum until 1988.

They were sent to the museum on 5th June 1987 and 11th November 1988 respectively

YY Class 4-wheel Open wagons Nos. 4913, 4927 and 4947 - South Australian Railways - Narrow Gauge

The YY class four wheel steel open wagon where used extensively on the South Australian Railways narrow gauge system. Originally built as broad gauge YY class open wagon, but later converted for use on narrow gauge. The three members of the class the museum owns are all on narrow gauge.



South Australian Railways - Y Class 4-wheel Open wagon (drop-sides) Nos.5019 and identical except for livery NGSA 373 - 21st September 2008(*Chris Drymalik*)



YY Class 4-wheel Open wagon No. 4913 - 29 March 2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Good
YY4913 Entered service	1915 as YY3075
YY4913 Converted to narrow gauge	4.8.1926 as YY4913
YY4927 Entered service	1913 as YY4269
YY4927 Converted to narrow gauge	24.8.1926 as YY4927
YY4947 Entered service	1913 as YY3644
YY4947 Converted to narrow gauge	8.9.1926 as YY4947
Entered the museum	1988
Ownership	National Railway Museum
Provenance	South Australian Railways
Withdrawn	1988

Table 12.25: Details of Freight YY Class 4-wheel Open wagons - South Australian Railways - Narrow Gauge

Class operators	Commonwealth Railways
Condition	Excellent
Entered service	November 1912
Entered the museum	11th November 1988
Length (over coupling points)	17'9"
Load Weight	12 tons
Ownership	National Railway Museum
Provenance	South Australian Railways
Tare Weight	5 tons 5 cwt
Withdrawn	1988

Table 12.26: Details of Freight Y Class 4-wheel Open wagon (drop-sides) Nos. 5017 (restored as CR NGAS 373) - Commonwealth Railways - Narrow Gauge

The museum has No. 4913 built by the South Australia Railways at the Islington Workshops in 1915, No. 4947 built by Gray Brothers of Port Adelaide, South Australia in 1915, and No. 4927

Y Class 4-wheel Open wagon (drop-sides) No. 5017 (restored as CR NGAS 373) - Commonwealth Railways - Narrow Gauge

General freight was carried over the narrow-gauge rails of the South Australian Railways in large numbers of small 4-wheel wooden open wagons. Wagons 5017 and 5019 belong to this type and were built at the Islington Workshops in November 1912.

Known as the Y Class these wagons were the final development of this type of wagon on the 3' 6" gauge. Built for the Northern System, later the Peterborough Division, they were finally isolated on the Gladstone - Wilmington line with the opening of the standard-gauge line between Port Pirie and Broken Hill in January 1970.

5019 was placed in the Mile End Railway Museum on 24th July 1986, but 5017 came under Australian National ownership on 1st March 1978 and was not obtained by the msueum until 1988.

They were sent to the museum on 5th June 1987 and 11th November 1988 respectively



NGAS372 - ex South Australian Railways Y wagon 5017 - 9.2.2001 (*Chris Drymalik*)



NRM Exhibits Guide

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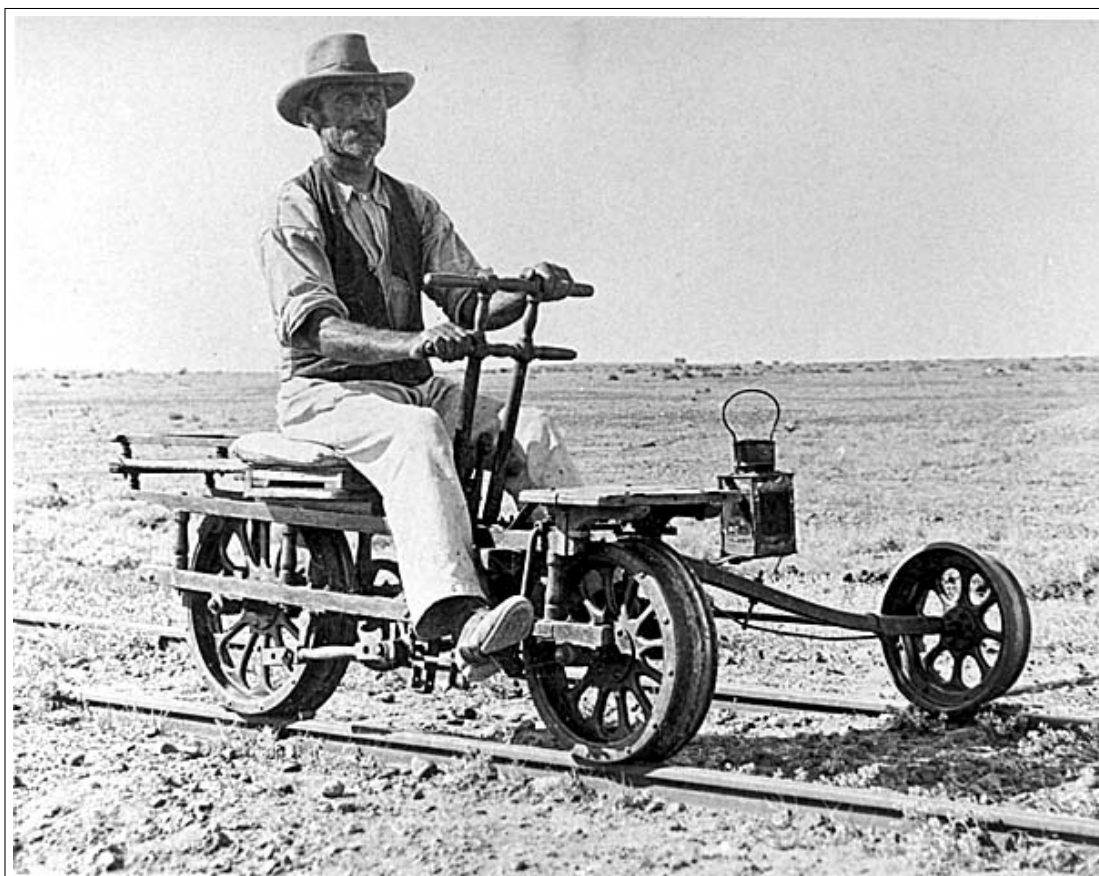
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Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways

Table 13.1: Details of Ganger's 3 wheel Pump Trike - South Australian Railways - Broad Gauge

During the early years of railway expansion, railway track maintenance workers are generally referred to by the either the term 'Ganger' or 'Navy'. The work required them to move rapidly from place to place so it was necessary to develop a number of vehicles light weight that could be used quickly. The museum collection includes a variety of these vehicles, ranging from hand power trikes to diesel motored /textitQuads.

Ganger's Trikey similar to some the museum own (*R.W.Thomas collection*)

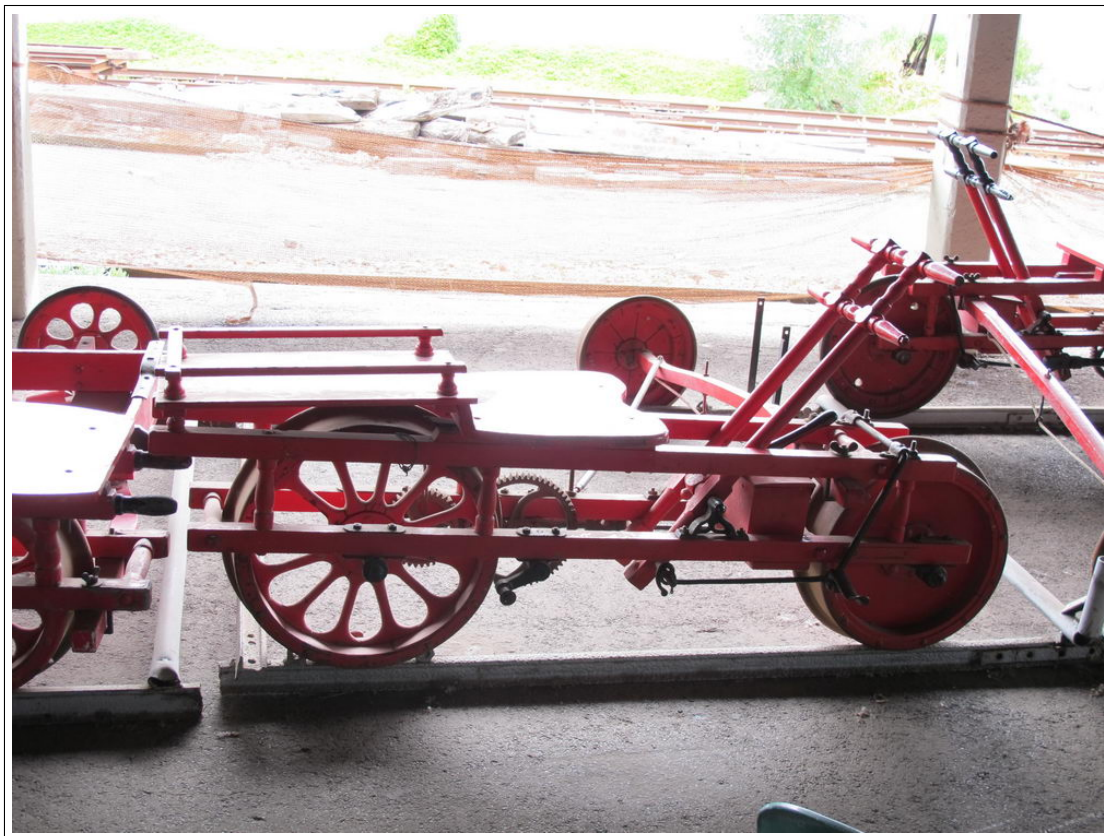
Ganger's 3 wheel Pump Trike - South Australian Railways - Broad Gauge

The 3 wheel pump trike, with a capacity of two, were used as a means of transport by track gangs. It was their job to inspect, repair and maintain sections of track, and these vehicles were common to both the South Australian and Commonwealth Railways operations.

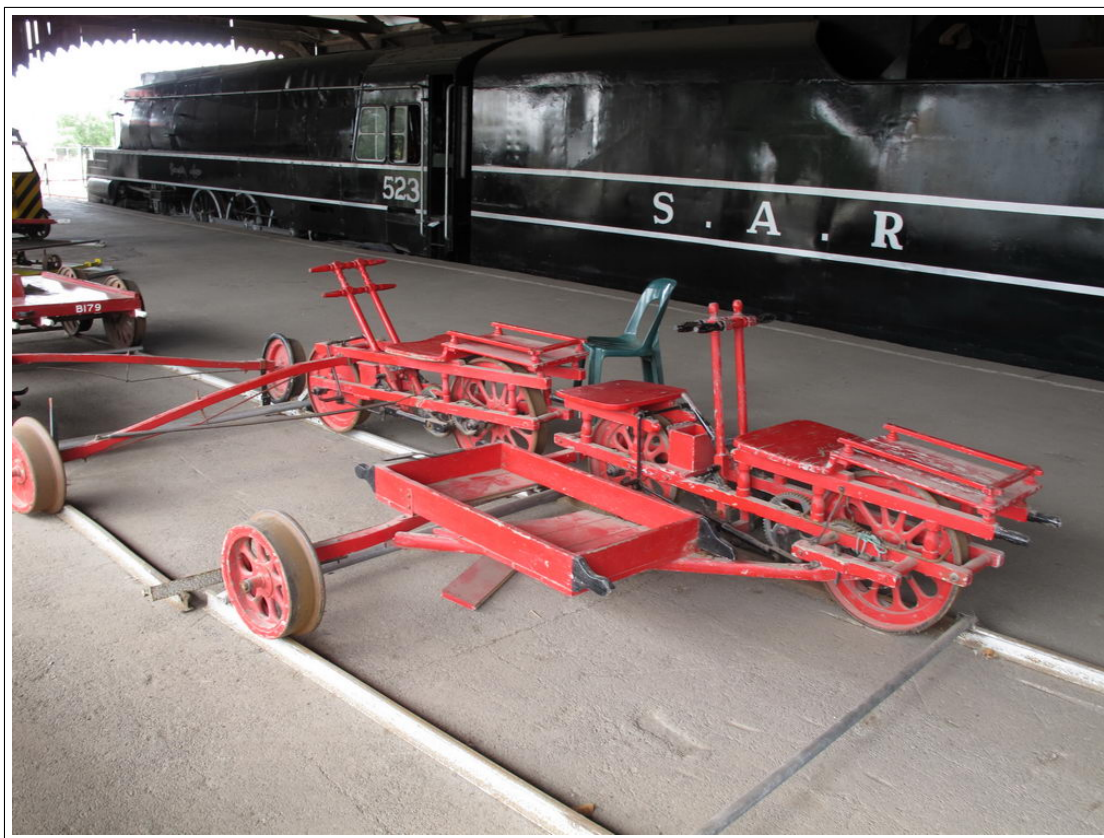
All the hand operated inspection vehicles were phased out by the introduction of motor powered models. Some were also fitted with motors

Ganger's 4 wheel Pump Car - B 179 - South Australian Railways - Broad Gauge

The 4 wheel pump car, were used as a means of transport by track gangs. It was their job to inspect, repair and maintain sections of track, and these vehicles were common to both the South Australian and Commonwealth Railways operations.



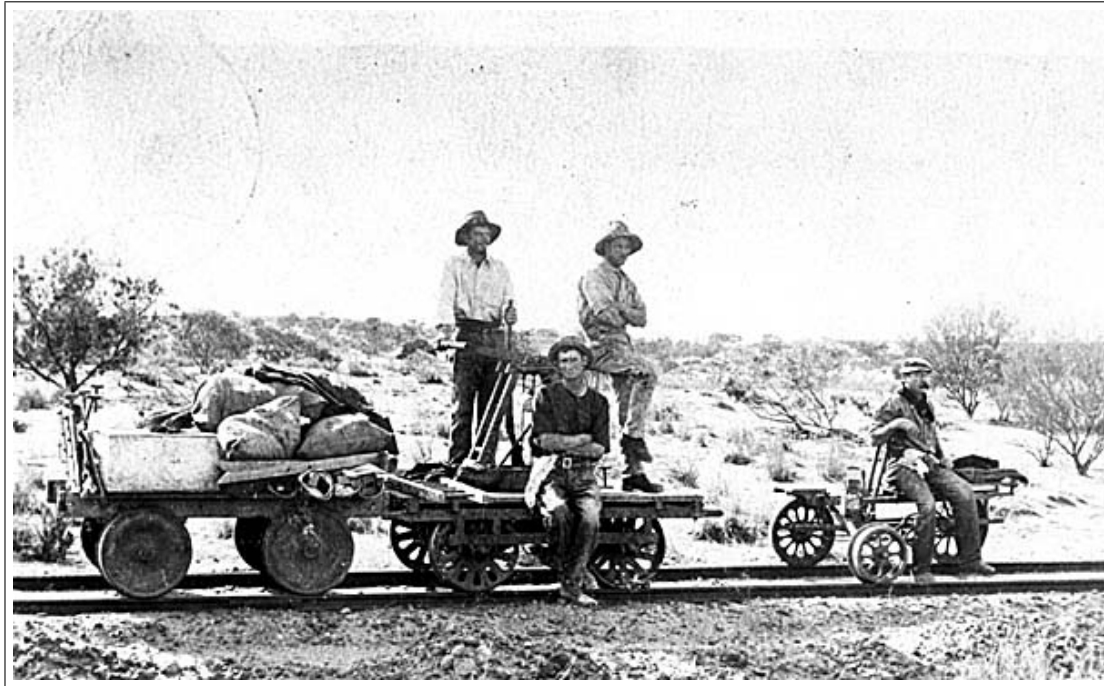
3 Wheel Pump Trike - 4 April 2000 (*Chris Drymalik*)



3 Wheel Pump Trike - 4 April 2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Entered the museum	1966
Provenance	South Australian Railways
Builder	Buda Foundry, USA
Model	No. 1 Harvey Handcar
Entered the museum	1966

Table 13.2: Details of Ganger's 4 wheel Pump Car - B 179 - South Australian Railways - Broad Gauge



Various ganger's vehicles similar to some the museum own in use on the Central Australian Railway - 1915 (*Collection of Mrs I Reed*)

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways

Table 13.3: Details of Ganger's Motor Pump Car - unnumbered - South Australian Railways - Broad Gauge

The 4 wheel pump cars were all known local as Kalamazoo's (a particular manufacturer in the USA), and four men were needed to lift them off the track when a train approached.

All the hand operated inspection vehicles were phased out by the introduction of motor powered models. Some were also fitted with motors.

Unit B 179 is a No. 1 Harvey Handcar, manufactured by the Buda Foundry USA. It was obtained by the museum in 1966.

Ganger's Motor Pump Car - unnumbered - South Australian Railways - Broad Gauge

These were built for use as motor quadricycles, for both broad and narrow gauge use. Most of these units had Villiers motors fitted with a few examples, including this unit, having motors built at the Islington Workshops of the South Australian Railways. The storage trolley was used to hold the tools



4 Wheel Pump Car B 179 - 12 February 2011 (*Chris Drymalik*)



Motor Pump Car - 16th December 2007 (*Steve Gordon*)

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways Australian National
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST2

Table 13.4: Details of Ganger's Trolley - F 40 - Australian National Railways - Broad Gauge

used by staff repairing the line and communications wires. Most people consider this type of car to be very dangerous as it was easy to miss set the wheels and cause the unit to derail at high speed.



Motor Pump Car - 16th December 2007 (Steve Gordon)

Ganger's Trolley - F 40 - Australian National Railways - Broad Gauge

This is an example of a broad gauge 'ST2' class unit. It was used by Australian National

The ST2 series of Ganger's Trolleys were built by Fairmont Railway Motors Inc, Fairmont, Minnesota, USA. They were built as a heavy duty vehicle and featured battery ignition, belt drive, hinged top seats for easy access to the motor compartment, water cooled radiator and became widely used in Australia. The motor drives the wheels using a belt drive and could be run in either a forward or reverse direction by adjusting the engine timing via a control lever. Starting was done by means of a slide crank lever that was hooked into the main fly wheel from the side of unit.

The standard ST2 was fitted with 16" insulated steel tired wheels, roller bearings and a hand operated brake lever that could be used to quickly bring it to a halt. Optional accessories included a steel cab top, side curtains, windshield for weather proofing.



Australian National F 40 - 4 April 2000 (Chris Drymalik)

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST2
Entered the museum	November 1984

Table 13.5: Details of Ganger's Trolley - F 147 - South Australian Railways - Broad Gauge

Ganger's Trolley - F 147 - South Australian Railways - Broad Gauge

This is an example of a broad gauge South Australia Railways ‘ST2’ class unit that is unmodified. It was donated tot he NRM in November 1984.

The ST2 series of Ganger's Trolleys where built by Fairmont Railway Motors Inc, Fairmont, Minnesota, USA. They were built as a heavy duty vehicle and featured battery ignition, belt drive, hinged top seats for easy access to the motor compartment, water cooled raditor and became widely used in Australia. The motor drives the wheels using a belt drive and could be run in either a forward or reverse direction by adjusting the engine timing via a control lever. Starting was done by means of a slide crank lever that was hooked into the main fly wheel from the side of unit.

The standard ST2 was fitted with 16” insulated steel tired wheels, roller bearings and a hand operated brake level that could be used to quickyl bring it to a halt. Optional accessories included a steel cab top, side curtains, windshield for weather proofing.

Ganger's Trolley - M - South Australian Railways - Broad Gauge

This unit is an example of a broad gauge Ganger's trolley without a roof. It belongs to the History Trust of South Australia.



Australian National F 40 - 4 April 2000 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways

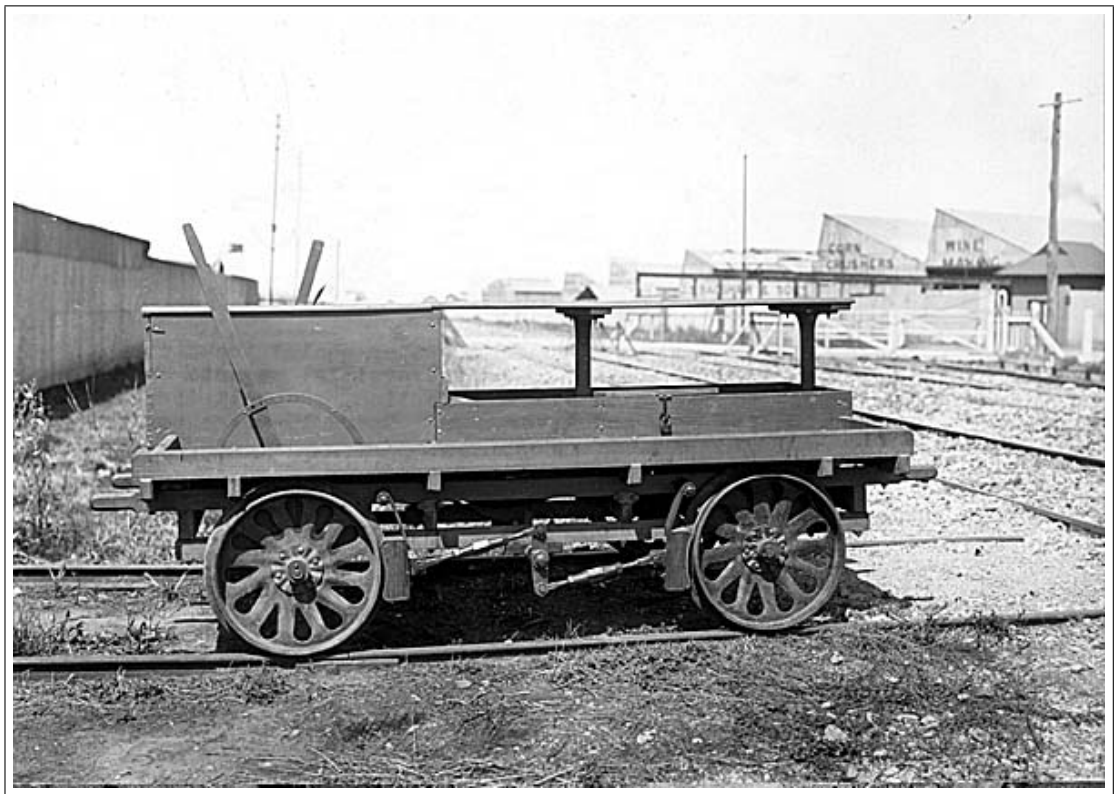
Table 13.6: Details of Ganger's Trolley - M - South Australian Railways - Broad Gauge



F 147 - 12 February 2011 (*Chris Drymalik*)



F 147 - 12 February 2011 (*Chris Drymalik*)



South Australian Railways - Ganger's Trolley similar to some the museum own - This unit was described by the railways as a motor section car (side view) - fitted with a 3½ h.p. hopper water cooled two stroke engine. High tension (reversible) magneto ignition enabling car to be run in either direction. Belt drive with tension rack and lever. Speed 15 miles per hour (*NRM Collection*)

Class operators	South Australian Railways
	Australian National
Condition	Excellent
Provenance	South Australian Railways
Builder	Pacific Ace, Queensland (under license from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA)
Model	M19Z63

Table 13.7: Details of Ganger's Trolley - M 183 - South Australian Railways - Broad Gauge

Ganger's Trolley - M 183 - South Australian Railways - Broad Gauge

This unit is an example of a broad gauge Ganger's trolley with a roof. It was built by Pacific Ace, Queensland, under license from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA, being a Model M19Z63 Serial 2053. Australian National altered the car by fitting a number of weather proofing accessories, including a windshield, canvas top and side curtains. It was used to inspect and maintain track and signalling equipment.

On occasions a trailer was used for tools, etc, when the men were engaged on major repairs works. See page 280 for an example of an unpowered trolley.

Ganger's Trolley - S 50 - South Australian Railways - Broad Gauge

This is an example of a broad gauge South Australia Railways 'S' class unit. It is fitted with a boxer horizontal 2 cylinder engine.



South Australian Railways - Ganger's Trolley similar to some the museum own - This unit was described by the railways as a motor section car (end view) - fitted with a $3\frac{1}{2}$ h.p. hopper water cooled two stroke engine. High tension (reversible) magneto ignition enabling car to be run in either direction. Belt drive with tension rack and lever. Speed 15 miles per hour (*NRM Collection*)



M 183 - 12 February 2011 (*Chris Drymalik*)



M 183 - 12 February 2011 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Fair
Provenance	South Australian Railways

Table 13.8: Details of Ganger's Trolley - S 50 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Condition	Excellent
Provenance	South Australian Railways Australian National
Entered the museum	November 1988

Table 13.9: Details of Ganger's Trolley - SD 101 - South Australian Railways - Broad Gauge

Ganger's Trolley - SD 101 - South Australian Railways - Broad Gauge

This is an example of a broad gauge 'SD' class unit. It was entered service on the South Australian Railways in 1958 and was officially known as an 'Enfield Diesel Motor', though it actually appears to be locally constructed version based on a 'Fairbanks & Morse Car'.

The NRM obtained the Trolley from Australian National in November 1988. Its condition is excellent and it is complete.

Ganger's Trolley - Wickham Type 4 - South Australian Railways - Broad Gauge

This is an example of a broad gauge South Australia Railways Ganger's Trolley unit built by Wickham. This car is fitted with its original single cylinder petrol engine.



S 50 - 12 February 2011 (*Chris Drymalik*)

Class operators	South Australian Railways
Condition	Poor (under restoration)
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Builder	Whickham
Model	Type 4

Table 13.10: Details of Ganger's Trolley - Whickham Type 4 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways

Table 13.11: Details of Ganger's Trolley - unpowered - South Australian Railways - Broad Gauge

Ganger's Trolley - unpowered - South Australian Railways - Broad Gauge

These are examples of the unpowered broad gauge trolley that could be towed behind a powered unit.

Ganger's Trolley - CC 165 - Australian National Railways - Narrow Gauge

This unit was a narrow gauge M 19 that was converted to a 'CC' class quad.

Australian National relabeled a lot of cars a 'CC' as part of the referencing system they used. This unit in all likeliness would have been 'N165' in keeping with the Commonwealth Railways system of identification.

It was built by Pacific Ace, Queensland, under license from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA, being a Model M15B242. Australian National used it to inspect and maintain track



Ganger's Trolley - S 50 and SD 101 - South Australian Railways - Broad Gauge - 12 February 2011
(Chris Drymalik)



SD 101 - 12 February 2011 (*Chris Drymalik*)



Unpowered gang trolley loaded with some of the gangs tools and track jacks - 12 February 2011 (*Chris Drymalik*)



Unpowered gang trolley - 4 April 2000 (Chris Drymalik)

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways Australian National
Builder	Pacific Ace, Queensland (under license from Fairmont Rail- way Motors Inc, Fairmont, Minnesota, USA)
Model	M15B242
Entered the museum	June 1988

Table 13.12: Details of Ganger's Trolley - CC 165 - Australian National Railways - Narrow Gauge

and signalling equipment, until June 1988 when it was purchased by the museum.

Ganger's Trolley - F 171 - South Australian Railways - Narrow Gauge

This is an example of a narrow gauge 'ST2' class unit. It was used by the South Australia Railways on the Port Lincoln Division and came until Australian National Railway ownership in 1978, who renumbered it 'ANR CC-14'. When it was replaced by a road/rail vehicles in 1988, it was donated to the NRM collection.

The ST2 series of Ganger's Trolleys where built by Fairmont Railway Motors Inc, Fairmont, Minnesota, USA. They were built as a heavy duty vehicle and featured battery ignition, belt drive, hinged top seats for easy access to the motor compartment, water cooled raditor and became widely used in Australia. The motor drives the wheels using a belt drive and could be run in either a forward or reverse direction by adjusting the engine timing via a control lever. Starting was done by means of a slide crank lever that was hooked into the main fly wheel from the side of unit.

The standard ST2 was fitted with 16" insulated steel tired wheels, roller bearings and a hand operated



CC 165 - 12 February 2011 (Chris Drymalik)

Class operators	South Australian Railways Australian National
Condition	Excellent
Provenance	South Australian Railways
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST2
Entered the Museum	1978

Table 13.13: Details of Ganger's Trolley - F 171 - South Australian Railways - Narrow Gauge



CC 165 - 12 February 2011 (*Chris Drymalik*)



Gangers Section Car F 171 - 28th November 20101 (*Chris Drymalik*)



Gangers Section Car F 171 inside the Fitch Pavilion - 28th November 20101 (Chris Drymalik)

Class operators	South Australian Railways
Condition	Excellent
Entered the museum	15 February 1971
Provenance	South Australian Railways
Withdrawn	1971

Table 13.14: Details of Ganger's Trolley - T 123 - South Australian Railways - Narrow Gauge

brake level that could be used to quickyl bring it to a halt. Optional accessories included a steel cab top, side curtains, windshield for weather proofing.

Ganger's Trolley - T 123 - South Australian Railways - Narrow Gauge

This unit is an example of a narrow gauge Ganger's trolley, powered with a petrol engine, and because of distances involved they were widely used throughout the system, superseding the back breaking, hand powered earlier models. The South Australian Railways refered to this style of vehicle locally as a 'SH Casey Jones Section Car'. It is basically a locally (possibly Victorian Railways) built vewrsion of an American design.

On occasion a trailer was used for tools, etc, when the men were engaged on major repair works.

This trolley entered the Museum on 9 February 1971.



T 123 - 12 February 2011 (*Chris Drymalik*)



T 123 - 12 February 2011 (*Chris Drymalik*)



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MISCELLANEOUS VEHICLES

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Locomotive Wheels - South Australian Railways - Broad Gauge

The first exhibit encountered by visitors entering the Museum consists of two pairs of steam locomotive driving wheels mounted on a length of track laid with Brunel's patent bridge rail and placed in front of the main door to the pavilion. This is historically the most important exhibit in the Museum's collection for it dates from the very beginning of steam railway operation in South Australia, in 1856.



Locomotive wheels originally used on 2-4-0 Tank Locomotive 'Adelaide', 'Victoria' or 'Albert' (A. Peters)

The wheels belong to one of the first three locomotives built for the Adelaide and Port Railway by William Fairbairn & Co., Manchester, England. Ordered by the famous Isambard Kingdom Brunel, then Consulting Engineer for the railway, they were built to the 2-4-0T wheel arrangement and arrived at Port Adelaide in November 1855. Here they were erected and named Adelaide, Victoria and Albert. Later they were to be numbered 1, 2 and 3 respectively.

Adelaide was the first to be assembled and ran a trial between Port Adelaide and Alberton at the end of January 1856. On 8th February an additional trial was run, this time to Adelaide, but the locomotive derailed twice at Morphet Street before successfully entering the station. After further trials the line was opened with due pomp and ceremony on 19th April. Thereafter all three engines saw regular service, venturing further afield as a new line was pushed north from Adelaide to Gawler and Kapunda.

In 1869 they were rebuilt as tender engines but, by 1871, No. 1 had been taken out of service, and the other two followed in 1874. At this time the South Australian Railways had begun the construction of narrow (3' 6") gauge lines throughout the colony. There subsequently arose the necessity of transporting narrow-gauge locomotives and rollingstock over the broad-gauge to and from the workshops in Adelaide. Plans were drawn up for an 'Engine Carriage Bogie Truck', and the vehicle, which was given the number 1272, was outshopped by the Adelaide Locomotive Works in 1884. Of traditional Well Wagon pattern it was unusual in that, instead of normal bogies, the driving wheels and portions of the frames from two of the locomotives were used. It is possible that they came from Nos.2 and 3, however no records have been found to support or disprove this supposition.

Class operators	South Australian Railways
Condition	Excellent
Entered service	1856
Entered the museum	1977
Ownership	History Trust of South Australia
Withdrawn	1977

Table 14.1: Details of Locomotive Wheels - South Australian Railways - Broad Gauge

South Australian Railways - 2-4-0 Tank Locomotive Adelaide - Loco No. 1 after conversion from tank to tender loco - circa 1869 (*NRM Collection*)

When classification letters were allocated to rollingstock in 1888, No. 1272 was classified WL. At some time during its career it also acquired the nickname *The Crocodile*, which eventually gained official recognition. It found considerable employment, the conversion to broad-gauge of the old Western System during the 1920s notwithstanding. In 1931 Islington Works outshopped a similar vehicle, this time equipped with conventional bogies, which became WL 8200, and 1272 was renumbered 8202. However, with the conversion to broad-gauge of the South Eastern System in the 1950s and the standardisation of the Port Pirie to Broken Hill line in the late 1960s, both vehicles were used less and less. No. 8202 was condemned on 2nd May 1977 and broken up, one bogie going to the Mile End Railway Museum and the other to Steamranger.

Motorised Inspection Car No. 4 - Commonwealth Railways - Standard Gauge

Basically a 1941 Maple Leaf Chevrolet, MIC 4 was used as a Commonwealth Railways standard gauge inspection and pay car. It was original built specifically by the South Australian Railways during WWII for the Commonwealth Land Transport Board, who made it available to the Australian Army to patrol the standard gauge Trans-Australian Railway line between Port Augusta and Cook checking on Prisoner of War (POW) camps.

At the end of WWII the vehicle was transferred to the Commonwealth Railways who used it as a

Class operators	Commonwealth Railways
Condition	Excellent
Entered service	1941
Entered the museum	1980
Ownership	National Railway Museum
Withdrawn	1978

Table 14.2: Details of Motorised Inspection Car 4 - Commonwealth Railways - Standard Gauge

Motorised Inspection Car (MIC)



Commonwealth Railways - Motorised Inspection Car - No. MIC 4 (*Andrew Peters*)

Fitted with steel railway wheels it ran initially on the lines from Port Augusta to Woomera and Cook and was equipped with a hydraulic turntable for reversing. Towards the end of its railway service it was stabled at Cook for many years as an Ambulance car, before being purchased by Steamtown Peterborough in 1979. Steamtown Peterborough in turn donated it to the museum in 1980.

Between 1997 and 2003 the museum loaned MIC to the Military Vehicle Collectors Society of South Australia. They restored the car to its current condition and displayed it at the National Military Vehicles Museum. It was returned for display at the NRM on 17 November 2003.

Malcolm Moore & Company Internal Combustion Locomotive - South Australian Harbors Board - Narrow Gauge

The South Australian Harbors Board operated a 3 ft 6 in gauge jetty railway at Price, South Australia. The motive power used consisted of 2 tractors, one of which is now in the museum collection. This unit was built in Melbourne by Malcolm Moore & Company in 1954, and is based on a Fordson Tractor which was modified for use on rail. It has 4 cylinders and operates on power kerosene, after starting with petrol. It has 4 forward and 4 reverse gears, operating through a transfer box,. Ignition is by a magneto.



South Australian Harbors Board - Malcolm Moore & Company Internal Combustion Locomotive - 7 July 2014 (*Chris Drymalik*)

Class operator	South Australian Harbors Board
Condition	Excellent
Provenance	South Australian Harbors Board
Ownership	National Railway Museum
Builder	Malcolm Moore & Company, Port Melbourne, Victoria, Australia - based on a Fordson Tractor
Entered service	1954
Entered the museum	18/12/1971

Table 14.3: Details of Malcolm Moore & Company Internal Combustion Locomotive - South Australian Harbors Board - Narrow Gauge

Class operator	South Australian Harbors Board
Condition	Excellent
Entered the museum	18/12/1971
Ownership	National Railway Museum

Table 14.4: Details of Jetty Truck No. 146 - South Australian Harbors Board - Narrow Gauge

The locomotive was received from the South Australian Harbors Board, Price, on 18th December 1971.

Jetty Truck No. 146 - South Australian Harbors Board - Narrow Gauge



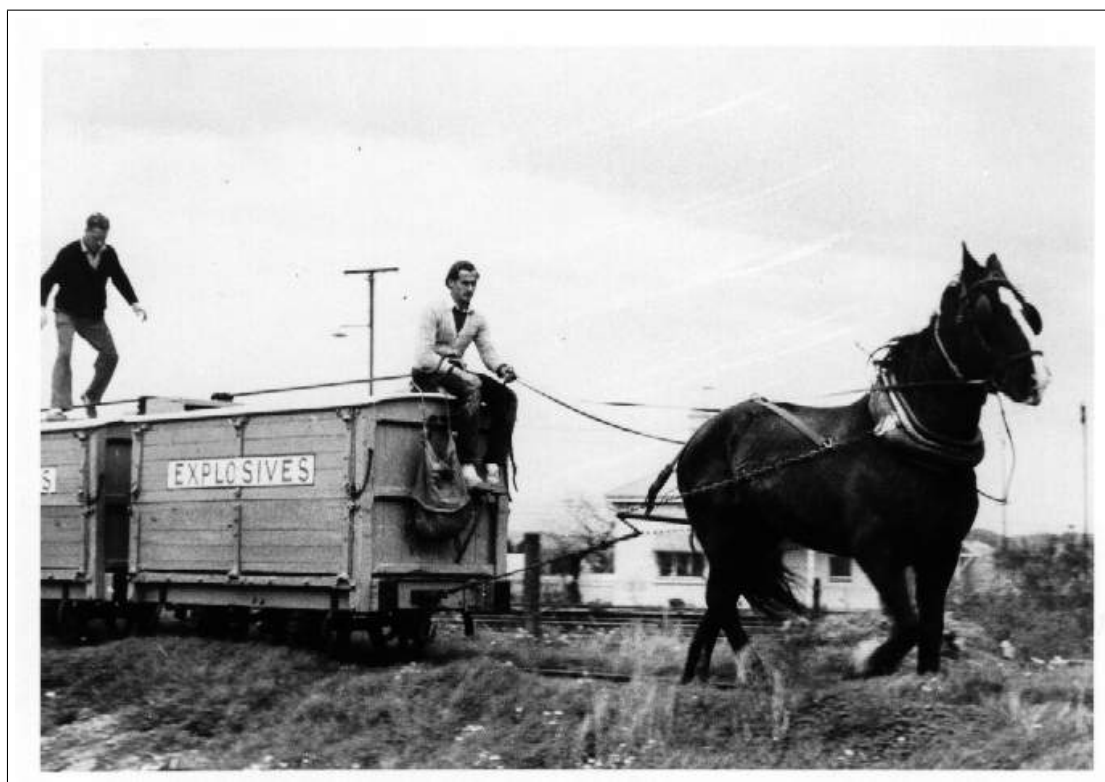
South Australian Harbors Board - Jetty Truck No. 146 at the museum shortly after being repainted - 25 October 1994 (*Chris Drymalik*)

Along the South Australian coastline, many jetties were constructed at ports to enable ketches and other small craft to unload goods brought in by sea from Port Adelaide. This also facilitated loading of the local produce for the Adelaide Markets. 3 ft 6 in gauge track was laid on these jetties for easy movement of goods on four-wheeled trucks, supplied by the South Australian Harbors Board. Our exhibit is an example of this mode of transport, powered by tractor, horse or man. Our flat entered the Museum on 18th December 1971

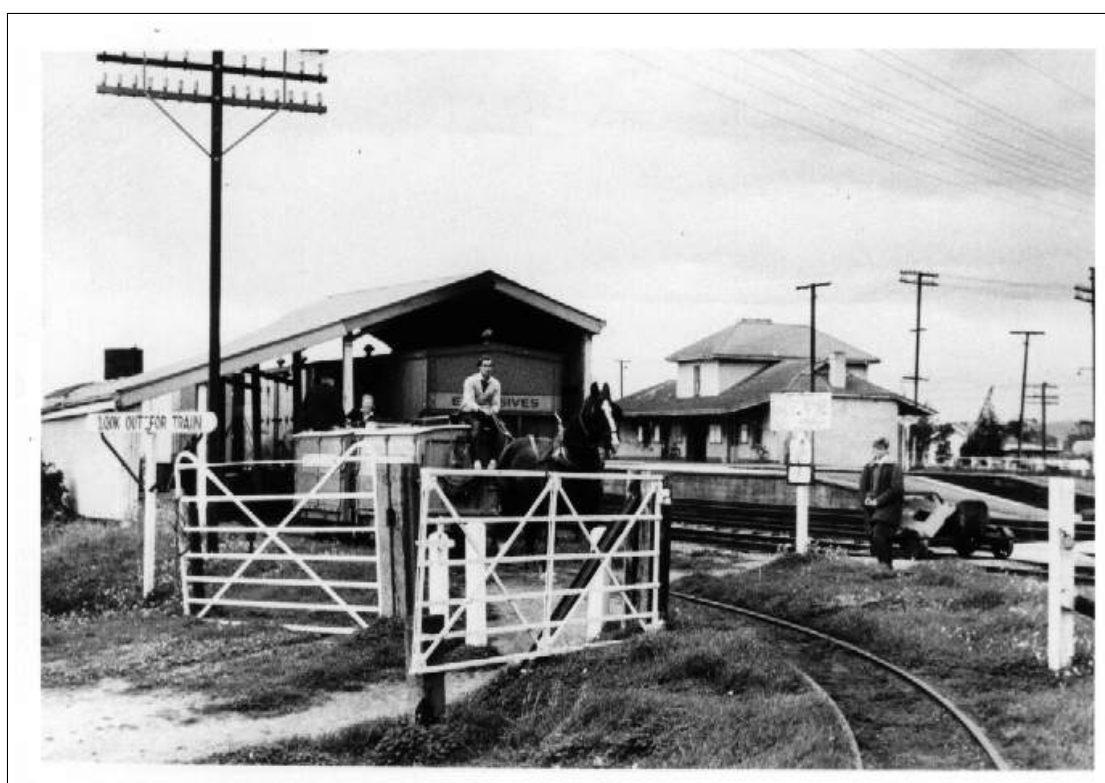
South Australian Department of Chemistry - 2' gauge Explosives Van - 2 Foot Gauge

The South Australian Department of Chemistry opened an explosives magazine near Dry Creek, just north of Adelaide, in 1904. Originally horses and drays carried the explosives in magazines overland from Broad Creek. However, the construction of a 2 foot (609mm) Tramway in January 1906 brought this to an end.

This vehicle is one of a number that were pulled by horses on the Tramway from Dry Creek to a jetty at Broad Creek. This jetty was used for the loading of ketches in the North Arm of the Port Adelaide River, east of Torrens Island. The tramway was approximately 2



South Australian Department of Chemistry horse drawn Tramway at Dry Creek (*NRM Collection*)



South Australian Department of Chemistry horse drawn Tramway at Dry Creek station (*NRM Collection*)

Class operators	South Australian Railways
Condition	Excellent
Entered service	1906
Ownership	National Railway Museum
Withdrawn	14th December 1964
Entered the museum	1975

Table 14.5: Details of South Australian Department of Chemistry - 2' gauge Explosives Van - South Australian Railways - 2 Foot Gauge



Explosives Van - South Australian Department of Chemistry (*Andrew Peters*)

Ruston Hornsby Diesel Locomotives No. 304 and 306 - Waratah Gypsum Co - 2 Foot Gauge

Nowadays it is largely forgotten that there used to exist, in South Australia, a number of small privately owned Railways, built for particular purposes, usually but not always to provide access to deep sea ports. Equally, it is not always remembered that what are now small seaside towns were once flourishing ports in their own right. Usually such ports had their own large jetties, and nearly always such jetties had a railway line that ran their entire length.

Such a port was Marion Bay on the southern tip of Yorke Peninsula, while another, operated until quite recently, was Stenhouse Bay. Both existed mainly for the removal of gypsum, which was found locally in large quantities. The Hassell Marion Bay Gypsum Company used two tiny steam engines on its line to Marion Bay until 1921; while another line used horses to haul gypsum from Inneston to Stenhouse Bay until 1920.

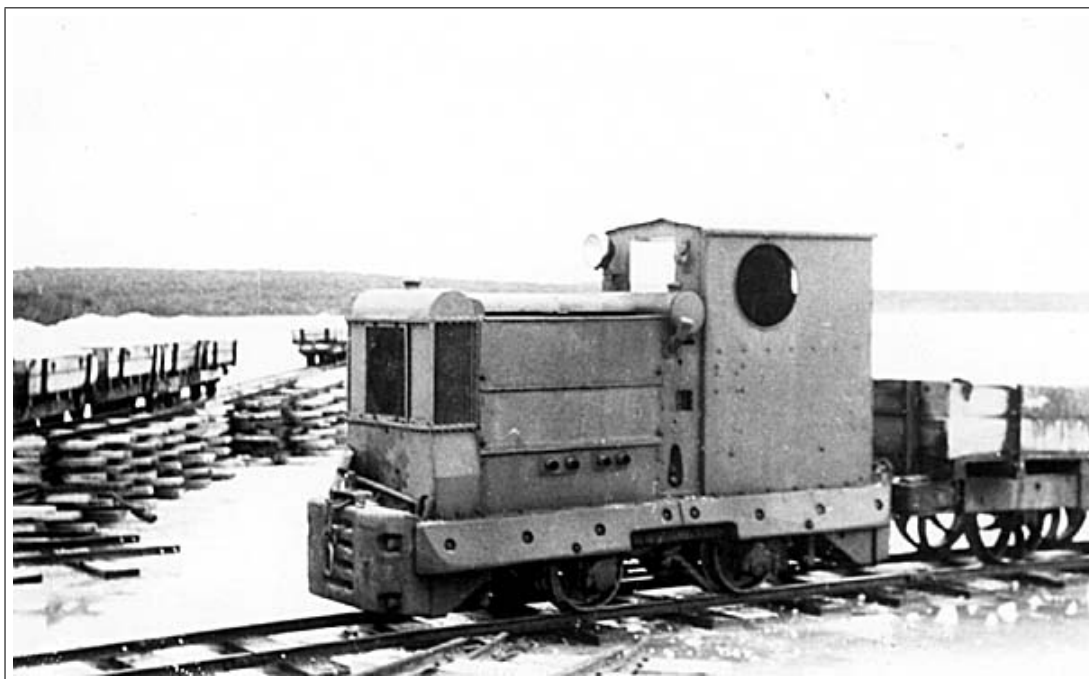
In 1926 the Waratah Gypsum Company started business with a $2\frac{1}{2}$ mile line from Marion Lake to Stenhouse Bay, and was unusual in that it operated all petrol/diesel engines, which it distinguished by letters rather than numbers. Thus, F and G were built by Vulcan Iron Works in the United States of America and were powered by a Deutz 50 h.p. engine, while H, another Vulcan product, had a

Class operators	Waratah Gypsum Co
Condition	Good
Built	Ruston Hornsby, Boultham Works, Lincoln, England
Builder's No.	187070-9
Entered service	1937-39
Gauge	2 ft.
Length	11 ft. 3 in.
Weight	5½ tons
Engine	Ruston 4 VRO, 48 h.p., roller chain drive to axles
Withdrawn	c.1960s
Entered the museum	25.11.1971
Ownership	National Railway Museum

Table 14.6: Details of Ruston Hornsby Diesel Locomotives No. 304 - Waratah Gypsum Co - 2 Foot Gauge

Class operators	Waratah Gypsum Co
Condition	Good
Built	Ruston Hornsby, Boultham Works, Lincoln, England
Builder's No.	393981
Entered service	1956
Gauge	2 ft.
Length	13 ft. 10 in.
Weight	10 tons
Engine	Ruston 4 YE, 82½ h.p., drive to axles by jack shaft connecting rods
Withdrawn	c.1960s
Entered the museum	25.11.1971
Ownership	National Railway Museum

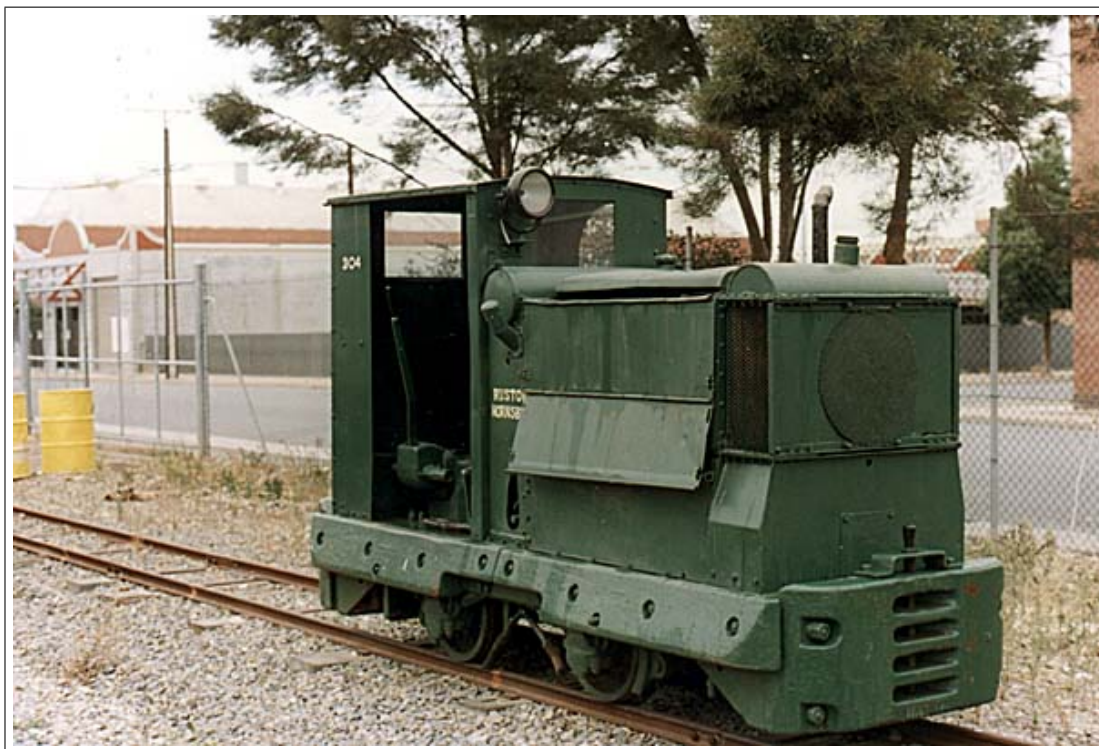
Table 14.7: Details of Ruston Hornsby Diesel Locomotives No. 306 - Waratah Gypsum Co - 2 Foot Gauge



'The Ruston' Waratah Gypsum-Stenhouse Bay - 23.1.1947 (A.D.Lockyer)



This photograph, taken in 1947, shows the Ruston engine 304 at left. Engine 'J' at right is hauling trucks from the salt lake (*A.D.Lockyer*)



Waratah Gypsum locomotive 304 at the museum - 1991 (*P.Meredew*)

Class operators	Waratah Gypsum Co
Condition	Good
Built	Malcolm Moore, Melbourne, Victoria
Builder's No.	1514
Entered the museum	1990
Ownership	National Railway Museum
Withdrawn	c.1960s

Table 14.8: Details of Malcolm Moore Diesel Locomotive No. 1514 - Waratah Gypsum Co - 2 Foot Gauge

Caterpillar diesel engine. J, K and M were built by Malcolm Moore of Melbourne and were based on Fordson tractors. After these, the Company decided that it would be more rational to use numbers instead of letters, and two engines were numbered 304 and 306. These two were both Ruston Hornsby engines, but different sizes. The older and smaller engine was originally known as Ruston, but the other engine went directly to its number identification, 306.

To carry the gypsum the Company had a fleet of 32 bogie trucks, each weighing $4\frac{1}{2}$ tons and capable of carrying 8 tons of gypsum. The trains survived into the 1960's, when the task of transporting the gypsum was transferred to motor lorries. This little tramway operated on two foot gauge, and was one of several around the state. Unfortunately, none now survive.

These two locomotives are currently on loan to the Sheaoak Log Historic Machinery Museum.

Malcolm Moore Diesel Locomotive No. 1514 - Waratah Gypsum Co - 2 Foot Gauge

In 1926 the Waratah Gypsum Company started business with a $2\frac{1}{2}$ mile line from Marion Lake to Stenhouse Bay, and was unusual in that it operated all petrol/diesel engines, which it distinguished by letters rather than numbers. Thus, F and G were built by Vulcan Iron Works in the United States of America and were powered by a Deutz 50 h.p. engine, while H, another Vulcan product, had a Caterpillar diesel engine. J, K and M were built by Malcolm Moore of Melbourne and were based on Fordson tractors.

This tractor type locomotive was used at Stenhouse Bay, prior to being transported to the NRM in 1990. It was built by Malcolm Moore, and subsequently rebuilt with the original Fordson engine being replaced by a Deutz diesel. The company originally had three of these units identified as J, K and M, though the identify of this particular loco is uncertain it bears the number 1514

To carry the gypsum the Company had a fleet of 32 bogie trucks, each weighing $4\frac{1}{2}$ tons and capable of carrying 8 tons of gypsum. The trains survived into the 1960's, when the task of transporting the gypsum was transferred to motor lorries. This little tramway operated on two foot gauge, and was one of several around the state. Unfortunately, none now survive.

This locomotive is currently on loan to the Sheaoak Log Historic Machinery Museum.

Loco Number 1 - *Juilet* - Mile End Railway Museum - 18 Inch Gauge

This little locomotive was operated at the Mile End Railway Museum from October 1966 to September 1983. The locomotive was originally named by A.R.H.S and Museum Secretary J.A.Norris.

Juilet was donated to the NRM in May 2005 by J.A.Norris and E.Wolverson.

Loco Number 2 - *Chitty* - Mile End Railway Museum - 18 Inch Gauge

This locomotive was operated originally on 610mm gauge at Barry's Brickyard Torrensville until aquired by the museum in September 1968, when it was regauged by Hercus Engineering to 457mm gauge for use on it's minature railway.

Chitty gained it's name from the sound it would make, but also in homage to the movie Chitty Chitty Bang Bang.



Locomotive Number 1 Juliet (*Andrew Peters*)



Locomotive Number 1 Juliet (*Andrew Peters*)

Class operators	Mile End Railway Museum
Condition	Excellent
Entered the museum	May 2005
Ownership	National Railway Museum
Entered service	1951
Withdrawn	1983

Table 14.9: Details of Loco Number 1 - *Juilet* - Mile End Railway Museum - 18 Inch Gauge

Class operators	Mile End Railway Museum
Condition	Excellent
Entered service	Barry's Brick yard :unknown , Mile End Railway Museum : September 1968
Entered the museum	September 1968
Ownership	National Railway Museum
Withdrawn	1988

Table 14.10: Details of Loco Number 2 - *Chitty* - Mile End Railway Museum - 18 Inch Gauge

Chitty has been on static display since 1988.

Boomerang Train - Miniature Railway Locomotive - 10 Inch Gauge

Boomerang Train on display (*Andrew Peters*)

This steam 254mm (10inch) gauge locomotive, was built for the Boomerang Miniature Railway (so named because it ran on an oval track and always came back) by Alfred Thomas Daniels over a period of seven years.

Class operators	Misc
Condition	Excellent
Entered service	1935
Entered the museum	1989
Ownership	National Railway Museum

Table 14.11: Details of Boomerang Train - Misc - 10inch

It first ran in 1935 hauling three carriages round a track laid in the playground adjacent to the Thebarton Oval. It was taken to the Wayville showgrounds in 1936 as part of the Centenary of South Australia Exhibition.

It last ran under steam during World War II at Attunga Hospital, Kensington Road, raising money for charity. The owner, Alfred, sold it to a showman after the war and he converted it to run with a petrol motor. It ran at various Adelaide beaches.

The museum received Boomerang in 1989 and it was restored by volunteers in 2004.



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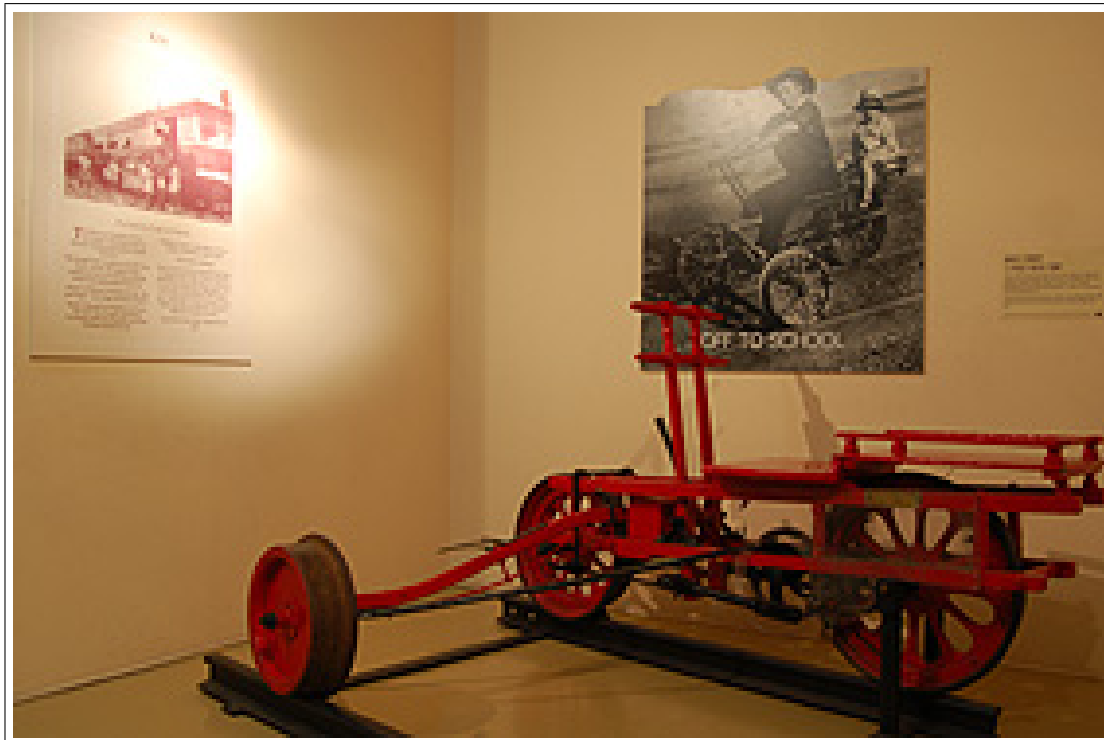
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'The Long Journey' - Women in Railways

Railways brought changes to the lives of everyone, especially women. Through photos, story boards and exhibits relive what these women who accompanied their husbands to the railway construction camps had to endure as they cared for their families, looking after their needs - schooling, health and nutrition, often in very harsh conditions.

For other women the railways made recreational travel and holidays possible and gave them independence - many of them for the first time. During World War Two women brought changes to the railways with women taking the place of the men who were serving in the military. Women were also employed by the railways, which not only gave them employment and independence but equality.



'The Long Journey' features displays which bring alive stories of pioneer railway families (*NRM Collection*)

Railway Signalling and Safeworking

The guiding principal behind any railway is keep them moving - safely. This comprehensive display explains the systems that were required to safely regulate the passage of trains, from hand written Train Orders to modern fully computerised systems.

Divided into four main sections - Signal Cabin, Station Office, Signalling Equipment and Train Control Centre - story boards, photographs, written information and actual railway artifacts and equipment help unravel the puzzle of Safe Working. See block instruments, electric staff machines, semaphore signals, lamps and much more.

The Overland

The *Intercolonial Express*, *Melbourne Express*, or *The Overland*. Whatever you call it, it is one of Australia's iconic rail journeys. With more than 100 years of history, the story of the South Australian Railways flagship comes to life through images and text as story boards describe The Overland route, locomotives, carriages, stations and misadventure. See beautifully made models of the carriages and 900 class locomotive Lady Norrie which hauled the *The Overland*.



A recreation of the inside of a signal cabin (*NRM Collection*)

Fully immerse yourself in the experience by exploring *The Overland* rollingstock housed in the museum, 500 class locomotive 504, Rx class locomotive Rx 93, 900 class locomotive 900 *Lady Norrie*, 930 class locomotive 930, Dining Car *Adelaide*, Sleeping car *Onkaparinga*, BE42, Dogbox 294 and Sleeping car *Allambi*. The Train Departures Board recalls when *The Overland* left from the Adelaide Station.

Growth and Consolidation of Railways in South Australia

This interactive display features a large map of South Australia, with the network of railway lines lit up by LED lights.

Visitors are able to step through the timeline of railways in South Australia, watching as railway lines slowly radiated out from Adelaide, and early short disconnected lines initially built from regional towns to nearby ports were joined and gauge converted to form an impressive railway network.

Moving later into the timeline, watch as lines were closed as the railways faced pressure from road transport and economic rationalisation, and the mainlines to interstate capitals were standardised to form the National network we see today.

Train Departures Board and the *Man in Blue* Replica

Meeting at the Man in Blue under the station clock is something many South Australians would remember fondly. The Train Departures Board was located in the Adelaide Station concourse. Everyone who travelled or who was waiting for people to arrive had to consult the board. There were people coming and going, questions being asked, announcements being made, and the sound of the boards being changed made it a hub of activity.

It comprised of illuminated vertical metal panels which were changed by hand and displayed departure times, platforms and station names for all metropolitan, country, and interstate trains. On top of which was a large two faced Pulsenetic clock, that is still working in Adelaide station today. The board also housed the Man in Blue, an information officer, who daily answered many and varied questions from train passengers.



Fitch Pavilion Photo Display - 12 February 2011 (*Chris Drymalik*)



Scaled down replicas of Overland carriages feature detailed interiors (*NRM Collection*)



The interactive maps illustrate a timeline of railways in South Australia (*Chris Drymalik*)

In 1983-84 the board was removed and replaced with a new display system using computer technology.

The Tea and Sugar Train

The Museum has the sole remaining carriages from the legendary Tea and Sugar train which traversed the Nullarbor Plain carrying essential provisions for railway employees. It later services outback communities along the route.

Through digital sound and vision explore the:

- Pay Car - staffed by clerks who paid the wages to the railway workers (see page 226).
- Butcher's Van - carried beef, pork, mutton, fresh milk and icecream and more (see page 224).
- Provisions Van - sold groceries, clothing, general household goods, records, cassettes and small furniture (see page 227).
- Relay Brake Van - provided fairly comfortable living quarters for the off duty crew, with a shower, toilet and bunks for up to 8 employees (see page 201).

The Tea and Sugar Train is well thought out display housing touch screens, video and audio.

Port Dock Station Historical Marker

A unique combination of railway history greets visitors at the entrance to the Ron Fitch pavilion.

The plaque commemorating the opening of the museum in December 1988 is mounted on bluestone used in the construction of the original Port Adelaide station platform. The wheels are from one of the original steam locomotives built in 1856 in England to operate the railway line between Adelaide and Port Adelaide, and rest on rails from the original track.

Locomotive Number and Name Plates

Locomotive Number Plates were used to identify individual engines. In some cases, certain locomotives were named after dignitaries prominent at the time of the locomotive's introduction to service.

An extensive collection of number and name plates adorns the Northern wall of the Ron Fitch pavilion. Also on display are a number of station signs.



The train departures board replica (*NRM Collection*)



Purchase items from the Tea and Sugar Provisions van using the interactive touch screens (*NRM Collection*)



Tea and Sugar Display in the *Ron Fitch Pavilion* - 12 February 2011 (*Chris Drymalik*)



Name and number plates from various locomotives hang from the main pavilions wall (*NRM Collection*)



An example of the railway memorabilia on display (*NRM Collection*)

Railway Memorabilia and Artifacts

Located along the Western side of the main pavilion are a number of display cabinets housing rare and interesting railway memorabilia and artifacts such as cutlery from the TransAustralian passenger train, railway uniforms, and commemorative clips and spikes.

Signs

Many advertisers used metal signs at stations and alongside the track to advertise products.

The museum has a collection of these signs on display around the site.

Old Time Scales

On the *Break of Gauge* platform within the main Fitch Pavilion you will find a working set of old time scales that were found in many shopping centres and railway stations.

Why not put in a coin and see what your weight is!

Printing Press

The printing press on display was used from the 1920s for printing tickets for the South Australian Railways and the State Transport Authority. It prints Edmondson tickets - small 2 $\frac{1}{4}$ " x 1 $\frac{3}{16}$ " (57mm x 30mm) coloured cards which until recent times, were in almost universal use by rail systems throughout the world.

Thomas Edmondson was born in Lancaster, in the UK on 30th June 1792. As a boy he began his apprenticeship with a local woodworker, but completed it with a furniture maker and became a journeyman cabinetmaker. He went into a partnership with some friends, but the business failed and he was forced to look for employment elsewhere. For a while he became involved in the tea and grocery business, but was never happy in this field.



Griffiths Brothers Tea signs were once common sights along Adelaide railway lines and stations (*NRM Collection*)



The Old Time Scales on the *Break of Gauge* platform within Fitch Pavilion - Break of Gauge platform - 12 February 2011 (*Chris Drymalik*)



The Edmondson ticket printing press (*NRM Collection*)

In 1836, at the age of 44, he applied for and was successful in obtaining a position as Stationmaster at Scotsby on the Newcastle and Carlisle Railway, but later he moved to Milton where he formed the idea of a new type of passenger ticket.

While at Milton, Thomas Edmondson built a small printing frame in which he produced card tickets measuring 1½" x 1⅛" (39mm x 29mm) showing the issuing station and destination, the number (still written) and the value. His tickets were numbered from 0 to 9999, so that the number of the next ticket to be sold represented the number of tickets sold to that point. This system survived until Edmondson tickets were phased out in favour of electronic and other types 150 years later.

The printing press still operates and is used by the museum to print tickets for special events.



The old Adelaide railway station coffin trolley (*NRM Collection*)

Coffin Trolley

This rectangular cart was built in the 1880s for transport of coffins. It was hauled by hand, but has a design similar to a horse-drawn vehicle of the period. It continued to be used at the Adelaide Station until withdrawn in 1982.

Next Train Clock

Manually operated clock hands were used at South Australian Railways Metropolitan stations to advise passengers of train departure times. The hands were turned with a special pole inserted in a slot connected by gears.



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BUILDINGS

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Break of Gauge Railway Shop



Break of Gauge Railway Shop - 15 January 2002 (Chris Drymalik)

The '*Break of Gauge Railway Shop*' doubles as the Museum's gift shop and point of entrance to the museum. Admission is not required to access the shop.

The Ron Fitch Pavilion

The Ron Fitch pavilion was constructed in 1988 especially to house the museum's collection of restored locomotives and carriages. The exhibits are grouped together by the gauge over which they operated - broad, narrow or standard.

The centre piece of the pavilion is the break of gauge station, which dramatically highlights the problems created by the variety of gauges operated within South Australia. Our station represents the break of gauge between broad and narrow, last seen at Terowie in 1970. Similar breaks occurred at Hamley Bridge, Wolseley, Port Pirie, Peterborough and Gladstone. Excellent comparisons can be made between locomotive and carriage design, and most dramatically, size!

On the Western side of the pavilion are a number of display cabinets housing railway memorabilia, and rooms for our educational and interactive displays and model railway, while the Northern wall of the pavilion is adorned with locomotive number and name plates.

In May 2009, the pavilion was named after former Chief Civil Engineer of the Commonwealth Railways and South Australian Railways Commissioner Ron Fitch, to acknowledge his dedication and effort to ensure so much of railway history was preserved and published.

The Ronald E Fluck Pavilion

The Ronald E Fluck Pavilion was opened in 2001 as the Commonwealth Railways Museum to provide cover for the Museum's expanding collection of Commonwealth Railway's rolling stock.

In May 2009, the pavilion was re-named after Ronald E Fluck, who founded the original Mile End Railway Museum, championed the establishment of the museum in its current location, and is a former Chairman and now Life Member of the National Railway Museum.



Some of the exhibits on display inside the *Ron Fitch* Pavilion - 29 February 2008 (*Chris Drymalik*)



The *Ron Fitch* Pavilion set up for a special function - 20 August 2007 (*Chris Drymalik*)



Some of the exhibits on display inside the *Ron Fluck* Pavilion - 29 February 2008 (*Chris Drymalik*)

Woodville Signal Cabin



Woodville Signal Cabin exterior - 12 February 2011 (*Chris Drymalik*)

The former Woodville signal cabin of the South Australian Railways/State Transport Authority has been re-located to the Museum site and connected to the narrow gauge yard on the Western side of the Museum site. It is available for tours.

Goods Shed

The original 1878 Port Dock Station Goods Shed is included as part of the Museum complex. This building is constructed of large timber beams and is typical of the type of buildings constructed by the South Australian Railways in the 19th Century. It is located to the East of the Ron Fitch pavilion.

Callington Station

The 'Callington Shelter Shed and Booking Office' is typical of the type of building used by the South Australian Railways at small country stations. It was originally built in 1951 for the then small rural community of Callington, located approximately 20 kilometres west of Murray Bridge on the main Adelaide to Melbourne route.

Intense competition during the 1960's and 70's with road transport, for passenger and parcels traffic, eventually resulted in the withdrawal of all staff and the closure of Callington station. Following closure, the building was subject to extensive vandal attacks that left nothing but the exterior.

In 1991 an approach was made to Australian National, who agreed to sell the building. This resulted in the building being purchased by a museum member, who subsequently arranged for its donation and transportation to Port Adelaide. It was placed in storage until 1994, when it was re-erected in its current location on the Northern side of the Museum site. All the work associated with the demolition and re-erection of Callington was undertaken by members of the museum in a volunteer capacity.



The signalman explains Woodville Signal Cabin workings to some museum visitors - 23 April 2005
(Chris Drymalik)



Looking down the Port Dock Station Goods Shed - 12 February 2011 (*Chris Drymalik*)



Passengers alight from a special train on the Port Dock Station Goods Shed to the sound a brass band during a night function - 20 August 2007 (*Chris Drymalik*)



Callington Station and platform - 13 July 2008 (*Chris Drymalik*)

Today the station is once again used as a boarding point, albeit for our 457 mm gauge railway. The first ticket was sold from the re-erected Booking Office to a visitor on Monday 13th June 1994. However train rides are now included in the price of admission (excluding special events).

Eudunda Gangers Shed

Located at rear of the Ron Fitch pavilion is the former Eudunda Gang Shed. It was purchased and relocated by members of the museum in 1990.



Eudunda Gangers Shed - 28 March 2009 (*Steve Gordon*)

The Steam Shed

Located South-West of the Ron Fitch pavilion, the steam shed is where the Museum maintains our operating fleet of 457 mm gauge locomotives and narrow gauge steam locomotive *Peronne*. This building is not accessible to the public.



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TRACKSIDE INFRASTRUCTURE

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Fixed Signaling Equipment

Trackside signals are used by the railways to control the movement of trains and are normally located to the left or directly above the line to which they apply, as seen by the driver of an approaching train. Various types of signals exist, varying from modern coloured light indicators to older semaphores that indicate using an arm by day and coloured light by night.

Disc Signal

Some station yards had disc signals. The museum has a variety of this type of signal on display.



A disc signal at the museum - 25th April 2011 (*Chris Drymalik*)

Dwarf signal

Dwarf signals were a modern replacement for disc signals in some yards.

Train Order Signal

Train order signals were used at stations on the South Australian Railways to indicate to an approaching train if it needed to stop to pickup a new train order. If the arm was up the train did not need to stop, if it was down it would need to stop and pick up a new order.

Glenelg Line Signal

This wooden signal was originally set up at Thebarton to control trains on the now closed North Glenelg Railway Line. A plaque is now located on the site of the original Thebarton platform at Mile End.

If the arm is in the horizontal position, or showing a red light at night, a train was not permitted to pass the signal. If the arm was pointing down at 45 degrees or showing a green light at night, the train was permitted to proceed past the signal.



The museum's train order signal dwarf engine *Bub* and the train - 19 July 2008 (*Chris Drymalik*)



The Glenelg line signal on display in the Fitch Pavilion - 25th April 2011 (*Chris Drymalik*)

Coloured Light signal

Coloured light signals are a modern replacement for the older mechanical signals. They vary in style, but uniformly show a variety of red, yellow or green coloured light combinations to indicate the occupancy of the line ahead.



This coloured light signal is used to indicate to a museum train that the warning light on the crossing pedestrian ahead are working - 12 February 2011 (*Chris Drymalik*)

Switching Equipment

Cheese Knob Switch Lever

A Cheese Knob Switch Lever is device which enabled a set of points (leads) to be changed. By throwing the 'Cheese Knob' lever over the points are set.



A Cheese Knob Switch Lever - 25th April 2011 (*Chris Drymalik*)

Switch Stands

A switch stand is device which enabled a set of points (leads) to be changed by a lever being turned 90 degrees. The way the points are set is normally indicated by a coloured marker on the top of the stand. A green indicator showing, to the driver of an approaching train, indicates that the points are set to allow the train to take the 'main line'. If yellow is showing it indicates that the points are set to move the train into the crossing loop, and a red indicator means that the points have been set to take the train into the goods road or a dead end siding.

Switch Locks

A switch lock is used in rail safety procedures to ensure that safe working practice was applied in the operation of manually changed switches. Its purpose is to prevent the switch from being moved manually as a train approaches.

Derail

A derail is a device that prevents a train in a siding from being able to move onto the main line. It does this by blocking the track in such a way that any train that should pass over the 'derail', when it is set, will be automatically 'derailed'.



A switch stand at the museum - 12 February 2011 (*Chris Drymalik*)



The derail in the left of the picture is set to prevent a train from moving onto the main line. It is connected to the control lever, on the right, by an under track rod - 25th April 2011 (*Chris Drymalik*)

Water Columns

Water columns were erected at stations, yards and stopping points for the dispensing of water to steam locomotives. The museum has two columns on display - the old Appamurra water column (located between the book shop and the main pavilion) which is now used to top up the tanks of our narrow gauge steam locomotive *Peronne* when it is in use for special events, and the old Eurelia column which is located outside of the Commonwealth Railways Museum pavilion.

Concrete Sleepers

Pre-stressed concrete sleepers were used on the standard gauge line between Tarcoola and Alice Springs when it was constructed from June 1978. On display are the first and the 500,000th sleeper manufactured by the Readymix Costain Joint Venture.

Warning Boards

Whistle Board

Whistle boards are placed on the left side of the track, at the approach to all level crossings, blind junctions, sidings, stations etc., and indicate to Enginemen where the whistle must be sounded, as a warning to the public using the level crossing.

Yard Limit Board

Station yard limit boards, bearing the words 'yard limit' are situated in advance of the outermost switches at certain locations. The board marks the station yard limits, and indicate to the locomotive driver or shunter that they have reach the limit of the yard for shunting purposes. If a train wants to



A Commonwealth Railway water column sits sandwiched between engines in front of the Fluck Pavilion - 27th July 2008 (*Chris Drymalik*)



The former Eurlia water column - 12 February 2011 (*Chris Drymalik*)

proceed past a Yard Limit Board, onto the main line, it must have the appropriate train movement authority before passing the board.



A yard limit board and whistle sign at the museum - 25th April 2011 (*Chris Drymalik*)

Level Crossing Warning Devices

Wig Wag

'Wigwag' is the nickname given to a type of railroad grade crossing signal named for the pendulum-like motion it used to signal the approach of a train. This type of crossing warning device was first installed at Long Beach, California in 1914. In operation, it shows a red light in the center of a round target that is swung from side to side as a mechanical gong is sounded.

Flashing Crossing Lights

A level crossing (also called a railway crossing, railroad crossing, train crossing or grade crossing) is a crossing on one level of a railway line by a road or path. It is possible from a pedestrian or vehicle passing over the crossing to be in danger of hitting a train. To reduce the likelihood of this happening an number of protective devices and barriers have been used by various rail systems. Probably the best know of these is the common 'flashing light' warning device; which consist of a pole with two red light that flash alternately, in addition to a gong sounding, as a train approaches. Most implementations include 'Railway Crossing' signs and a indicator of the number of tracks at the crossing.



A 'Wig Wag' warning devices protects a crossing gate, adjacent to the Eudunda Quad Shed, at the rear of the Fitch Pavilion - 25th April 2011 (*Chris Drymalik*)



Flashing Crossing Lights protect the pedestrian walkway between the museum Book Shop and the Fitch Pavilion - 25th April 2011 (*Chris Drymalik*)



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APPENDIX



SOUTH AUSTRALIA RAILWAY CENTENARY AND CENTRE LOADING CARRIAGES



The South Australian Railways purchased the Glenelg railway line in December 1899 and identified a need for more rollingstock for holidays, racedays etc. This led to the approval for the building of new cars similar to a number of old cars that had been taken over with the Glenelg Railway. The original Glenelg line cars had been based on imported United States designs dating from the 1860's, though most of the cars had actually been constructed much later than this. The South Australian Railways put into service the first batch of the new sitting cars (Nos. 260-267) in December 1908, closely followed by two baggage cars (Nos. 268-269) in January 1909, all specifically built for the Glenelg suburban trains. Interiors were made from selected native timbers, and the body structure from seasoned Blackwood including a clerestory roof originally fitted with 'Milk Glass' windows and polished timber matching the rest of the car. These cars were also the first in South Australia fitted with electric light in place of Pitsch gas.

The new cars performed well, so when more cars were required for other suburban lines it was decided to build more identical to Nos. 260-269. Prior to commencement of construction the carriage body design was altered. This resulted in narrower cars being built because of the wider platforms on the other suburban lines, body length was also increased to include a centre vestibule to help accelerate passenger loading. Building began in 1910 with numbers allotted in the range Nos. 314-363. The first 4 cars entered service 31 May 1912. Fifteen more wider body, original design, Glenelg cars (Nos. 364-378 - See 'Centenary Baggage No. 376' page 154) were constructed during 1913-14 by 'A Pengelly and Coy' on underframes supplied by South Australian Railways Islington Workshops. Eighty more suburban cars were constructed between 1914 and 1924 (See 'Suburban End and Centre Loading Car No. 446' page 156). With the Islington workshops producing both bodies and underframes for Nos. 260-269 and Nos. 314-363.

Glenelg cars Nos. 260-267 and Nos. 364-374 originally were painted brown, with a gold lettered 'SAR' centrally above the windows, and the car number done in an ornate 'floral' alphabet. These cars also featured end windows and rattan cane seating for 76 passengers. Baggage cars Nos. 268-269 and Nos. 375-378 were done in a similar style, except capacity was reduced to 56 sitting passengers.

The Non-Glenelg line Suburban cars had 'SAR' and the car number centrally below windows on the exterior of each compartment in a 'floral' alphabet. Above the windows of each compartment was 'FIRST' and 'SECOND', denoting the class of the carriage.

The cars remained basically unaltered throughout the 1920's, except in July 1927, 13 Glenelg cars were fitted with lavatories (baggage cars Nos. 269 and No. 378 remained unaltered).

On 1 June 1929, Railway Commissioner /textit{W.A. Webb} reclassified all suburban cars as one class. New carriage livery was introduced, with the lettering in silver block, applied to the cars a reduced number of times. The cars now only had 'Smoking', 'Non-smoking' and car number on the end panels.

Following the conversion of the Glenelg Railway line to a tram service, in 1929, the surplus Glenelg cars were used on other services including long distance country line work, for which they were great unsuited due to the inferior standard of seating they provided. A refurbished car, No. 373 (Glenelg), was placed outside the CME's office on 22 March 1935 for inspection by the Railways Commissioner. It had been fitted out with an 'improved interior', including high backed semi partitioned moquette cloth seating. The Railway Commissioner gave approval for a further 12 cars to be altered. The second car completed was No. 367 in May. As the year progressed, approval was given to increase the number of cars to 23. Once again baggage cars Nos. 269 and 378 were left unaltered.

During 1935, the Governor of SA suggested running a special train for SA's Centenary which would occur in 1936. It was decided to use several of the improved Glenelg cars. These cars were repainted from Regal Red to the State Centenary colours of Hawthorn Green and Cream. The colour scheme included Gold Block lettering '1836 CENTENARY 1936' on the letterboard and the South Australian state badge 'The Piping Shrike' centrally below the windows. Baggage car No. 268 was fitted out as a buffet car. The *Centenary Limited* as the train was called, first operated on 7 March 1936 to Victor Harbor. Baggage car No. 377 was included in April 1936, increasing passenger capacity and replacing 2 x 60 foot brakevans (Nos. 276 and 306) which were originally used on the train. The Centenary colour scheme became popular with the public and eventually the remaining Glenelg cars, except Nos. 269 and 378, were painted Green and Cream.

In 1937-38, the South Australian Railways fitted 19 Suburban End and Centre loader, and 5 Suburban End loading Baggage cars with the semi partitioned seating. No lavatories were fitted and the cars remained Red. They became known in railway circles as 'Blue Day Cars' (Nos. 269 and 378 also fitted). During 1939-40, a handbrake was fitted to the centre vestibule of selected Suburban and Blue Day cars.

The railways regularly received complaints about the lack of lavatory cars on long distance country trains, so in 1947-48, the 19 'Blue Day Cars' were fitted with lavatories and washrooms by closing in the centre vestibules and the colour scheme was altered from Red to Green and Cream. Cars Nos. 269 and 378 were also fitted and the exterior colours altered. They became part of the country car fleet. Those cars which had handbrakes fitted in the centre vestibule, had the brake gear removed to the end platform.

During the 1950's the South Australian Railways fitted select numbers of cars, of all types, with flush exterior panelling to reduce maintenance cost. Eleven Suburban Baggage cars were also fitted with Perambulator Compartment for pushers.

In 1961, 13 of the Suburban End loading Baggages were converted for railcar operation. This involved altering the brakes and fitting cold cathode fluorescent lighting, for use as trailer cars between a pair of 'Red Hen' power cars. These cars were numbered 820-832 and retained the Red colour scheme.

During the late 1960's several Blue Days car interiors were painted white, and mass condemning of all cars began.

A total of 103 Suburban Centre and End loading carriages were built, plus 27 Suburban End loading Baggage cars. 19 of these cars were converted to the 'Blue Day' configuration. Of the Glenelg cars, 19 End loaders were built and 6 Baggage cars, all of which were given 'Improved Interiors'.

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