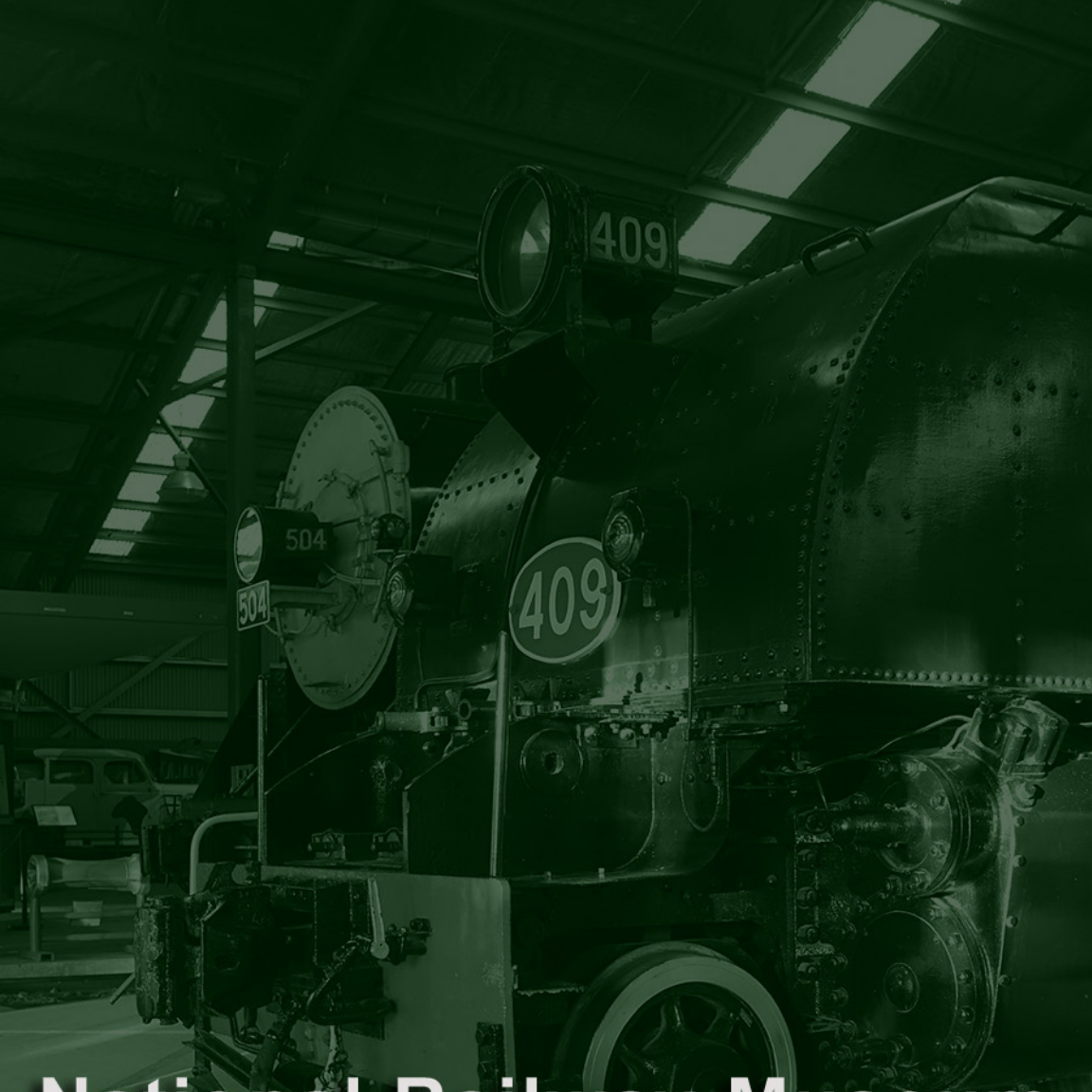


National Railway Museum Exhibits Guide

Chris Drymalik and Andrew Peters

A Digital Publication of the
National Railway Museum

National Railway Museum Exhibits Guide

Chris Drymalik and Andrew Peters

A Digital Publication of the

National Railway Museum
Port Adelaide, South Australia

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.nrm.org.au/

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CHAPTER 1

ABOUT US

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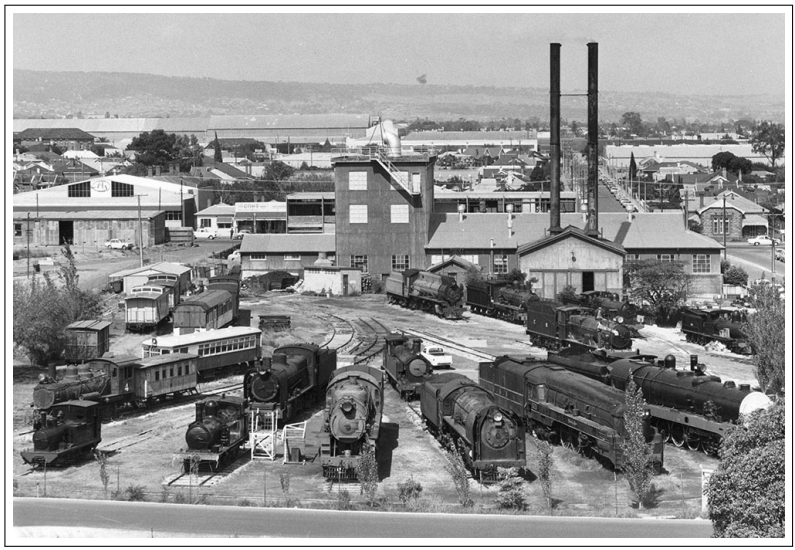
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Who we are - a brief history of the National Railway Museum

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 *(Chris Roads Collection - NRM Collection 44-981-e190)*

The first railway museum was located on Railway Terrace at Mile End, South Australia, operated on a completely voluntary basis and opened on only two afternoons each month. Prior to 1988 museum members cosmetically restored many locomotives and carriages, designed and built our 457 mm gauge steam locomotive *Bub*, and restored narrow gauge steam engine *Peronne* to operational condition. They also published several railway books.

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 $2 million Australian Bicentennial Commemorative Grant to relocate to our current site and to provide covered accommodation for the exhibits.

On the 2 January 1988 the gates at the Mile End Railway Museum closed for the last time and on the 10 December 1988, after a year of frantic activity, the Port Dock Station Railway Museum Port Adelaide



The current museum under construction *(Robert Haebich - NRM Collection 48-987-d019-16)*

was officially opened by the Premier of South Australia, The Honourable John Bannon.

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

At the opening of the Commonwealth Railway Museum the Port Dock Station Railway Museum was renamed the 'National Railway Museum'. The name change was a response to the Commonwealth Railway's operations being integrated into a National Transport Network that now spans 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.

Our Collections

The National Railway Museum preserves and showcases a comprehensive collection representing the full scope of Australian railway history.

The collection includes:

- **Rolling Stock:** A wide array of historic locomotives and



‘Ghan’ statue and Commonwealth Railways Rolling Stock - 21 October 2008 *(Chris Drymalik - NRM Collection 275-373-p1053279)*

carriages from State, Commonwealth, and private railway operators, spanning all four major Australian rail gauges.

- **Railway Infrastructure:** Equipment and components essential to railway operations, such as station buildings, signalling and telecommunications systems, track hardware, and maintenance vehicles.
- **Railway Objects:** Artefacts ranging from locomotive builders' plates and station name boards to uniforms, clocks, signal lamps, railway hospitality items, and furniture.
- **Audiovisual Material:** Historic photographs, negatives, video and audio recordings, artworks, posters, and placards that document the visual and cultural history of rail transport in Australia.
- **Documents and Archives:** Public and working timetables, weekly notices, engineering drawings, gradient and curve diagrams, railway tickets, government publications, and other official records.
- **Reference Library:** A specialised research library featuring books, journals, images, film, and audio materials covering all aspects of Australian railway history.

The NRM's collection is organised into two distinct but complementary components:

- **National Collection:** Focusing on items of national significance from across Australia's railway systems. This includes items from the former Federal Government owned rail operators: the Commonwealth Railways (CR), and Australian National (AN).
- **SA & NT Collection:** Preserving and highlighting the South Australian and Northern Territory railway heritage, including the South Australian Railways (SAR), and the Silverton Tramway.

This structure allows the Museum to focus on collecting items of national significance - those that reflect key technological developments, national policy milestones, inter-system operations, or iconic examples of Australian railway heritage without the need to maintain comprehensive holdings for each state-based railway system.

This targeted approach avoids unnecessary duplication of the extensive collections already held by dedicated state railway museums, which are better equipped to interpret and preserve their



The Museum can be hired for special night functions - this photo was taken at the rear of the Fitch Pavilion under natural light - 23 March 2007 *(Chris Drymalik - NRM Collection 275-373-p1033721)*

own regional histories in detail. Instead, the NRM supports research and general public enquiries about other state systems through a small reference collection, while referring more detailed or specialist queries to the relevant state institutions. This collaborative, non-duplicative strategy strengthens partnerships across the museum and heritage sector, ensures efficient use of curatorial resources, and enables the NRM to maintain its dual role: as a national institution contributing to the broader Australian rail story, and as the principal custodian of South Australian and Northern Territory railway heritage, reflecting our historical roots and enduring connection to the region.

Leaving a Gift in Your Will

You can help safeguard the future of the National Railway Museum by leaving a gift in your will. Your support will ensure that generations to come can continue to enjoy and learn from Australia's rich railway heritage.

If you're considering a bequest, we encourage you to meet with the *'Curator and Business Manager'* to discuss your plans. If you intend to bequest items, please confirm in advance that the Museum is the appropriate home for your collection.

We also kindly ask that you consider including provision for transport costs, as these can sometimes be a barrier to accepting otherwise valuable donations.

Donating Artefacts and Memorabilia to the National Railway Museum Collection

At the National Railway Museum, we care for our collection to the highest possible standards. Preserving and interpreting railway heritage is a significant undertaking - one that requires both time and resources. For this reason, we must be selective about the items we accept into the collection.

Every item considered for donation must make a meaningful and significant contribution to the broader story we aim to tell. To ensure this, we need to discuss any potential donation with you in advance.

If you're thinking about donating an item, please review the checklist below to help determine whether it may be suitable for our collection:

- Is the item related to Australian railway history? *(Required)*
- Can you describe what the item is? *(Required)*
- Do you know its history or previous use? *(Required)*
- Are you or the legal owner willing to permanently transfer ownership of the item to the NRM? *(Required)*
- Do you know who made or manufactured the item?
- Are there any personal or historical stories associated with it?
- Where did the item come from?
- Can you provide clear digital images, including any identifying features or markings?

- Can you describe the item's current condition (e.g., good, fair, poor)?

If you can answer the four required questions, we will be in a better position to assess whether your item could be included in the NRM collection.

To offer a donation, please complete the '*Donation Information Form*' that is on the NRM web site, and send it to the *'Curator and Business Manager'*. You will receive a response as soon as possible.

Please note: Donations must be formally approved by the *'Curator and Business Manager'*, or the relevant *'Collection Manager'*, before being accepted into the Museum. Unfortunately, we are unable to accept unsolicited or unapproved items.



A Reel to Reel tape player, and computers being used by an NRM volunteer to digitise the Museum's sound archival collection - 18 February 2023 *(Chris Drymalik - NRM Collection 275-373-p1209236)*

Volunteering at the National Railway Museu

Why volunteer at the National Railway Museum?

It is a not-for-profit, self-funded museum maintained and run by a dedicated group of volunteers. The Museum houses an impressive collection of locomotives, carriages, railway heritage items, including photographs, artefacts, documents and ephemera. Volunteers are

invaluable to the Museum and enjoy assisting to preserve, document, and interpret the evidence of Australian rail history.



NRM volunteers rebuilding rail track - 6 July 2024 *(Chris Drymalik - NRM Collection 275-373-p1221595)*

Volunteering hours at the Museum can be flexible, provided they fall between 8am and 4pm. As we are a daily operation, including weekends, some volunteer positions may involve weekend hours. We also operate the *Semaphore and Fort Glanville Tourist Railway*. We encourage you to explore opportunities to get involved with our activities and events. Follow us on *Facebook* to see when we're looking for specific skills, and become familiar with our collections online.

Onsite training for roles is provided. Knowledge of trains and railways is not required to volunteer at the National Railway Museum.

All applicants and volunteers will be required to attend an interview. The NRM reserves the right not to accept any person as a volunteer if the NRM does not believe they will be suitable for any of the available roles. If you wish to volunteer, please contact our Volunteer Coordinator.



CHAPTER 2

LIST OF NRM ROLLING STOCK

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The following tables contain a listing of all the Rolling Stock in the National Railway Museum Collection.

Steam Locomotives

Steam Locomotives (see page 97)	Operator	Gauge	Primary use
504 *Tom Barr Smith*	SAR	1600 mm	Mainline Passenger & Freight Locomotive
523 *Essington Lewis*	SAR	1600 mm	Mainline Passenger Locomotive
624	SAR	1600 mm	Mainline Passenger Locomotive
702	SAR	1600 mm	Mainline Freight Locomotive
752	SAR	1600 mm	Branchline Mixed Traffic Locomotive
F 255	SAR	1600 mm	Suburban Passenger Locomotive
P 117	SAR	1600 mm	Mixed Traffic Locomotive
Rx 93	SAR	1600 mm	Mixed Traffic Locomotive
G 1	CR	1435 mm	Passenger and Freight Traffic
409	SAR	1067 mm	Mainline Freight Locomotive
T 253	SAR	1067 mm	Mainline Mixed Traffic Locomotive
Y 97	SAR	1067 mm	Mixed Traffic Locomotive
NM 34	CR	1067 mm	Mainline Mixed Traffic Locomotive
A 21	Silverton	1067 mm	Mainline Mixed Traffic Locomotive
W 25 *H.F. (Gerry) Walsh*	Silverton	1067 mm	Mainline Mixed Traffic Locomotive
Y 12	Silverton	1067 mm	Mainline Mixed Traffic Locomotive
4	BHP	1067 mm	Mainline Freight Locomotive
Peronne	BHAS	1067 mm	Shunt Locomotive
2 - *Skipper*	MM	610 mm	Industrial Freight Locomotive



30 April 1988, Steam Engine 504 being turned on the turntable at Mile End Diesel depot on it's way down to Port Dock *(Chris Drymalik - NRM Collection 275-374-n08337a-19)*

Diesel Locomotives

Diesel Locomotives (see page 165)	Operator	Gauge	Primary use
515	SAR, ANR	1600 mm	Shunt Locomotive
517	SAR, ANR, G&W	1600 mm	Shunt Locomotive
703	SAR, ANR, OneRail	1600 mm	Mainline Mixed Traffic Locomotive
801	SAR, ANR	1600 mm	Mainline Mixed Traffic Locomotive
900 *Lady Norrie*	SAR, ANR	1600 mm	Mainline Mixed Traffic Locomotive
930	SAR, ANR	1600 mm	Heavy passenger & freight engine used over most lines
Ruston	ICI, PSP	1600 mm	shunt locomotive
DE 91	CR, ANR	1435 mm	Shunt Locomotive
GM 2	CR, ANR	1435 mm	Mainline Mixed Traffic Locomotive

Diesel Locomotives (see page 165)	Operator	Gauge	Primary use
ETSA 1	ETSA	1435 mm	Shunter
NSU 61	CR, ANR	1067 mm	Mainline Mixed Traffic Locomotive

Electric Locomotives

Electric Locomotives (see page 199)	Operator	Gauge	Primary use
E1	BHP	1067mm	Shunt Locomotive

Industrial and Amusement Locomotives

Industrial and Amusement Locomotives (see page 205)	Operator	Gauge	Primary use
Malcolm Moore & Company	S.A.H.B	1067 mm	Internal Combustion Locomotive
Ruston Hornsby Diesel Locomotives No.304	WGC	610 mm	Industrial Freight Locomotive
Ruston Hornsby Diesel Locomotives No.306	WGC	610 mm	Industrial Freight Locomotive
Malcolm Moore Diesel Locomotive No.1514	WGC	610 mm	Industrial Freight Locomotive
Boomerang Train	Misc	254 mm	Amusement Locomotive
No.1 *Juilet*	MERM	457 mm	Amusement Locomotive
No.2 *Chitty*	MERM	457 mm	Amusement Locomotive
No.4 *Bub*	NRM	457 mm	Amusement Locomotive
No.6 *Bill*	NRM	457 mm	Amusement Locomotive
No.7 *Ken*	NRM	457 mm	Amusement Locomotive
No.8 *Len*	NRM	457 mm	Amusement Locomotive

Railcars

Railcars (see page 229)	Operator	Gauge	Primary use
8	SAR	1600 mm	Country / Suburban Passenger
41	SAR	1600 mm	Country Passenger
Bluebird *Kestrel* No.257	SAR, ANR	1600 mm	Country Passenger
321	SAR, STA, TA	1600 mm	Suburban Passenger
400	SAR, STA, TA	1600 mm	Suburban Passenger
2006	STA, TransAde-laide	1600 mm	Suburban Passenger
2112	STA, TransAde-laide	1600 mm	Suburban Passenger
CB 1	CR/ANR	1435 mm	Country passenger services



SAR Brill 75 class railcar Milk Bar interior - c.1936 *(STA Collection - NRM Collection 5-98-h1973)*

Passenger Carriages

Passenger Carriages (see page 257)	Operator	Gauge	Primary use
3	SAR	1067 mm	Saloon Car
144	SAR	1067 mm	Second class car
294	SAR	1600 mm	Passenger Car
376	SAR	1600 mm	Country Passenger / Baggage Car
446	SAR	1600 mm	Suburban Passenger Car
606	SAR, ANR	1600 mm	Country Passenger
Adelaide	SAR, STA	1600 mm	Dining Car
Allambi	V&SAR, V/Line, VR	1600 mm	Overland sleeping car / Vinelander sleeping car
Baroota	SAR	1067 mm	Sleeping Car
Cafeteria C1	SAR, ANR	1600 mm	Cafeteria Car
Onkaparinga	SAR, V&SAR	1600 mm	Sleeping Car
Murray	SAR, ANR, STA	1600 mm	South Australian Railways Commissioners Car
Vice Regal Car	SAR	1600 mm	Vice Regal Car
42 BE	SAR	1600 mm	Second Class Sitting Car
T.P.O. O18	SAR, V&SAR	1600 mm	Post Office Van / Officers Inspection car
AFA 93	CR	1435 mm	Trans-Australian Lounge Car
AR 33	CR	1435 mm	Sleeping car used on the Trans-Australian & Ghan Services
DA 52	CR	1435 mm	Dining car for use on Trans-Australian Railway



Pullman dining car *Adelaide* is almost completely hidden by TV equipment during filming of ABC progam *'The Collectors'* on 17 March 2007 *(Chris Drymalik - NRM Collection 275-373-p1033546)*

Brake Vans

Brake vans (see page 319)	Operator	Gauge	Primary use
276	SAR	1600 mm	Brake Van
4074	SAR	1600 mm	Brake Van
4367	SAR	1600 mm	Caboose
8394 (AVAP 396)	SAR	1600 mm	Brake Van
AVEP 349	CR	1435 mm	Freight Train Brake Van
7553	SAR	1067 mm	Brake Van



Port Dock Goods Shed and yard - c.1980 *(STA Collection - NRM Collection 5-98-sc1140)*

Service Stock

Service Stock (see page 337)	Operator	Gauge	Primary use
5-ton Travelling Crane No.2327	SAR	1600 mm	5-ton Travelling Crane
Steel Open Wagon G 363	SAR	1600 mm	Match-wagon for the crane No.2327
Accident Crane No.3	SAR	1600 mm	Accident Crane
AMW 4015	SAR	1600 mm	Bogie Match Wagon
Toyota Land Cruiser Hi-Rail	AN, G&W	1435 mm	Track Inspection
Truck Placer	SAR	1600 mm	Wagon shunting
Dynamometer Car	SAR, ANR, V&SAR	1600 mm	Dynamometer Car
ESV 8131	SAR	1600 mm	Bogie employees van
FA 640	SAR	1435 mm	Tea & Sugar Train
PA 281	CR	1435 mm	Tea & Sugar Train
VPA 1340	CR	1435 mm	Tea & Sugar Train
TSB 691	CR	1435 mm	Tank Wagon
WT 5506	SAR	1067 mm	Water Tank Wagon



Commonwealth Railways Budd Railcar CB1 being placed on it's standard gauge power bogies - 3 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1001967)*

Freight Wagons

Freight Wagons (see page 367)	Operator	Gauge	Primary use
ABAA 7299	SAR, ANR	1600 mm	Bogie steel van
AFFA 8536	SAR, ANR	1600 mm	Bogie flat wagons (ex FB)
AFBF 8657	SAR, ANR	1600 mm	Bogie flat wagons (ex FB)
AOWF 58	SAR, ANR	1600 mm	Bogie timber open wagon (ex OW)
BAS 615	CR	1435 mm	Ballast Wagon
CF 26	SAR	1600 mm	4 wheel cattle van
DA 4346	SAR	1600 mm	4 wheel steel van
DWF 4724	SAR	1600 mm	4 wheel timber van
FB 8500	SAR	1600 mm	Bogie flat wagons
FNT 7850	SAR	1067 mm	Flat Wagon
HFN 5108	SAR	1067 mm	Hopper Wagon for the carriage of coal and ballast
M 7038	SAR	1600 mm	Bogie steel van
M 7436	SAR	1600 mm	Bogie steel van

Freight Wagons (see page 367)	Operator	Gauge	Primary use
MG 39	SAR	1600 mm	Bogie steel van
N 251	SAR	1600 mm	4 wheel timber van
OB 32	SAR	1600 mm	Bogie steel open wagon
OF 439	SAR	1600 mm	4 wheel steel open
ON 929	Silverton	1067 mm	Ore Wagon
RBP 9003	SAR	1600 mm	refrigerator car
SF 160	SAR	1600 mm	4 wheel sheep van
TC 8463	SAR	1600 mm	4 wheel fuel tank
TV 4872	SAR	1600 mm	Bogie fuel tank wagon
V 260	CR	1435 mm	bogie Covered Van (outside frame),
V 1990	SAR	1067 mm	4-wheel Louvred Van
WL 8200	SAR	1600 mm	Bogie well flat wagon
Y 3582	SAR	1600 mm	4 wheel steel open
Y 5017 (restored as CR NGAS 373)	CR	1067 mm	Open wagon (drop-sides)
Y 5019	SAR	1067 mm	Open wagon (drop-sides)
YY 4913	SAR	1067 mm	Open wagon
YY 4927	SAR	1067 mm	Open wagon
YY 4947	SAR	1067 mm	Open wagon
Z 3236	SAR	1600 mm	4 wheel steel hopper



South Australia Railcar bluebird 257 on Jacketts siding runs alongside loco NRM Bub - 12 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222069)*

Gang Vehicles

Gang Vehicles (see page 411)	Operator	Gauge	Primary use
3 wheel Pump Trike	SAR	1600 mm	Ganger's 3 wheel Pump Trike
4 wheel Pump Car - B 179	SAR	1600 mm	Ganger's 4 wheel Pump Car
Motor Pump Car - unnumbered	SAR	1600 mm	Ganger's Motor Pump Car
F 40	SAR, ANR	1600 mm	Ganger's Trolley
F 147	SAR	1600 mm	Ganger's Trolley
M	SAR	1600 mm	Ganger's Trolley
M 183	SAR	1600 mm	Ganger's Trolley
S 50	SAR	1600 mm	Ganger's Trolley
SD 101	SAR	1600 mm	Ganger's Trolley
Motor Quadricycle - unnumbered	SAR	1600 mm	Ganger's Motor Quadricycle
Wickham	SAR	1600 mm	Ganger's Trolley
Trolley - unpowered	SAR	1600 mm	Ganger's Trolley
CC 165	CR, ANR	1067 mm	Ganger's Trolley
F 171	SAR	1067 mm	Ganger's Trolley
T 123	SAR	1067 mm	Ganger's Trolley
Matisa Tamper	SAR	1600 mm	Tamper
Wickham	CR	1435 mm	Ganger's Trolley
Fairbanks Morse	CR	1435 mm	Ganger's Trolley
TA 030	STA	1600 mm	Ganger's Powered Track Jack
TA 031	STA	1600 mm	Ganger's Powered Track Jack



Australian National Butcher Van FA640 being unloaded from a flat car at the NRM - 2 August 1988 *(Ron Fluck - NRM Collection 124-1338-pd188-21)*

Miscellaneous Vehicles

Miscellaneous Vehicles (see page 459)	**Operator**	**Gauge**	**Primary use**
Locomotive Wheels	SAR	1600 mm	Originally used on 2-4-0T Locomotive
MIC 4	CR	1435 mm	Motorised Inspection Car
Jetty Truck No.146	S.A.H.B	1067 mm	Jetty Truck
Explosives Van	SAR	610 mm	Explosives Van

CHAPTER 3

AUSTRALIAN RAILWAY HISTORY

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Australian Railways

Rail transport in Australia

RAILWAYS WERE DEVELOPED in the 19th century when Australia comprised six self-governing British colonies. Each colony had its own laws and conventions, and this applied to rail systems. Goods and wagons were exchanged at a limited number of border interconnections. When the states Federated in 1901, forming the *Commonwealth of Australia*, the individual state based system where 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 states. The project commenced in 1912, with the formation of the *Commonwealth Railways*, and construction of 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 Street Station Building, Melbourne Victoria *(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 of the state based systems. Only South Australia and Tasmania accepted. So on 1st July 1975 the

Australian National Railways Commission (ANRC) was established. During the next two years the Commonwealth finalised the transfer of the Tasmanian Government Railways, and the South Australian Railways freight business and non-urban operations with the ANRC taking full control from 1st March 1978. The metropolitan Adelaide railway lines remained under the control of 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 1435 mm (4 ft. 8½ in.).

The most frequently used Australian rail gauges are:

- Irish broad gauge 1600 mm (5 ft. 3 in.) - mainly Victoria, some South Australia.
- Standard gauge 1435 mm (4 ft. 8½ in.) - mainly New South Wales and the interstate rail network
- Narrow gauge 1067 mm (3 ft. 6 in.) - mainly Queensland, Western Australia and Tasmania as well as some of country South Australia
- Two-foot gauge 610 mm (2 ft.) - used mainly for Industrial Railways, Sugar Cane Railways, and Timber Logging Operations.

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 the Secretary of State for the Colonies in London, that one uniform gauge

should be adopted in Australia, this being 1435 mm standard gauge. This was adopted by the then three colonies of New South Wales, Victoria and South Australia, who where 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 1600 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 ordered 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 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 where 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.

History of Railway Construction in Australian

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 ft. 3 in. (1600 mm)
- 1865 - Queensland - Ipswich to Bigges Camp (renamed Grandchester in honour of occasion) on the way to Toowoomba railway opened - 3 ft. 6 in. (1067 mm)
- 1871 - Tasmania - Deloraine to Launceston railway opened - 5 ft. 3 in. (1600 mm), converted to 3 ft. 6 in. (1067 mm) in 1888
- 1879 - Western Australia - Geraldton and Northampton railway opened - 3 ft. 6 in. (1067 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 ft. 6 in. (1067 mm)
- 1915 - Canberra to Queanbeyan railway opened - 4 ft. 8½ in. (1435 mm)
- 1917 - 4 ft. 8½ in. in (1435 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 ft. 8½ in. (1435 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 ft. 3 in. (1600 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 ft. 8½ in. (1435 mm) (standard gauge) railway gauge conversion opened, completing the Sydney-Melbourne railway
- 1968 - Kalgoorlie to Perth 4 ft. 8½ in. (1435 mm) (standard gauge) railway gauge conversion opened
- 1969 - Broken Hill to Port Pirie 4 ft. 8½ in. (1435 mm) (standard gauge) railway gauge conversion opened, completing the Sydney-Perth railway
- 1980 - Tarcoola, South Australia to Alice Springs 1435 mm (standard gauge) railway opened
- 1982 - Adelaide to Crystal Brook, South Australia 1435 mm (standard gauge) railway gauge conversion completed, including a new standard gauge connection between Merriton and Crystal Brook.
- 1995 - Melbourne-Adelaide railway 1435 mm (standard gauge) railway gauge conversion completed
- 2004 - Adelaide-Darwin railway 1435 mm (standard gauge) railway completed

Gauge Problems

The governments of the 1850s did not envisage the need for either interstate 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 intercolonial border anyway. Federation changed this attitude. Customs and immigration disappeared, and free trade between the states was universal. The impediment of different gauges now became more apparent than 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.

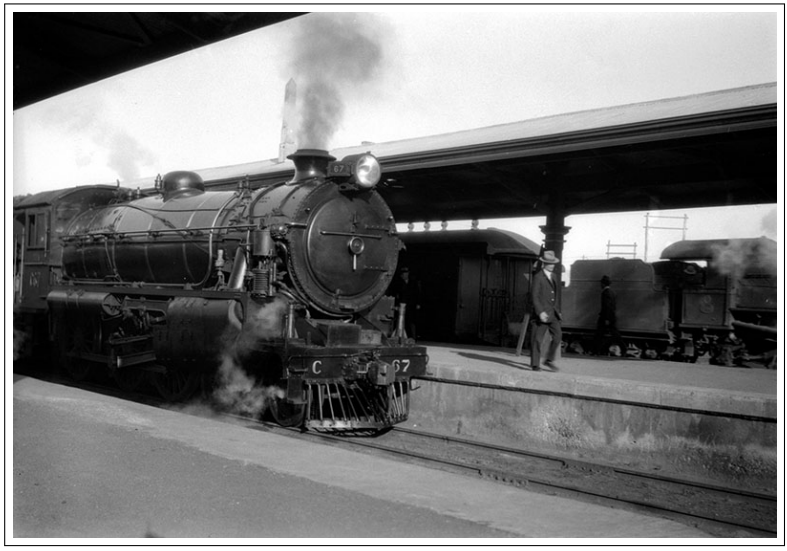
Break of Gauge stations in Australia have been located at:

- Kalgoorlie - standard, narrow
- Port Augusta - standard, narrow
- Port Pirie - standard, narrow, broad
- Gladstone - narrow, broad, and later standard was added
- Peterborough - narrow, standard, 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 - was developed in 2010 to relieve overcrowding at Acacia Ridge.

The Clapp Report

After the railways' poor wartime performance, a report into the 'Standardization of Australia's Railway 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 (see page 43).
- 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 Barringun, 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.



Commonwealth Railways Locomotive C67 in Kalgoorlie station with a WAGR train in the other platform. Each train is on a different gauge. *(NRM Collection 1-5-pd0830)*

Effectively the report went nowhere, but 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 Marree opened in July 1957.

The Wentworth Committee

In 1956 a Government Members Rail Standardization 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, 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 in 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 (see page 43) 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.

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

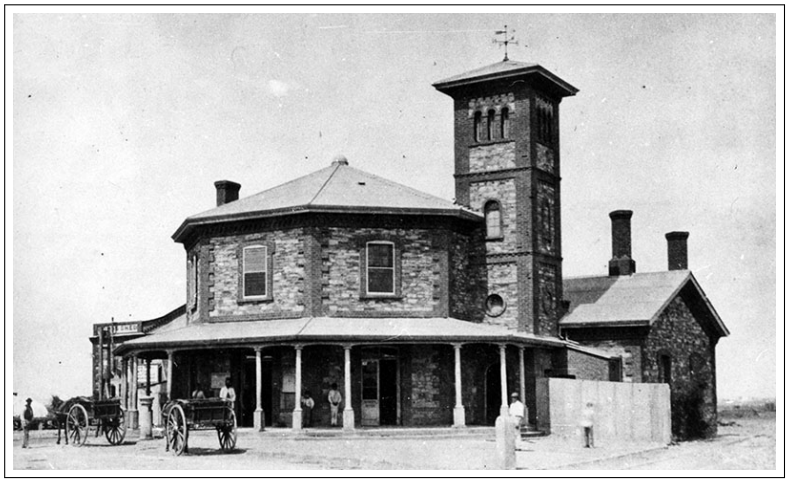
trains began using the line in 1983, followed by passenger trains in 1984.

The *One Nation* infrastructure development program 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.

South Australia Railway History

The Formation of the South Australian Railways (SAR)

THE SOUTH AUSTRALIA 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. Kapunda 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 River Murray paddle steamer trade from upstream.



The original station building at Port Dock, Port Adelaide - c.1860s *(NRM Collection 1-1-18041)*

The early lines were short, disconnected lines built in the direction of the nearest port such as Port Broughton to Mundoora (horse drawn), Port Pirie to Crystal Brook and Port Wakefield to 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-1900s.

The Gauge Problem

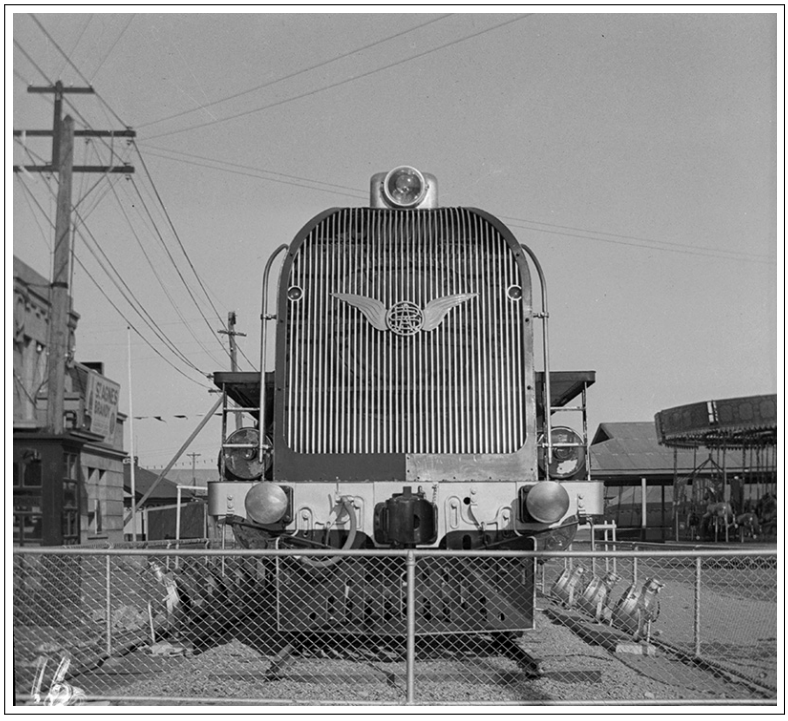
A notorious hindrance to the economic development of Australia was each State operating its railways to different gauges - a problem no better illustrated than in South Australia, which by 1917, had lines built in three different gauges. The problem greatly reduced in 1995 with the *One Nation* infrastructure development program ensuring each Australian mainland capital city was connected with uninterrupted standard gauge lines.

Broad gauge 1600 mm (5 ft. 3 in.)

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 1067 mm (3 ft. 6 in.)

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



South Australian Railways Broad Gauge locomotive 620 on public display at the Centenary Exhibition at the Wayville showgrounds shortly before being introduced to service - 1936 *(Ralph Skewes - NRM Collection 32-257-0016)*



South Australian Railways Narrow Gauge locomotive T241 at Peterborough - 26 January 1953 *(Douglas Colquhoun - NRM Collection 2-71-a1046)*

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 gypsum line near Ceduna reminds 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 1435 mm (4 ft. 8½ in.)

The first standard gauge line in South Australia was the Trans-Australian Railway running between Port Augusta and Kargoorlie in WA, built by the Commonwealth Railways, and opened in 1917. In 1937, standard 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 56 km 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 uninterrupted 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 South Australia'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.

South Australia's Passenger Services

From the early days South Australian Railways metropolitan and country passenger services were almost exclusively steam hauled. In



Transferring coal from narrow gauge wagons to broad gauge wagons at Terowie - 1 June 1944 *(Douglas Colquhoun - NRM Collection 1-1-18436)*



The South Australian Railways 500 class was the biggest of the big power locomotives introduced by Commissioner Webb - 1920's *(STA Collection - NRM Collection 5-103-0766a)*

The Webb Era/Legacy

The 'Webb Era' of the South Australian Railways (SAR) refers to the transformative period during the tenure of Commissioner William Alfred Webb, who led the railways from 1922 to 1930. This was one of the most ambitious and modernising phases in SAR history.

By 1922, through wear and tear, lack of maintenance, an ageing fleet of small locomotives and rolling stock, 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:

> "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.

His innovations made SAR one of the most advanced railways in Australia during the 1930s.

1924 Commissioner Webb introduced Model 55 railcars, which became known as *Tin Hares*, 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, larger specification, 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, due to the sound of their horn, 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* railcars were introduced on country services commencing in 1954. The following year, *Red Hen* railcars began operating on suburban lines. Steam locomotives last ran in South Australia 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 South Australia 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' - c.1950 *(NRM Collection 1-1-14893)*

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 state capital cities 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*. From 1986 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 standard gauge locomotive GM1 at Port Augusta - c.1952 *(Commonwealth Railways - NRM Collection 14-219-a80-200)*

Commonwealth Railways (CR)

The Commonwealth Government entered the world of railways when in 1911 it acquired the narrow gauge Port Augusta to Oodnadatta line - though it continued to be 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 New South Wales Government (prior to Federation in 1901) 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 South Australia to Broken Hill in New South Wales. 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.



Silverton Tramway Co. Y class No.11 shunting open wagon ON9596 at Railwaytown, Broken Hill, New South Wales - December 1953 *(Douglas Colquhoun - NRM Collection 2-71-a1358)*

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 supply iron ore to the furnaces at Whyalla

BHP also operated a standard gauge 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, BHAS 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



Timber sleepers on bridge deck being plaited by workmen - ANR Tarcoola to Alice Springs line construction - Early 1970s *(Australian National - NRM Collection 14-219-e80-351-04)*

The only way for South Australia's railways to participate in the movement of freight nationally was to standardise all main through lines to 1435 mm[1]. The South Australian Railways and Commonwealth Railways mutually agreed to link Port Augusta and Adelaide, via Port Pirie, by the construction of a new standard gauge line between Port Pirie and Pt Augusta, and a new broad gauge line between Redhill and Port 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 Port 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 Port 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

[1] This is discussed in more detail on page page 34



A switch under construction alongside newly ballasted track - ANR Tarcoola to Alice Springs line construction - Early 1970s *(Australian National - NRM Collection 14-219-c80-339-23)*

1995. All mainland State capitals were now directly connected by standard gauge. Ironically, this section was the first with a common gauge across a State border - opened in 1887.

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 where constructed by private companies, until the 1870s when the *Government Railway Department (Victorian Railways)* began major railway line construction.

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 Street, which led to them amalgamating into the *Melbourne*



Early view of the Geelong Station *(Victorian Railways)*

and Hobson's Bay United Railway Company by 1865, with public ownership coming in 1878.

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

The first interstate 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 (1435 mm). A second interstate connection followed in 1887 when the broad gauge South Australian Railways linked with Victoria at Serviceton.

The majority of the railways of Victoria were constructed to 1600 mm (5 ft. 3 in.) broad gauge. In addition, the Victorian Railways experimented with four short narrow gauge lines of 762 mm (2 ft. 6 in.) 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[2]. 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.

[2] This is discussed in more detail on page page 34



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 900 mm 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 ft. 6 in.) or 914 mm (3 ft.) gauge, with 610 mm (2 ft.), 762 mm (2 ft. 6 in.), 1219 mm (4 ft.), 1600 mm (5 ft. 3 in.) 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 private operators.

New South Wales Railway History

History

CONSTRUCTION OF RAILWAYS in 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 page 28) the decision was made to construct all lines in New South Wales in uniform *Australian Standard Gauge* of 1435 mm (4 ft. 8½ in.).

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.



New South Wales Locomotive 3206 on the 8:40am down Wolli at Wollongong - 17 December 1955 *(David Parsons - NRM Collection 80-1260-b15-60)*

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



New South Wales Locomotive 3815 on a passenger at Newcastle - 5 June 1962 *(Graham Ahern - NRM Collection 330-1405-62-16-10)*

was constructed between 1857 and 1888, with a break-of-gauge at the border. Sydney and Newcastle were 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 linking 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 in 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 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.
- Since 2010, Sydney's suburban rail network has shifted from being only a heavy-rail system to an integrated multi-modal network. Key alterations include the opening of the driverless Sydney Metro and major upgrades to the traditional Sydney Trains network with the new Metro North West Line, Metro City Extension, and the Bankstown Transport Hub.

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 the South Australian Railways from Port Pirie, South Australia to Broken Hill, New South Wales, 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 (as discussed on page 43). The line was replace, 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.



Australian Iron & Steel B Class Locomotive named ‘Bantam’ at Port Kembla - February 1961 *(Neil Mackintosh - NRM Collection 2-71-b1711)*

These include:

- Silverton Tramway from Cockburn, South Australia to Broken Hill via Silverton - 3 ft. 6 in. (1067 mm) gauge.
- Queensland Rail from Queensland to Tweed Heads - 3 ft. 6 in. (1067 mm) gauge.
- Deniliquin and Moama Railway Company from Moama to Deniliquin, connecting with the Victorian system at Echuca - 5 ft. 3 in. (1600 mm) gauge.
- The Victorian Railways Goulburn Valley line being extended north into Tocumwal - 5 ft. 3 in. (1600 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. (1600 mm) gauge.

Queensland Railway History

FEBRUARY 25TH, 1864, at Ipswich saw the turning of the sod for the first Queensland railway. After a long Parliamentary fight, the battle of the gauges in Queensland was settled in favour of the 1067 mm (3 ft. 6 in.) gauge. The new narrow gauge railway would link Ipswich with Toowoomba, with the first section to Bigges Camp (later renamed Grandchester) opening on 31 July 1865. The line quickly

Australia's Sugar Cane Railways

Australia's sugar cane railways are an extensive and unique network of narrow gauge 610 mm (2 ft.) gauge industrial railways, used almost exclusively to transport harvested sugar cane from farms to nearby sugar mills. These systems are among the largest remaining industrial railway networks in the world, and are a distinctive part of sugar production in Queensland and parts of northern New South Wales.

Primarily located along the coastal plains of Queensland, stretching from Mossman in the north to Gordonvale, Innisfail, Mackay, Proserpine, and as far south as Bundaberg and Childers.

A few smaller systems existed in northern New South Wales, particularly around Condong, Broadwater, and Harwood.

The networks can include hundreds of kilometres of track, often built cheaply with tight curves and light rails, suitable for small locomotives and cane bins. Most tracks are seasonal - used heavily during the crushing season (June - November), and maintained or upgraded during the off-season.

Many lines cross roads and pass through farmland, sometimes with temporary or portable track panels in use.

Cane is loaded into small open wagons (cane bins) either manually, or using mechanical harvesters and loaders. In many places, the networks are operated 24/7 during the harvest season to keep up with demand.

proved 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 reach by rail in 1867, and the line was extended to Dalby in 1868. By 1876 it had reach Brisbane.

Over the next few decades the reach of the lines wase 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 Wandaoan in 1914 and Roma to Orrallow in 1916 and Injue 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 the link was run by the New South Wales Government Railways, although



Marian Sugar Mill Locomotive hauling a full train load - c.1965 *(Ron Coney - NRM Collection 33-287-c16-098)*



Queensland Railways Locomotive 2351 with two others hauls a loaded coal train near Rockhampton - April 1982 *(Michael Kelly - NRM Collection 227-975-35552)*

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 hauls the majority of freight.



Queensland Railways Locomotive 1025 with a loaded freight at Townsville - 21 June 1992 *(Bob Grant - NRM Collection 335-1411-01992-24)*

In 2005 the first non-Queensland Rail narrow gauge commercial rail operation started when Pacific National Queensland (a subsidiary of Pacific National) commenced operation of container services between Brisbane and Cairns. This was followed in 2009 by their entry into the export coal market, and the later introduction of more private operators into freight services.

Standard gauge passenger services have been provided since 1 July 2013 by New South Wales Train Link.

Tasmania Railway History

History

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



Tasmanian Government Railway Locomotive ZA6 on a goods train *(Australian National - NRM Collection 14-219-b80-118)*

Despite the failure of the first private railway venture, the Tasmanian Government agreed to act as guarantor 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 1 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 transhipment of cargo, the line between Western Junction and Deloraine was converted to dual gauge on 17 March 1885. On 30 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 18 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.



Tasmanian Locomotive TR14, TR04, and TR03 on a goods train loaded with containers at Penguin on the Western Line, Tasmania - 8th May 2024 *(Bob Grant - NRM Collection 335-1410-CH240129)*

- 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 6 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 25 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 20 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 22 May 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 railroad's 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 acquiring 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 where 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 (1067 mm) reaching virtually all cities and major towns. Services are focused primarily on bulk freight, with no commercial passenger services being operated.

Western Australia Railway History

THE RAILWAYS OF Western Australian began as a series narrow gauge (1067 mm) lines from Fremantle, Geraldton, Bunbury, Albany and Esperance. Some of the lines where 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.



Western Australia Locomotive PM707 on Brunswick Junction to Collie freight, Western Australia - 28 January 1970 *(Phil Curnow - NRM Collection 33-287-b02212)*

Although the 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 interstate 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



Western Australia's Hamersley Locomotives 8167 + 8151 + 7049 cross another train as the driver of the loaded train watches the empty train pass at Dingo in the Pilbara - 4 August 2012 *(Bob Grant - NRM Collection 335-1410-40D12-9697)*

and freight rail services in Western Australia until 2000, when the state owned freight operation was sold to *Australia 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 *Journey Beyond* also operates the *Indian Pacific* trains that connect Perth with the eastern states.

Intrastate freight is mainly operated by private operators, including a number of private iron ore haulage railways that operate in the Pilbara region of the state.

Amalgamation & Privatisation

In 1978 the Commonwealth Railways, South Australian Railways and Tasmanian Government Railways were amalgamated to form *Australian National Railways* (later shortened to *Australian National*) - 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* (later named *Genesee & Wyoming Australia*) took control of the remaining functions - ownership of ex-Australian National locomotives, wagons and branch lines.

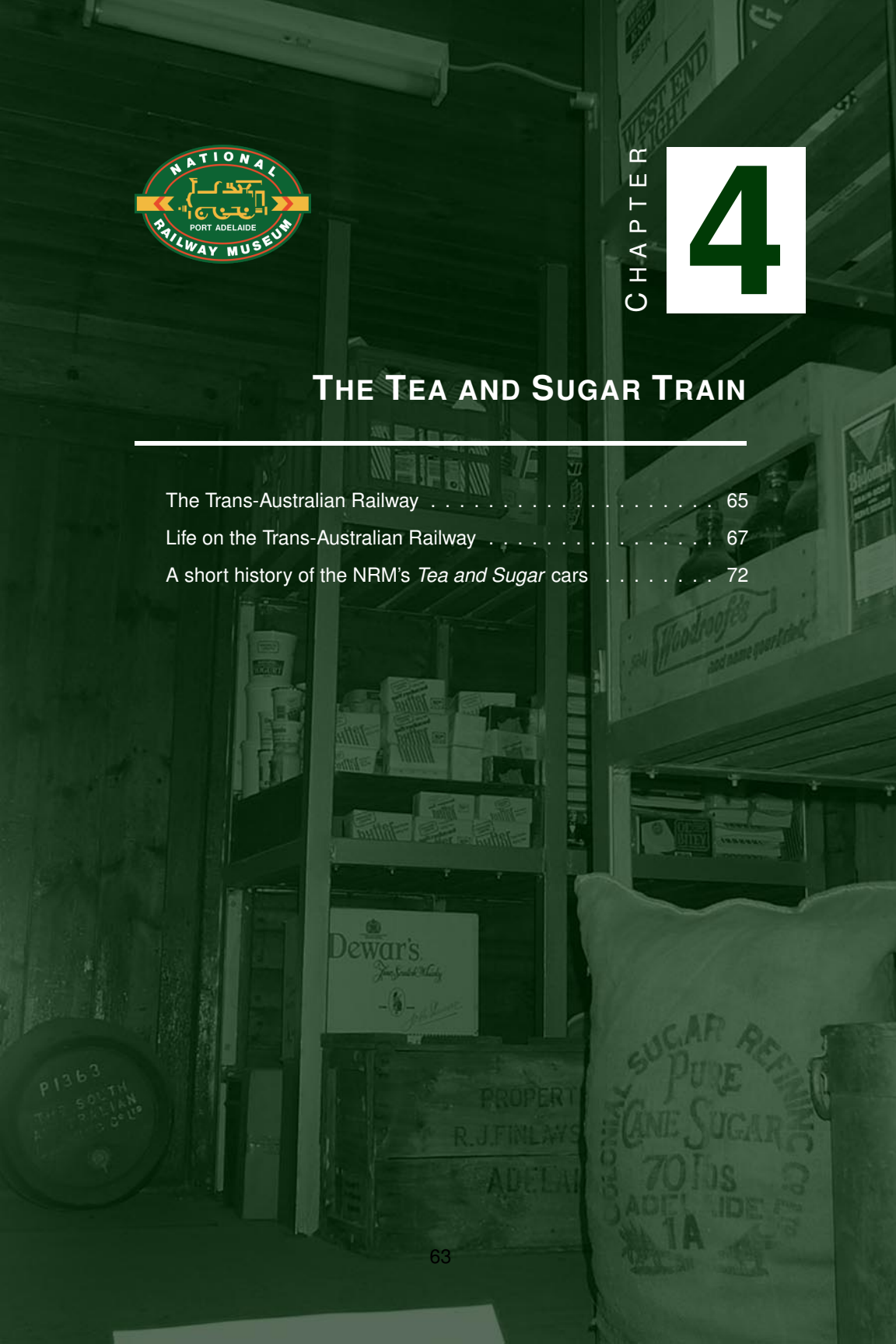


Australian National Locomotive BL34 hauls The Overland passenger train at Fosters Corner, Belair, South Australia - 12 February 1985 *(Australian National - NRM Collection 14-225-375)*



Locomotive NR16, NR33, BL33 on the 7YN2 departs Jamestown - 17 May 2003 *(Phil Curnow - NRM Collection 33-287-a18006)*

Enter the era of private rail companies running their own trains over a combination of Commercial, State and Commonwealth Government owned tracks. Today, rail operations are the domain of commercial companies, with only state based passenger services remaining in government hands.



CHAPTER 4

THE TEA AND SUGAR TRAIN

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WEST END LIGHT
Woodroofe's
Dewar's
PROPERT
R.J.FINLAW'S
SUGAR REFINING
PURE
CANE SUGAR
70 lbs
1A

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 constructions 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. 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 systems to which it connected. The original survey party decided on a route that was 1063 miles (1711 km) in length and it was agreed that it should be built to the then new Australian Standard rail gauge of 4 ft. 8½ in., despite the rail systems it connected to at either end being narrow gauge (3 ft. 6 in). 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 been 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

Section	System	Gauge
Perth- Kalgoorlie	Western Australian Government Railways (Westlander)	Narrow 1067 mm (3 ft. 6 in.)
Kalgoorlie - Port Pirie	Commonwealth Railways (Trans-Australian)	Standard 1435 mm (4 ft. 8½ in.)
Pt Pirie - Adelaide	South Australian Government Railways (East West Express)	Broad 1600 mm (5 ft. 3 in.)

Table 4.1: Changing trains on the journey from Perth to Adelaide

Port Pirie.



Commonwealth Railways Locomotive GA17 departing Kalgoorlie with a Trans-Australian passenger train - c.1936 *(NRM Collection - NRM Collection 1-1-11684)*

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. Colonial rivalries and differing priorities made it difficult to reach agreement as to 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 subsidies from their wealth and prosperity.

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

- the distance between her and the eastern seaboard (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 1000 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 at Ooldea.

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, to provide water both for the population and the steam locomotives. Unfortunately the water quality was poor and often brackish so frequently water supplies had to be carried into the area by the train.

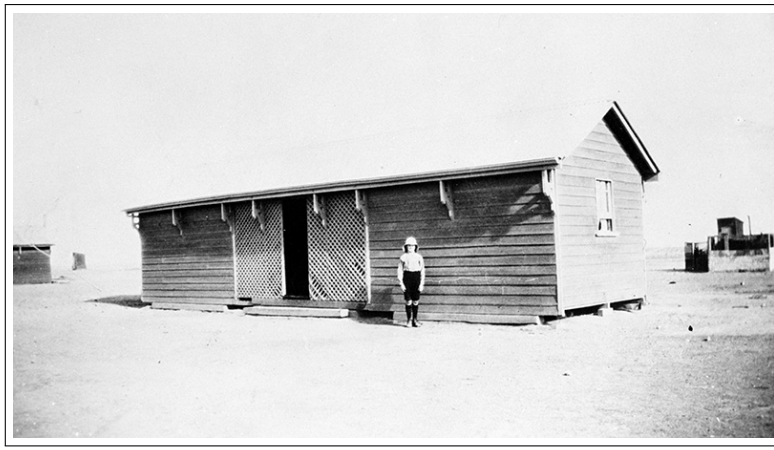
Life on the Trans-Australian Railway

From Port Augusta to Kalgoorlie, the Trans-Australian Railway was supported by small communities spaced about 30 km apart. These settlements faced remoteness, harsh climates, and limited access to essential services.

Housing and Living Conditions

Railway workers lived in three-room, T-shaped houses made from corrugated iron with open lattice-walled corridors. These structures had no insulation or refrigeration, and temperatures often exceeded 50°C. Cooking was done on wood stoves, and perishable food had to be prepared immediately after arrival by the weekly supply train - the *Tea and Sugar*.

Drinking water was collected from rainwater tanks, while all other water was delivered by train. Long-drop toilets and tin bathtubs served as sanitary facilities. Electricity was scarce; families used batteries and accumulators recharged at Port Augusta. Wind generators were used later, and by the 1960s, some larger camps received generators.



Commonwealth Railways Housing at Cook - 1927 *(Commonwealth Railways Collection - NRM Collection 14-217-an880420l-07)*



Australian National housing at Chandler on the Trans-Australian Railway - 16 July 1979 *(Department of Transport - NRM Collection 1-3-s02724)*

Refrigeration began with Coolgardie safes and progressed to kerosene and gas units. Lighting was provided by kerosene lamps. After dust storms, homes had to be cleaned by hand, with dust often needing to be shovelled out. Floods and mud followed rain, compounding living difficulties.

Work and Education

Men maintained the railway in difficult outdoor conditions. Children learned via correspondence lessons from Port Augusta, with mothers acting as teachers. Informal learning included bushcraft, often shared with local indigenous children.

Secondary education usually meant leaving home. A few students boarded in towns or pursued remote learning. Boys often aspired to become locomotive drivers, while girls typically became homemakers or entered nursing, teaching, or governess roles.

Women provided essential medical care and first aid. They assisted with childbirth and treated conditions like heat exhaustion and gastroenteritis using home remedies and shared experience.

The Role of the Tea and Sugar Train

The Tea and Sugar train served as a vital link, delivering supplies, fuel, and water to the railway communities and to local communities. Families pre-ordered goods, and meat was processed en route in a special van. Goats were kept for milk and butter, and firewood was dropped off at sidings.

Train arrivals were weekly community events. Residents dressed up, children explored the locomotive, and adults exchanged news. The crew served as informal mail carriers and sources of information across camps.

Modernisation and Decline

Over time, housing improved with air-conditioned transportable homes and solar hot water. Settlements gained recreational facilities, and satellite television became common. Cook, near the SA–WA border, had a swimming pool, basketball court, and recreation room.

Despite improvements, isolation remained. Staff turnover was high; between 1969 and 1974, nearly equal numbers were hired and left. Anyone fit and willing was typically accepted for work.

The Tea and Sugar train modernised as well. Wooden vans were replaced by refrigerated and insulated cars. The Butcher's Van delivered pre-packaged meat, milk, and ice cream. Cold Stores and



Residents on Trans line station loading purchases from the Tea & Sugar into wheel barrows *(NRM Collection 1-1-11331)*

Santa and the Tea & Sugar

One enduring tradition was the visit from Father Christmas, played by Alf Harris, a railway employee who donned the red suit from 1960 onward to bring joy to children on the Nullarbor.



Santa visiting the remote settlements by the Tea & Sugar - c.1980s *(NRM Collection 1-3-s03983)*

Provisions Vans carried fruit, vegetables, clothing, small household goods, and entertainment media.

In 1981, services to pastoral stations ended, and only railway employees could use the supply train. Others paid standard freight. By 1982, the train functioned as a mobile store, providing goods at Port Augusta prices. It continued to deliver bulk water, kerosene, and maintenance supplies.

Passenger cars and a fortnightly pay-van remained. The latter handled wages, banking, and postal needs.

Education and Communication

Remote students later accessed education via the DUCT telecommunication system or enrolled in the Open Access College at Marden or the Port Augusta School of the Air. Teachers occasionally visited students in person. Some towns like Cook had formal schools.

Welfare and Community Support

The Welfare Car, introduced in 1945, helped new settlers, including post-war migrants. Services grew to include mobile clinics, infant care, clergy visits, Aboriginal liaison, and support for family well being. Staff provided first aid training, maintained supplies, coordinated movie screenings, and handled emergencies.

The Royal Flying Doctor Service conducted monthly clinics and provided emergency advice and evacuations. Local radio contact with hospital nurses supplemented care.

Legacy and Decline

By 1985, only twelve railway camps remained, reduced to nine by 1987. Diesel locomotives had improved working conditions for crews, and faster travel times made supply more efficient. Nevertheless, the Tea and Sugar remained essential to life along the railway, offering goods, connection, and continuity to isolated communities.

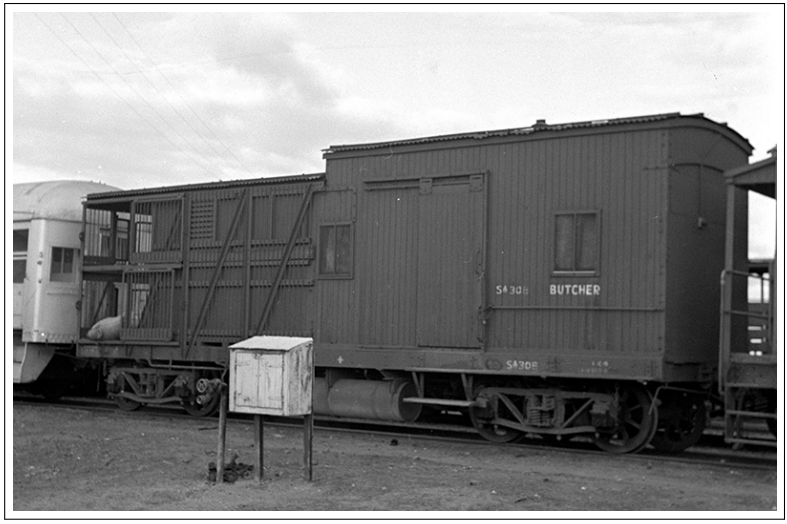
A short history of the NRM's *Tea and Sugar* cars

THE *Tea and Sugar* is well known to most people as the train that services the remote employees on Australian National's *Trans-Australian* line. It began life very early the 20th 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 1063 miles in length be built to the then new Australian Standard of 4 ft. 8½ in. gauge, 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 began 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.

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 pair of supply and butcher's vans initially began life in 1913 as B class four wheel ballast wagons built under



Tea & Sugar Butcher's Van SA308 at Port Augusta. It was created by combining a sheep wagon & an enclosed V class van *(Arnold Lockyer Collection - NRM Collection 7-1074-e124-04)*

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 butcher's 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 slaughtered 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 class 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 suspected it was just a standard enclosed 4 wheel VS class van.

Early in 1918 authorisation was granted to construct a replacement travelling butcher's 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 SA258 and SA308 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



Commonwealth Railways Tea & Sugar Provision Van OPA 1340 at the NRM - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1001780)*

their employees on 15th 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 Brothers) 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 VP351 and VP352. 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 rolling stock used on the *Tea and Sugar* until 1944 when two new bodies were built for use as mobile Butcher's cars. FA class van No.640 (see page 355) entered service on 20th November 1944, being constructed on a 45 ft. flat wagon that originally had been built in 1916. The other van FA658 entered service on 18th 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 11th September 1982. They were stored at Port Augusta and Stirling North for six years until FA640 was delivered to Port Dock Station Museum on 2nd August 1988 and FA658 was tendered for disposal. Unfortunately prior to being obtained by the Museum FA640 was badly vandalised and many fittings stolen.

In 1955 the two existing provision stored vans were replaced by two purposed built brand new all steel framed vehicles. Entering service on 18 October 1955, VPA1339 provided a far superior service and facilities to that of the then existing vans. The other provisions stores van VPA1340 (see page 360) 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'



Tea & Sugar consist with Locomotive G1 at the head of the consist - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053258)*

appeared above the words 'PROVISION STORE'. The other van VPA1340 entered service correctly painted.

Both vans were recoded from VPA to OPA on 30 November 1984 and officially written off on 3rd May 1986 with VPA1340 being transported to Port Dock Station Museum on 2 August 1988.

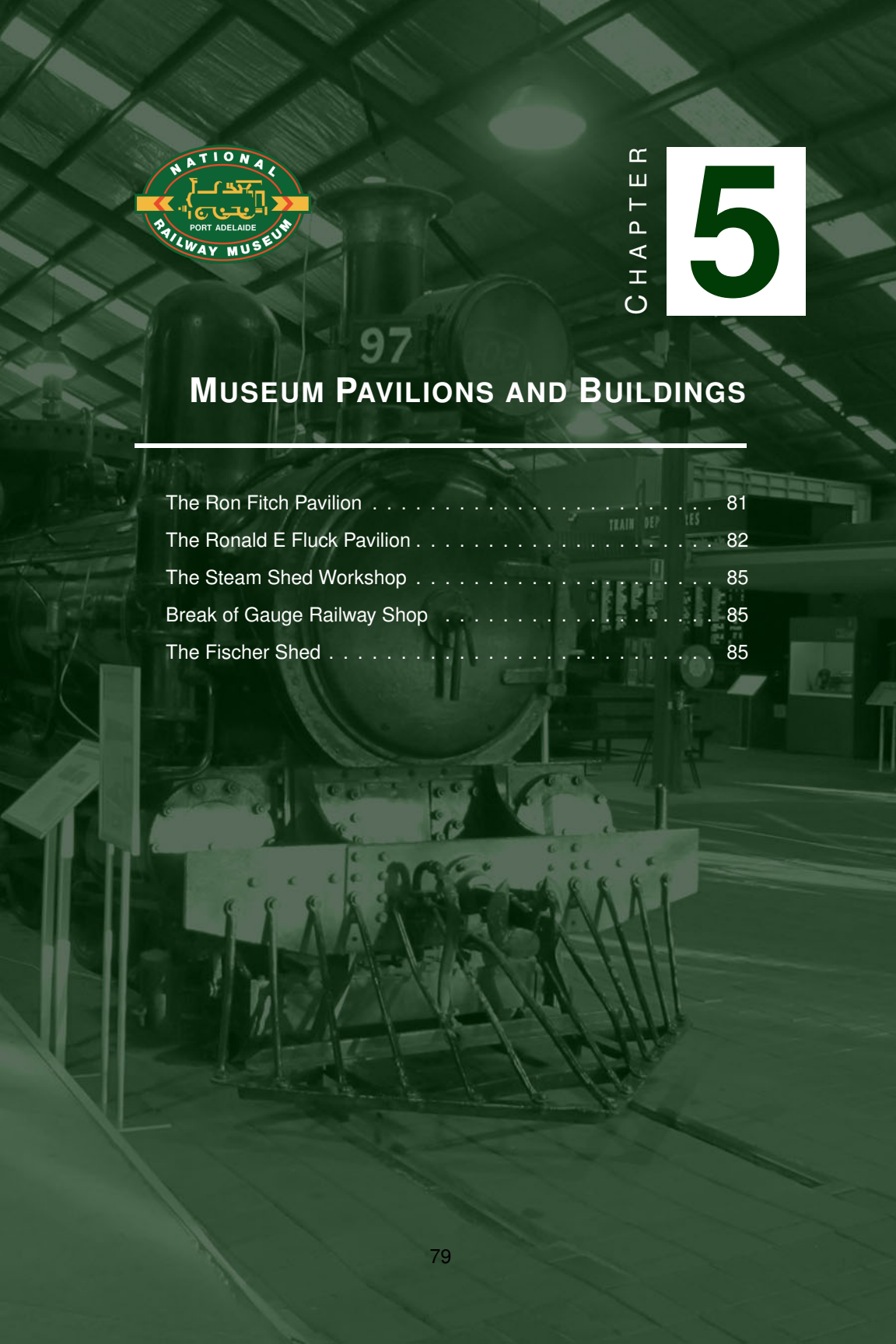
Both vans had become surplus due to Pullman sleeping cars *Macedon* and *Mount Lofty* being converted to new provisions store cars VPB74 and VPB328 respectively. The *Macedon* and *Mount Lofty* cars had originally been imported from America in 1928 for use as sleeping cars on the Adelaide to Melbourne Express (later named 'The Overland'). *Macedon* was sold to the Commonwealth by the Victorian Railways and entered service as twinette sleeping car ARC74 for use on the *Trans-Australian Railway* 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 VPB328, 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 29th October 1979 as VPB74. 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 where used occasionally on the

Tea and Sugar, these included Pay cars (see page 357), 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 where 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 Commonwealth Railways AR33 Sleeping Car page 310) 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.



CHAPTER 5

MUSEUM PAVILIONS AND BUILDINGS

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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 normally grouped together by the gauge over which they operated - broad, narrow or standard - though this can vary as many of the lines in the Pavilion are multi-gauge.

The centrepiece 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, as seen at Terowie until 1970. Similar breaks occurred at South Brisbane and Wallangarra in Queensland; Albury, Oaklands, and Tocumwal in New South Wales; Kalgoorlie in Western Australia; Hamley Bridge, Wolseley, Port Augusta, Port Pirie, Peterborough, Mount Gambier and Gladstone in South Australia. Excellent comparisons can be made between locomotive and carriage design, and most dramatically, size!

Arranged around the Pavilion are a number of display cabinets housing railway memorabilia, and rooms for 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 *Mr. Ron Fitch*, to acknowledge his dedication and effort



Museum exhibits on display inside the *Ron Fitch* Pavilion - 12 July 2014 *(Chris Drymalik - NRM Collection 275-373-p1119930)*



The *Ron Fitch* Pavilion at the NRM - 2 September 2001 *(Chris Drymalik - NRM Collection 275-373-p1001721)*



Museum exhibits on display in the *Ron Fitch* Pavilion at the NRM - 20 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1002182)*

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 Railways' rolling stock.



Locomotives on display inside the *Ron Fluck* Pavilion - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092309)*

In May 2009, the Pavilion was re-named after *Mr. Ronald E Fluck*, who was one of the founding members of the original Mile End Railway Museum, championed the establishment of the museum in its current location, and was a former Chairman and Life Member of the National Railway Museum.

Inside the Pavilion, visitors can explore a varied collection of locomotives, carriages, and freight vehicles that reflect the development of rail transport in Australia. From powerful steam locomotives to early diesels, and from elegant passenger coaches to rugged goods wagons, the exhibits showcase the diversity and evolution of railway operations. Interpretive panels positioned throughout the building provide historical background and technical details, helping visitors to understand how each vehicle functioned and its role within the broader railway network.



Some of the exhibits on display inside the *Ron Fluck* Pavilion - 29 February 2008 *(Chris Drymalik - NRM Collection 275-373-p1088851)*

The Steam Shed Workshop

LOCATED SOUTH-WEST OF the Ron Fitch Pavilion, the steam shed is where the Museum maintains its operating fleet of 457 mm gauge locomotives, as well as narrow gauge steam locomotive *Peronne* when operational. This is the former Australian National Port Dock Station workshop building used to house road vehicles and local repair equipment.

This building is not accessible to the public.

Break of Gauge Railway Shop



Break of Gauge Railway Shop - 29 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225633)*

THE *'Break of Gauge Railway Shop'* doubles as the Museum's gift shop and point of entrance to the museum. The Shop is located behind the white gates in Lipson Street. Entry to the Shop is free.

The Shop offers a range of railway books, including second hand ones appreciated by collectors, DVDs and souvenirs, inspired by the Museum's collection. The Shop also delights the little visitors with a handpicked range of toys and quality children's books. If you like browsing, we also have a large selection of preloved railway publications, and we have drinks and ice creams for sale as well.

The Museum Shop is staffed by Volunteers.

The Fischer Shed

THE TIM FISCHER Shed was opened in 2022 to provide cover for the Museum's expanding collection of operational rolling stock.



The *Fischer* Shed - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222048)*

The shed is named after former Deputy Prime Minister and NRM Patron Tim Fischer, who had a a long association with the National Railway Museum (NRM), and previous Port Dock Station Railway Museum.

Tim Fischer served as the Australian Deputy Prime Minister from 1996 to 1999, under the Howard Government, resigning as a Minister, and from Parliament altogether in 2001. Tim was always a passionate advocate for railways, and on this death, left a substantial bequest to the museum.

This building is not accessible to the public.



CHAPTER 6

HISTORIC BUILDINGS

Woodville Signal Cabin 89
Port Dock Station Goods Delivery Shed 91
Callington Station 92
Eudunda Gangs Shed 93
Avon Train Control Cabin 95



Woodville Signal Cabin

THE WOODVILLE SIGNAL CABIN was originally located at Woodville Railway Station and served under both the South Australian Railways and the State Transport Authority. It has since been relocated to the National Railway Museum and is now connected to the narrow-gauge demonstration yard on the western side of the site. The cabin is open for tours and offers a fascinating glimpse into the era of mechanical railway signalling.

Woodville Station opened in April 1856 as one of the first stops on the Adelaide to Port Adelaide line. In 1882, it became a junction when the privately built Grange Railway opened, which was later taken over by the South Australian Railways in 1891.



South Australia railcar STA redhen 436 on the Grange line passes the Woodville Signal Cabin as redhen 434 sits in the Port line platforms - Easter Monday 1989 *(Robert Haebich - NRM Collection 48-987-d097-21)*

During World War II, the area surrounding Woodville saw rapid industrial growth, including the construction of munitions and armaments factories. This led to the development of two new industrial railway branches and upgrades to the station. In 1942, the original 1856 station building was demolished, and a new signal cabin was constructed next to the Woodville Road level crossing.

With the advent of modern signalling systems in the late 1980s, the Woodville signal cabin became obsolete and was relocated to the Museum to preserve this important piece of South Australian railway



Woodville Signal Cabin interior showing the lever frame and railway safety equipment - 13 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222084)*

heritage.

Inside the cabin is a traditional mechanical lever frame, mounted beneath the operator's floor. Each lever is connected by rods or wires to points and signals in the adjacent yard. An interlocking system ensures the levers can only be moved in the correct sequence, preventing conflicting train movements and maintaining safe operation.

All signal cabins in South Australia have now been closed, with rail traffic managed through centralised control systems. This preserved cabin is a rare and tangible reminder of how railways were once operated - lever by lever, signal by signal.

Port Dock Station Goods Delivery Shed



Looking down the Port Dock Station Goods Shed - 12 February 2011
(Chris Drymalik - NRM Collection 275-373-p1092300e)

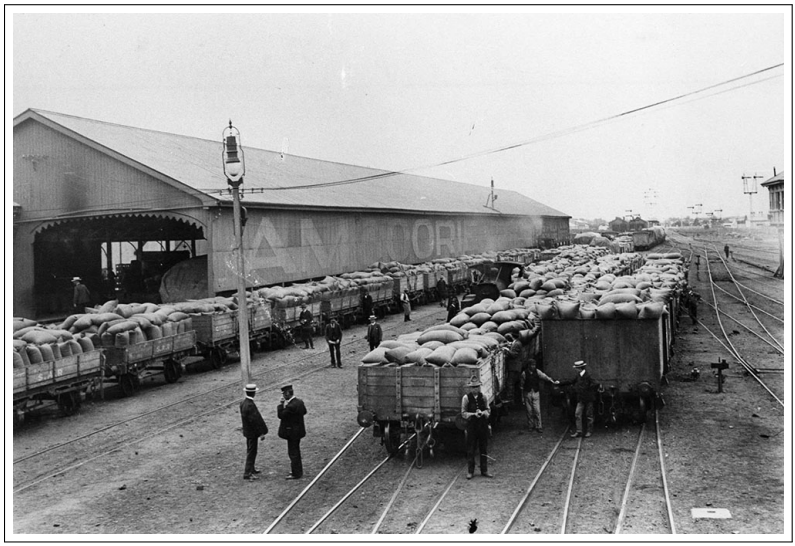
THE ORIGINAL 1878 Port Dock Station Goods Shed is included as part of the Museum complex. It is located to the East of the Ron Fitch Pavilion. Access to the building is by the pathway on the eastern side of the *Callington Station* platform.

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, and is the largest railway goods shed remaining in South Australia. The timber posts support timber trusses over two rail tracks and a goods loading platform. The roof is a corrugated galvanised

iron. Other than a goods office extension at the north end, little has changed with the building since it was originally erected.

Situated on what was the original eastern boundary of the Port Dock Station yard, the Goods Delivery Shed provided undercover accommodation for two goods trains, each carrying approximately 16 four wheel freight wagons. It was built as a response to the increased rail traffic and expansion of facilities in Port Adelaide and the wharf area.

The Port Dock Delivery Goods Shed is the only surviving building of the original Port Dock Station complex, and because of its historic significance has been included on the South Australian Register of State Heritage Items.



An early view of Port Dock Delivery Goods Shed with locomotive SAR K68 shunting wagons in yard *(NRM Collection 1-1-09987)*

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 1970'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



Callington Station and platform - 31 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222576)*

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.

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 13 June 1994. However train rides are now included in the price of admission (excluding some special events).

Eudunda Gangs Shed

LOCATED AT REAR of the *Ron Fitch Pavilion* is the former Eudunda Gang Shed. Eudunda is a rural town in the Mid North of South Australia, located on the former broad gauge Robertstown branch line,

which diverged from the main line between Adelaide and Morgan. The railway reached Eudunda in the 1870s and was central to the town's agricultural economy, especially for grain transport. As with many railway locations, Eudunda had a *'ganger's shed'* - a simple structure used by permanent way crews (often called *'gangers*') who were responsible for the inspection, repair, and day-to-day upkeep of the railway track and formation.



Eudunda Gangers Shed at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092312)*



Eudunda Gangers Shed being pulled down by for transfer to the Museum - 1990 *(Murray Billett - NRM Collection 17-232-mb-n010-11)*

The gangers shed would have stored tools such as track gauges, spiking hammers, fishplates, bolts, jacks, and replacement sleepers. It also provided a base for crews to rest or take shelter between work tasks, and it often housed the crew's trolley - a manually or motor-powered vehicle used to patrol sections of line.

The shed was built from corrugated iron/timber and located beside one of the yard sidings where trolleys could be easily set onto the rails.

It was purchased, dismantled and relocated by members of the museum in 1990.

Avon Train Control Cabin

THE AVON TRAIN CONTROL cabin comes from the former railway siding and township of Avon, located between Bowmans and Long Plains in South Australia's mid-north.



Avon Train Control Cabin with the Woodville North Station Sign Board at the Museum - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222058)*

Before the era of mobile communication, cabins like this were essential for keeping trains moving safely and efficiently. Drivers relied on these fixed-line telephones to contact Train Control or nearby stations if delays or hazards - such as a fallen tree on the line - occurred.

This particular cabin was equipped with two telephones. One had a direct line to Train Control, while the other was a party line connecting multiple stations along the route. The party line telephone included a winding handle, which was turned in short and long bursts to signal different locations—such as *SHORT-SHORT-LONG* for a specific station. Each station had its own unique code, ensuring clear and efficient communication across the network.



A Train Control Cabin similar to Avon one was located at Penrice, near Angaston, South Australia - 21 August 1992 *(Chris Drymalik - NRM Collection 275-372-10689-k)*

CHAPTER 7

STEAM LOCOMOTIVES

500 Class 4-8-4 Steam Locomotive No.504 - *Tom Barr Smith* - South Australian Railways - Broad Gauge 99

520 Class 4-8-4 Steam Locoomotive No.523 - *Essington Lewis* - South Australian Railways - Broad Gauge 103

620 Class 4-6-2 Steam Locomotive No.624 - South Australian Railways - Broad Gauge 107

700 Class 2-8-2 Steam Locomotive No.702 - South Australian Railways - Broad Gauge 111

750 Class 2-8-2 Steam Locomotive No.752 - South Australian Railways - Broad Gauge 115

F class 4-6-2 Steam Locomotive No.255 - South Australian Railways - Broad Gauge 120

P Class 2-4-0 Steam Locomotive No.117 - South Australian Railways - Broad Gauge 124

Rx Class 4-6-0 Steam Locomotive No.93 - South Australian Railways - Broad Gauge 127

G class 4-6-0 Steam Locomotive No.1 - Commonwealth Railways - Standard Gauge 131

400 Class 4-8-2+2-8-4 Steam Locomotive No.409 - South Australian Railways - Narrow Gauge 134

T Class 4-8-0 Steam Locomotive No.253 - South Australian Railways - Narrow Gauge 137

Y Class 2-6-0 Steam Locomotive No.97 - South Australian Railways - Narrow Gauge 141

NM class 4-8-0 Steam Locomotive No.34 - Commonwealth Railways - Narrow Gauge 143

A Class 4-6-0 Steam Locomotive No.21 - Silverton Tramway Company - Narrow Gauge 147

W Class 4-8-2 Steam Locomotive No.25 - *H.F. (Gerry) Walsh* - Silverton Tramway Company - Narrow Gauge 150

Y Class 2-6-0 Steam Locomotive No.12 - Silverton Tramway Company - Narrow Gauge 153

BHP 4-6-0 Steam Locomotive No.4 - Broken Hill Proprietary Company - Narrow Gauge 156

0-6-0 Steam Locomotive No.4 - *Peronne* - Broken Hill Associated Smelters - Narrow Gauge 158

0-6-2T Steam Locomotive No.2 - *Skipper* - Qunaba Mill - 2 Foot Gauge 162



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

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Class Builders	Sir W. G. Armstrong-Whitworth & Co., Newcastle-on-Tyne, England
Ownership	History Trust of South Australia
Number in class	10
Number series	500 - 509
Designer	F. J. Shea
Entered service	18 October 1926
Condemned	9 July 1962
Entered the museum	23 July 1965
Length (over coupling points)	84 ft. 2 in. (25.654 metres)
Total Weight	222 tons 6 cwt (225.856 tonnes)
Tractive Effort	59,000 lbs (9262.45 kN)
Wheel Arrangement	4-8-4 (4-8-2 original)
Driving Wheels Diameter	63 in. (1600 mm)
Maximum Axle Load	22 tons 3 cwt (22,504 kilograms)
Boiler Pressure	200 lbs psi
Cylinders	2x outside 26 in. x 28 in. (660 mm x 771 mm)
Valve Gear	Walschaerts
Water Capacity	7,000 gallons (31,822 litres)
Coal Capacity	11 tons (11,176 kilograms)
Grate Area	66.6 sq ft (6.19 sq m)
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 7.1: Details of 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 Mount 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 Mount Lofty, and locomotives of sufficient power to

conquer the 1 in 45 grades designed and built.



30 April 1988, Steam Engine 504 at Mile End Diesel depot on it's way down to Port Dock *(Chris Drymalik - NRM Collection 275-374-n08337a-25)*

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. The designs were heavily influenced by contemporary American practice. They were to become 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 almost two-and-a-half times more powerful than the Rx class. Whereas an Rx unaided could haul 190 tons over Mount 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 auxilliary steam engines that drove the trailing wheels of the locomotive). 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



loco SAR 504 hauls a freight train through Mount Lofty station - 14 May 1927 *(NRM Collection 1-1-03561)*



15 October 1961, loco 504 sits in the platform at Murray Bridge with an Australian Railway Historical Society special passenger *(George Bishop - NRM Collection 1-3-s06947)*



20 December 1946 at the Loco Depot, Mile End, engine 504 takes water with loco Rx215 and a coaling crane in the background *(George Sweetapple - NRM Collection 20-238-b0525)*



SAR locomotive 504 on a Down Tailem Bend freight at Blackwood in 1952 - behind the loco is and Overland Mail van *(Douglas Colquhoun - NRM Collection 2-71-a0376)*

increase in the engine load over Mount Lofty to 540 tons. The 500s were now 4-8-4s and were reclassified 500B. No.504 was modified and reissued to traffic on 23 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 1960s only Nos.500 and 504 remained available for traffic. Both were used for a time on excursions run for the Australian Railway Historical Society (ARHS), 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 Locoomotive No.523 - *Essington Lewis* - South Australian Railways - Broad Gauge

ENGINE 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.

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

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Class Builders	South Australian Railways Islington Workshops
Number in class	12
Number series	520 - 531
Designer	F. H. Harrison
Entered service	14 August 1944
Condemned	21 August 1969
Entered the museum	28 November 1968
Length (over coupling points)	87 ft. 4.375 in. (26.628 metres)
Total Weight	200.675 Tons (203.885 tonne)
Wheel Arrangement	4-8-4
Driving Wheels Diameter	66 in. (1670 mm)
Maximum Axle Load	15 tons 16 cwt (16.052 tonnes)
Boiler Pressure	215 lbs psi (91,482.37 kPa)
Cylinders	2x outside 20½ in. x 28 in. (520 mm x 711 mm)
Valve Gear	Walschaerts
Tractive Effort	32,600 lbs (145 kN)
Coal Capacity	9½ tons (9,906 kilograms)
Grate Area	45 sq ft (4.180 sq m)
Water Capacity	9100 gallons (41,369 litres)
Maximum Speed	70 mph (112 km/h)
Mileage	551,955 miles (888,261 kilometres)

Table 7.2: Details of 520 Class 4-8-4 Steam Locoomotive No. 523 - *Essington Lewis* - South Australian Railways - Broad Gauge

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,



Loco SAR 523 with a special passenger train on the Onkaparinga River bridge at Noarlunga, South Australia, 15 May 1968 *(Phil Curnow - NRM Collection 33-287-b06774)*



Loco SAR 523 taking water *(John James - NRM Collection 420-411-a0185)*

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 then-current difficulties in acquiring sufficient coal. As with most of the locomotive class 523 was to be later modified



Loco SAR 523 with a passenger train in the platform at Riverton Station, South Australia *(John James - NRM Collection 420-411-a0186)*



Loco SAR 523 with a mixed train, likely destined for Port Pirie, departs Adelaide Station, South Australia *(John James - NRM Collection 420-411-a0193)*



Loco SAR 523 light engine passes under the pedestrian foot bridge at Port Pirie Junction (Solomontown), South Australia, 8 September 1962 *(Graham Ahern - NRM Collection 330-1405-62-w01-07)*

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. Sister locomotive 524 worked the last 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, revolutionised 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



Tailem Bend - South Australia steam locomotive 624 with a mixed consist passes under the signal gantry with a Down Pinnaroo mixed *(Bill Callaghan - NRM Collection 107-1061-180)*



1937 South Australia SAR loco 624 newly built *(STA Collection - NRM Collection 275-373-p1149339)*

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Class Builders	South Australian Railways Islington Workshops
Number in class	10
Number series	620 - 629
Designer	F. J. Shea
Entered service	17 July 1937
Condemned	7 September 1967
Entered the museum	14 April 1967
Length (over coupling points)	69 ft. 8 in. (21.234 metres)
Total Weight	140 tons 15 cwt (143.002 tonnes)
Tractive Effort	25,000 lbs (111.21 kN)
Wheel Arrangement	4-6-2
Driving Wheels Diameter	66 in. (1676 mm)
Maximum Axle Load	15 tons 18 cwt (16.154 tonnes)
Boiler Pressure	200 lbs psi
Cylinders	2x outside - 18½ in. x 28 in. (470 mm x 711 mm)
Valve Gear	Baker
Coal Capacity	9 tons (9,144 kilograms)
Grate Area	33.4 sq ft (3.10 sq m)
Water Capacity	5,200 gallons (23,639 litres)
Mileage	704,164 miles (1,133,211 kilometres)
Maximum Speed	70 mph (112 km/h)

Table 7.3: Details of 620 Class 4-6-2 Steam Locomotive No.624 - South Australian Railways - Broad Gauge

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 resplendent in a livery of green and cream. The remainder of the class were un-streamlined but featured a front-end design that was unique in Australia and was found in just a few railways internationally, including Great Britain and Spain. All were fitted with Baker's valve gear, the only South Australian Locomotives to be so equipped.

No.624 was placed in service on 17 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 Harbour. 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 14 April 1967 but was not officially written off until 7th September. It was moved to the Port Adelaide site on 2 October 1988.



11 September 2004 South Australia loco SAR 624 in main yard at the NRM *(Chris Drymalik - NRM Collection 275-373-p1016089)*

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	20 September 1926
Condemned	9 July 1964
Entered the museum	1 June 1965
Length (over coupling points)	73 ft. 2 in. (22.3 metres)
Total Weight	171 tons 3 cwt (173,888 tonnes)
Wheel Arrangement	2-8-2
Driving Wheels Diameter	57 in. (1448 mm)
Maximum Axle Load	18 tons 18 cwt (19,202 tonnes)
Boiler Pressure	200 lbs psi (1,37 kPa)
Cylinders	2x outside - 22 in. x 28 in. (559 mm x 711 mm)
Valve Gear	Walschaerts
Tractive Effort	40,400 lbs (179.7 kN)
Coal Capacity	17 tons (17.272 tonnes)
Grate Area	47 sq ft (4.36 sq m)
Water Capacity	5,900 gallons (26,821 litres)
Mileage	775,526 miles (1,248,053 kilometres)
Maximum Speed	45 mph (72 km/h)

Table 7.4: 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.

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.



SAR loco 702 on a freight train at Belair, South Australia *(NRM Collection 1-1-14562)*

No.702 was given builder's number 645 of 1926 and was placed in service on 20 September 1926.



South Australian Railways locomotive 702 pulled the first train to Renmark in 1928 (1-5-pd0148) *(NRM Collection 1-5-pd0148)*

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 Mount Lofty while an Rx class could manage only 190 tons.



11 September 2004 South Australia loco SAR 702 on Jacketts siding at the NRM. This is now the location of the Port Dock suburban passenger platform *(Chris Drymalik - NRM Collection 275-373-p1208179)*

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 class, which were substantially 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 9 July 1964 and placed in the Mile End Railway Museum on 1 June 1965.

Steam Locomotive Wheel Arrangement - Names

Whyte Notation is a system used to classify steam locomotive wheel arrangements by counting the number of wheels (not axles) in three parts. Each number represents the **total number of wheels** (not axles) in a specific group:

- **Leading wheels:** Small wheels at the front that help guide the locomotive into curves.
- **Driving wheels:** Large powered wheels connected to the pistons — they move the train and provide traction.
- **Trailing wheels:** Small wheels at the rear that support the weight of the firebox and boiler.

Notation	Name	Leading	Driving	Trailing
0-10-0	Decapod	0	10	0
2-2-0	Planet type	2	2	0
2-6-0	Mogul	2	6	0
2-8-0	Consolidation	2	8	0
2-10-0	Decapod	2	10	0
4-4-0	American	4	4	0
4-6-0	Ten-wheeler	4	6	0
4-8-0	Mastodon	4	8	0
4-4-2	Atlantic	4	4	2
2-6-2	Prairie	2	6	2
2-8-2	Mikado	2	8	2
2-10-2	Santa Fe	2	10	2
4-6-2	Pacific	4	6	2
4-8-2	Mountain	4	8	2
4-10-2	Southern Pacific	4	10	2
4-6-4	Hudson	4	6	4
4-8-4	Northern	4	8	4
2-6-6-2	Mallet (articulated)	2	6+6	2
2-8-8-2	Mallet (articulated)	2	8+8	2
2-8-8-4	Yellowstone	2	8+8	4
4-6-6-4	Challenger	4	6+6	4
4-8-8-4	Big Boy	4	8+8	4
2-6-0+0-6-2	Garratt	2	6+6	2
0-4-0+0-4-0	Double Fairlie	0	4+4	0

Note: When the South Australian Railways fitted locomotives with booster units, their wheel arrangement technically changed to a new type. However, the railway continued to refer to them by their original (now technically incorrect) classification. As a result, locomotives of the South Australian Railways are often described as *Mountain* type, even though they have a *Northern* type wheel arrangement.

Steam Locomotive Wheel Arrangement - Suffix

A number of standard suffixes can be used to extend the Whyte notation for tank locomotives:

Suffix	Meaning	Example
[No Suffix]	Tender locomotive	0-6-0
T	Tank locomotive	0-6-2T
ST	Saddle tank locomotive	0-4-0ST
WT	Well tank locomotive	0-4-0WT
PT	Pannier tank locomotive	0-6-0PT
C or CT	Crane tank locomotive	0-6-2CT
IST	Inverted saddle tank locomotive	0-4-2IST
T+T (or ST+T, WT+T)	Tender-tank locomotive	0-4-0T+T
WT	Wing tank locomotive	0-4-0WT
RT	Rear tank locomotive	0-4-4RT

Various other types of steam locomotive can be also denoted through suffixes:

Suffix	Meaning	Example
VB or VBT	Vertical boilered locomotive	0-6-0VB
F	Fireless locomotive	0-6-0F
CA	Compressed air locomotive	0-6-0CA
R	Railcar	0-4-4-0R
R or RT	Rack locomotive	0-4-0RT

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.

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

Class operators	South Australian Railways
Condition	Excellent
Provenance	Victorian Railways. Transfered to South Australian Railways as N477 on 16th February 1951.
Ownership	History Trust of South Australia
Number in class	10
Condemned	750 - 759
Designer	A. E. Smith
Built by	North British Locomotive Co., Glasgow, Scotland
Entered service	2 March 1951 (S.A.R. service)
Withdrawn	21 August 1967
Entered the museum	14 April 1967
Length (over coupling points)	67 ft. 5 in. (20.5486 metres)
Total Weight	124 tons 13 cwt (126.644 tonnes)
Wheel Arrangement	2-8-2
Driving Wheels Diameter	55¾ in. (1416 mm)
Maximum Axle Load	13 tons 17 cwt (14.071 tonnes)
Cylinders	2x outside - 20 in. x 26 in. (508 mm x 660 mm)
Valve Gear	Walschaerts
Boiler Pressure	175 lbs psi (1206 kPa)
Tractive Effort	28,650 lbs (127.4 kN)
Coal Capacity	6 tons (6.096 tonnes)
Grate Area	31 sq ft (2.87 sq m)
Water Capacity	4,600 gallons (20,912 litres)
Mileage	262,593 miles (423,170 kilometres)
Maximum Speed	60 mph (96 km/h)

Table 7.8: Details of 750 Class 2-8-2 Steam Locomotive No.752 - South Australian Railways - Broad Gauge



Locomotive 752 with ARHS special train from Willunga on bridge at 27 miles on 8 December 1963 *(Ron Fluck - NRM Collection 124-1339-00547)*



Locomotive 752 with ARHS Willunga special train at Oaklands, South Australia *(Dean Carver and Alf Francis Slide Collection - NRM Collection 518-507-001)*

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.

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.



21 November 1963 loco 752 sit in the platform at Adelaide Station on Santa Special for Semaphore, Outer Harbour and Grange *(Wal Jack - NRM Collection 4-96-3192)*

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 with 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 14 April 1967 and formally written off on 21 August 1967.



Locomotive 752 at the NRM on 22 March 2025 *(Chris Drymalik - NRM Collection 275-373-p1224480)*

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 an express run.



South Australia Railways Steam Locomotive F255 at with a suburban passenger train at Sleeps Hill, South Australia in December 1955 *(Douglas Colquhoun - NRM Collection 2-71-a0110)*

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 begun 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.

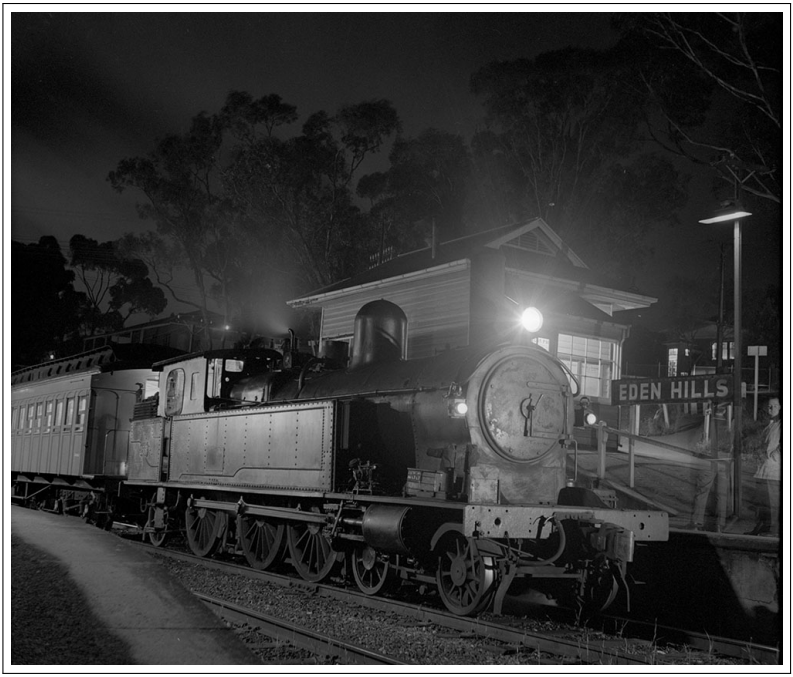
The first, No.167 was outshopped by the Islington Works and placed in service in April 1902. Eventually, forty-three were built, the last being No.255, built by the Perry Engineering Company and placed in service 6th October 1922. Known as *Dolly Grays* (after a song popular at the time of their introduction),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

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	6 October 1922
Withdrawn	21 August 1969
Entered the museum	19 April 1967
Length (over coupling points)	40 ft. 7¼ in. (12.376‘metres)
Total Weight	59 Tons (59,944 tonnes)
Maximum Speed	60 mph (96.54 km/h)
Wheel Arrangement	4-6-2
Driving Wheels Diameter	63 in. (1600 mm)
Maximum Axle Load	12 tons 6 cwt (12.96 tonnes)
Boiler Pressure	185 lbs psi (1,275 kPa)
Cylinders	2x outside - 17½ in.x 24 in. (444 mm x 609 mm)
Valve Gear	Stephenson
Tractive Effort	18,335 lbs (81.56 kN)
Coal Capacity	2¼ Tons (2286 kilograms)
Grate Area	18 sq ft (1.67 sq m)
Water Capacity	1,160 gallons (5273 litres)
Mileage	905,627 miles (1,457,153 kilometres)

Table 7.9: Details of F class 4-6-2 Steam Locomotive No.255 - South Australian Railways - Broad Gauge



South Australia Railways Steam Locomotive F255 at the NRM on 28 October 2006 *(Chris Drymalik - NRM Collection 275-373-p1030742)*



Steam Locomotive F255 with an Australian Railway Historical Society special passenger bound for Belair sits in Eden Hills station platform on 13 November 1963 *(Douglas Colquhoun - NRM Collection 2-71-a2672)*

The F class worked all suburban lines from Gawler to Seacliff 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.



On 24 August 1964 Steam Locomotive F255 is seen at the head of a rake of goods wagons in the Mile End Yard *(Ron Fluck - NRM Collection 124-1338-pd1068)*

No.255 was written off on 21 August 1969, after being placed in the Mile End Railway Museum on 19 April 1967. It was placed at the museum on 2 October 1988.

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 (later known as X10 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

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	12 June 1893
Withdrawn	17 December 1956
Entered the museum	24 August 1964
Length (over coupling points)	28 ft. 5 in. (8.66 metres)
Total Weight	33.70 tons (34.239 tonnes)
Wheel Arrangement	2-4-0
Driving Wheels Diameter	60 in. (1524 mm)
Maximum Axle Load	12 tons 7 cwt (12.553 tonnes)
Boiler Pressure	145 lbs psi (1,000 kPa)
Cylinders	2x inside - 16 in. x 20 in. (406 mm x 508 mm)
Valve Gear	Stephenson
Tractive Effort	10,517 lbs (46.78 kN)
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 7.10: Details of P Class 2-4-0 Steam Locomotive No.117 - South Australian Railways - Broad Gauge

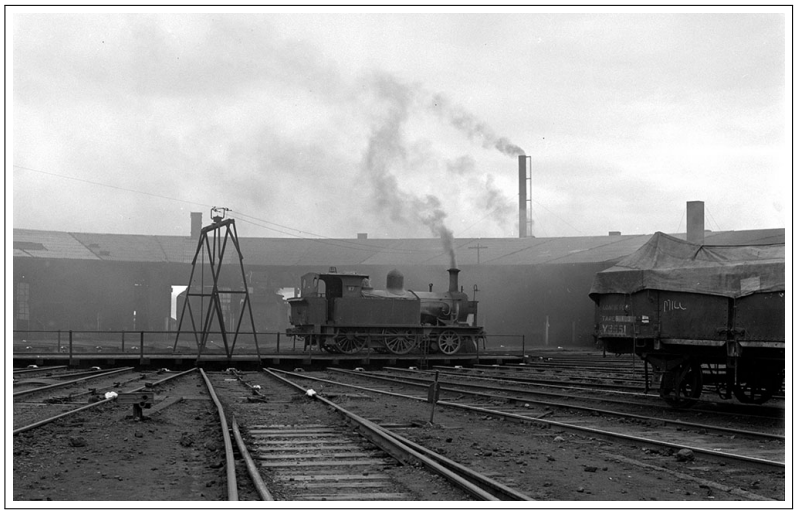


South Australian Railways Steam Locomotive P117 shunting in Timpson Place, Port Adelaide on 30 August 1952 *(Ron Stewien - NRM Collection 215-1237-sb0098)*



South Australian Railways Locomotives P72 and P117 back to back in the Port Adelaide Loco Depot Yard in 1951 *(Lionel Bates - NRM Collection 2-71-a0127)*

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.



South Australian Railways Steam Locomotive P117 on the turntable at Tailem Bend on 10 June 1956 *(Ron Stewien - NRM Collection 215-1237-s2707)*

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 Tailem 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 24 August 1964, and was moved to the Port Adelaide site on 29 October 1988.

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

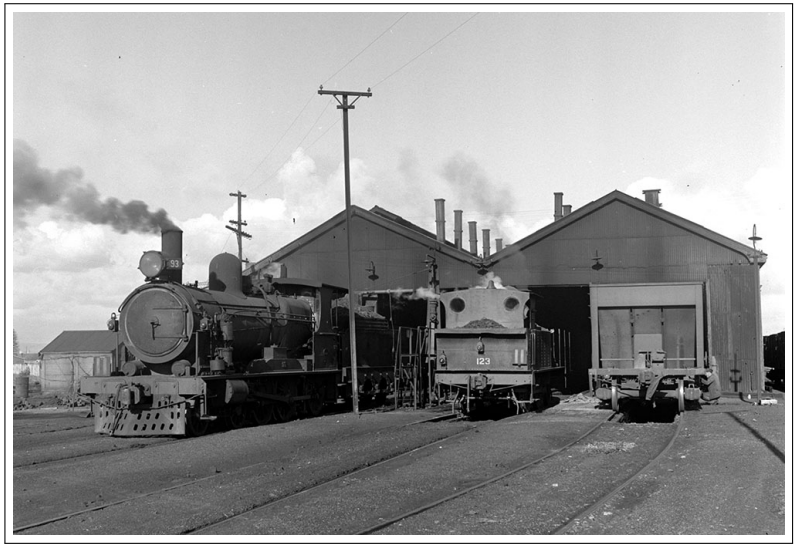
IN 1886 THE South Australian Railways placed in service six handsome 4-6-0 locomotives built by the Scottish builder Dubs & Co. These were the first members of the R class and later, after rebuilding, the Rx class which eventually amounted to 84 engines, the

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	29 March 1886
Condemned	28 October 1966
Entered the museum	28 September 1966
Length (over coupling points)	57 ft. 11¾ in. (17.67 metres)
Total Weight	88 tons 12 cwt (90.017 tonnes)
Maximum Speed	60 mph (96.54 km/h)
Wheel Arrangement	4-6-0
Driving Wheels Diameter	54 in. (1371 mm)
Maximum Axle Load	11 tons 8 cwt (11.582 tonnes)
Boiler Pressure	175 lbs psi (1,206 kPa)
Cylinders	2x outside - 18 in. x 24 in. (457 mm x 609 mm)
Tractive Effort	21,420 lbs (95.2 kN)
Coal Capacity	7 tons 15 cwt (7.874 tonnes)
Grate Area	20.27 sq ft (1.88 sq m)
Water Capacity	4120 gallons (18,729 litres)
Mileage	1,312,446 miles (2,112,119 kilometres)

Table 7.11: Details of Rx Class 4-6-0 Steam Locomotive No.93 - South Australian Railways - Broad Gauge



South Australian Railways Locomotive Rx93 on the Commercial Road Viaduct at Port Adelaide in 1953 with an Up Glanville freight *(Douglas Colquhoun - NRM Collection 2-71-a0182)*



South Australian Railways Steam Locomotives Rx93 and P123 sit out front of the Loco Depot Sheds at Port Adelaide on 18 June 1956 *(Ron Stewien - NRM Collection 215-1237-s2736)*

most numerous class on the broad gauge. Locomotive No.93, which had been given builder's number 2142 of 1885, was one of the original R class batch, and entered service on 29 March 1886.

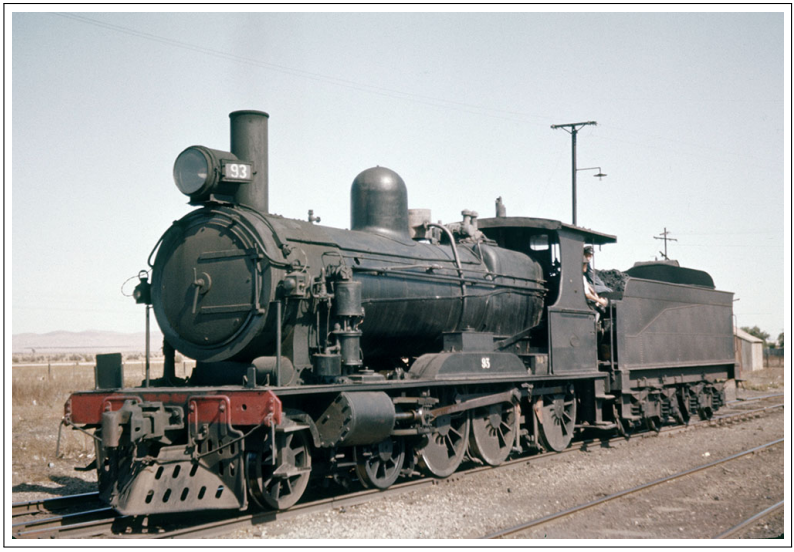
Used primarily for goods haulage over the steeply graded main south line they were soon also hauling the *Intercolonial Express* between Adelaide and Murray Bridge after the South Australian and Victorian Railways had been joined at Serviceton in January 1887.



South Australian Railways Locomotive Rx93 on a down holiday passenger train at Blackwood on 22 January 1912 *(Guy Williams Collection - NRM Collection 251-1308-gw-111)*

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 very 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.



South Australian Railways Locomotive Rx93 in the yard at Terowie, South Australia, during March 1964 *(Graham Ahern - NRM Collection 330-1405-64-06-16)*

G class 4-6-0 Steam Locomotive No.1 - Commonwealth Railways - Standard Gauge

THE COMMONWEALTH RAILWAYS, precursor to the later Australian National, was unique among Australian government railways in that it relied upon other railways, namely the New South Wales and Queensland Railways, for its steam locomotive designs. The G class were built to William Thow's highly successful design for the New South Wales Government Railways' (NSWGR'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 *'Transconinental 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 roads at 'Siberia', Port Augusta, but because of its historical

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	2 March 1914
Withdrawn	August 1945
Entered the museum	17 December 1969
Overall Length	59 ft. 8 in. (18.186 metres)
Total Weight	106 tons 4 cwt (108.06 tonnes)
Wheel Arrangement	4-6-0
Cylinders	2x outside - 20 in. x 26 in. (508 mm × 660 mm)
Valve Gear	Allan
Tractive Effort	22,200 lbs (98.75 kN)
Coal Capacity	7½ tons (7.620 tonnes)
Water Capacity	3,650 gallons (16,593 litres)

Table 7.12: Details of Steam Engine G class 4-6-0 Steam Locomotive No.1 - Commonwealth Railways - Standard Gauge



Commonwealth Railways Steam Locomotive G1 sits in the workshop yard at Port Augusta on 24 April 1965 *(NRM Collection 1-3-s05788)*



Commonwealth Railways Steam Locomotive G1 gets it's smoke box swept out at the Loco Depot Port Pirie June 1943 *(Wal Jack - NRM Collection 4-96-1639)*



Commonwealth Railways Locomotive G1 at Port Augusta on 24 April 1965 *(Graham Ahern - NRM Collection 330-1405-65-21-14)*



Commonwealth Railways Locomotive G1 is seen during a shunt at the NRM on 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053256)*

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.A. Smith. It was gratefully accepted and placed on display on 17 December 1969. On 14 July 1988 it made yet another journey when it was transported by road to the Port Adelaide site.

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 class 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, *Sociétée Franco-Belge de Matériel 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 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 60 class of the East African Railways, the 400's were oil-burners, but with provision for the installation of a mechanical

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Class Builder	Sociétée Franco-Belge De Matériel Des Chemins De Fer Raismes, France (Under licence to Beyer Peacock & Co. - Manchester, England)
Number in Class	10
Number Series	400 - 409
Entered service	6 September 1954
Condemned	1 May 1970
Entered the museum	17 November.1970
Length (over coupling points)	87 ft. 5 in. (26.644 metres)
Total Weight	148 tons 19 cwt (151.35 tonnes)
Wheel Arrangement	4-8-2+2-8-4
Driving Wheel Diameter	4 ft. (1.219 metres)
Cylinders	4x outside - 16 in. x 24 in. (406.4 mm × 609.6 mm)
Tractive Effort	43,520 lbs (193.58 kN)
Fuel Capacity	6 tons (1,400 gallons fuel oil)
Grate Area	48¾ sq̃uare feet
Water Capacity	3,700 gallons (16,820 liters)

Table 7.13: Details of 400 Class 4-8-2+2-8-4 Steam Locomotive No.409 - South Australian Railways - Narrow Gauge



loco SAR Garratt 409 approaching Belalie North with a freight load on 20 December 1968 *(David Voysey - NRM Collection 461-452-b433)*



October 1967 at Terowie SAR Garratt 409 arriving in the platform with a lunchtime mixed from Peterborough consisting of passenger cars and four MCN class goods vans *(Ron Fluck - NRM Collection 263-1327-e16) (NRM Collection)*

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 in 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, T45, T46 and T180 were built at Islington. The first, T180, 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.



South Australian Railways loco SAR T253 on Wilmington Goods on 26 June 1967 *(Murray Billett - NRM Collection 17-232-mb-n024-15)*

The class remained dominant on the line for some half a century until the advent of the large Beyer-Garratts steam engines, 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 Mallee lines, during which time they were designated as being the

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	8 September 1917
Withdrawn	18 May 1970
Entered the museum	24 November 1970
Length (over coupling points)	54 ft. 0 in. (16.459 metres)
Weight in Working Order:	78 tons 8 cwt (79.761 tonnes)
Wheel Arrangement	4-8-0
Driving Wheel Diameter	3 ft 7 in. (1.092 metres)
Cylinders	2x outside - 16½ in. x 22 in. (419 mm x 558 mm)
Valve Gear	Stephenson
Boiler Pressure	185 lbs p.s.i. (1,275 kPa)
Tractive Effort	21,904 lbs (97.4 kN)
Coal Capacity:	8 tons (8.128 tonnes)
Water Capacity	2,500 gallons (11,365 litres)

Table 7.14: Details of T Class 4-8-0 Steam Locomotive No.253 - South Australian Railways - Narrow Gauge

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 up to the 1960's, and indeed it was a T class engine that hauled the last regularly scheduled steam train operated in South Australia on 9 January 1970.



South Australia Railways loco's SAR T240 and T253 in the Gladstone Loco shed at night - 1967 *(Arno Ramp Collection - NRM Collection 21-241-e26-06)*



South Australia loco SAR T253 on Wilmington goods freight at Melrose 6 February 1968 *(Phil Curnow - NRM Collection 33-287-b00553)*



Gladstone 6 February 1968 - South Australian Railways loco SAR T253 ex Wilmington goods alongside the Gladstone coal gantry with fireman Ron Clayton (33-287-b00561) *(Phil Curnow - NRM Collection 33-287-b00561)*

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 class and the Beyer-Garratt 400 class again reigned supreme on the line. However, the majority of remaining members of the class were condemned on 18 May 1970, with the final six following a month later.

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.



South Australian Railways Y Class 2-6-0 Steam Locomotive No.97 on a passenger train in Ellen Street, Port Pirie *(Bob Footner - NRM Collection 1-5-pd1778)*

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 27 February 1890.

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	27 February 1890
Condemned	4 September 1970
Entered the museum	23 September 1970
Length (over coupling points)	39 ft. 3 in. (11.963 metres)
Total Weight	47 tons 15 cwt (48.517 tonnes)
Tractive Effort	13,289 lbs (59.1 kN)
Wheel Arrangement	2-6-0
Driving Wheel Diameter	3 ft. 3 in. (990 mm)
Cylinders	2x outside - 14½ in. x 20 in. (368 mm x 508 mm)
Coal Capacity	4 tons 10 cwt (4.572 tonnes)
Water Capacity	1,600 gallons (7,273 litres)

Table 7.15: Details of Y Class 2-6-0 Steam Locomotive No.97 - South Australian Railways - Narrow Gauge



South Australian Railways Y97 on a passenger train near Yongala on 9 October 1967 *(Graham Ahern - NRM Collection 330-1405-67-42-20)*



South Australian Railways Y Class 2-6-0 Steam Locomotive No.97 in the Rounhdhouse at Peterborough on 12 June 1966 *(Murray Billett - NRM Collection 17-232-mb-n236-10)*

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.

Y97 was withdrawn on 14 May 1970. The day before it had done a special trip for the Australian Railway Historical Society to Eurelia & return. It was moved to the Mile End Museum on 23 September 1970 and eventually to its current home at the Port Adelaide site on 11 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

Class operators	Commonwealth Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
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 ft. ½ in. (16.29 meters)
Tractive Effort	19,200 lbs (85.4 kN)
Wheel Arrangement	4-8-0
Water Capacity	3000 gallons (13638 liters)
Weight in Working Order	80 tons 19 cwt (82.2 tonnes)

Table 7.16: Details of Steam Engine NM class 4-8-0 Steam Locomotive No.34 - Commonwealth Railways - Narrow Gauge



Commonwealth Railways Steam Locomotive NM34 with South Australian Railways T199 on a special passenger train crossing one of the many bridges in the Pichi Richi Pass, South Australia on 8 October 1967 *(Arno Ramp - NRM Collection 21-241-b137)*



Commonwealth Railway Steam Locomotive NM34 taking water from the overhead tank in the Port Augusta Workshops Yard on 28 December 1953 *(Douglas Colquhoun - NRM Collection 2-71-a1292)*



Commonwealth Railway Locomotive NM34 on a short Quorn bound freight sits in the yard at Port Augusta on 29 December 1952 *(Ron Stewien - NRM Collection 215-1237-s0224)*

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. NM15 to NM28 and NM31 to NM37 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 the borrowed South Australian T class. NM38 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 NM34, which was retained at Quorn for use as a standby shunter, and during the 1960's actually made a few trips through the Pichi Richi Pass. After a handing over ceremony to the Museum by CR Commissioner Mr K. A. Smith at Stirling North on 8 October 1967, she became the last Commonwealth Railways steam engine to be used in



Commonwealth Railway Steam Locomotive NM34 on a special passenger crossing a bridge in the Pichi Richi Pass, South Australia - mid 1960s *(Barbara Hall - NRM Collection 290-1345-1289)*

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 I the Silverton Tramway needed new locomotives for the increasing work on the main line. The South Australian Railways had replaced its Y class with the larger T class, but the Silverton Tramway still operated its section of the line with the popular little Y class. 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 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

Class operators	Silverton Tramway Company
Condition	Excellent
Ownership	National Railway Museum
Provenance	Silverton Tramways Company
Class Builders	Beyer Peacock, Manchester, England.
Entered service	1915
Withdrawn	28 October 1960
Entered the museum	2 October 1965
Length (over coupling points)	44 ft. 6 in.
Number in class	4
Total Weight	59.10 tons (53.614 tonne)
Tractive Effort	18,467 lbs (82.15 kN)
Wheel Arrangement	4-6-0
Driving wheels	4 ft 3 ins (1.295 metres)

Table 7.17: Details of A Class 4-6-0 Steam Locomotive No.21 - Silverton Tramway Company - Narrow Gauge



Silverton Tramway loco A21 on an ore train between Sulphide Street and Railwaytown, Broken Hill, New South Wales - The open wagon behind the loco is an X class - 23 April 1958 *(David Parsons - NRM Collection 80-1260-b40-15)*



Silverton loco A21 being turned on the roundhouse turntable at Peterborough, South Australia - 26 September 1965 *(Graham Ahern - NRM Collection 330-1405-65-36-03)*

only limited service at Broken Hill, and A18 was the last A to work on 20 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.

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 November 1951 and 28 February 1953.

No.21 was written off on 28 October 1960 and placed in the Mile End Railway Museum on 2 October 1965. It was transferred to the museum on 1 September 1988 and became the first locomotive to be pushed into the Port Adelaide rolling stock pavilion on 19 November 1988



28 January 1953 at Peterborough, South Australia, Silverton loco A21 sits near the loco depot during a shunting operation *(Ron Stewien - NRM Collection 215-1237-s0347)*

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 sixty of the class W engines placed into 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 casing which covered the funnel and dome. All four engines were painted out in cotswold green and were named after Directors of the Company.

Built by the Manchester company, Beyer Peacock, these engines followed a tradition set by the earlier Silverton Y class and A class engines. In fact their building meant that every steam engine built for the Company was a product of Beyer Peacock. All four engines arrived at Port Pirie on 4 October 1951, and were then railed to Broken Hill. For this trip W24 and W25 were steamed and these hauled the other two - W22 and W23.

In service these engines could haul 1,200 tons of ore, in contrast to the 800 tons that the A class could manage. This meant that they matched up well with the 400 class Garratts which were very shortly to



Silverton Tramway Company loco W25 at Railwaytown, Broken Hill on 1 April 1961 *(Douglas Colquhoun - NRM Collection 2-194-r-0343)*

Class operators	Silverton Tramway Company
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	Silverton Tramways Company
Class Builders	Beyer Peacock, Manchester, England.
Entered service	4 October 1951
Withdrawn	July 1961
Entered the museum	12 March 1970
Length (over coupling points)	61 ft. 11 in. (18.872 metres)
Number in class	4
Total Weight	97 tons (98.557 tonnes)
Tractive Effort	21,760 lbs (96.8 kN)
Wheel Arrangement	4-8-2

Table 7.18: Details of W Class 4-8-2 Steam Locomotive No.25 - *H.F. (Gerry) Walsh* - Silverton Tramway Company - Narrow Gauge



Silverton Tramway Company loco W25 on special passenger near Silverton, New South Wales on 2 April 1961 *(George Sweetapple - NRM Collection 20-238-b1861b)*

be their counterparts on the South Australian Railways. In regular service they took over all roles from the A class and were to be seen on both passenger and freight trains. They performed well for the next nine years until the advent of the 1960's, 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 three diesel electric units.



Silverton Tramway Company loco W25 on 12 November 1969 at Broken Hill, New South Wales *(Hugh Williams - NRM Collection 251-338-s73-12)*

This immediately rendered the W class engines redundant, and between December 1960 and July 1961 all four were placed in storage. After that W25 was only steamed up again when she operated on special occasions. W25 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 km). Known as the Silverton Tramway Company (only colonial governments were permitted to operate railways) it became a highly successful venture surviving until 1970. At that time, as part of the project for completion of the standard gauge Transcontinental line between Sydney and

Class operators	Silverton Tramway Company
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	Silverton Tramways Company
Class Builders	Beyer Peacock, Manchester, England.
Entered service	1893
Entered the museum	2 October 1965
Length (over coupling points)	39 feet 3 inches (11.963 metres)
Maximum Axle Load	8 tons 6 cwt (8.433 tonnes)
Maximum Speed	35 mph (56 km/h)
Number in class	19
Total Weight	47 tons 14 cwt (48.416 tonnes)
Tractive Effort	16,500 lbs (73.4 kN)
Wheel Arrangement	2-6-0
Withdrawn	13 September 1964

Table 7.19: Details of Y Class 2-6-0 Steam Locomotive No.12 - Silverton Tramway Company - Narrow Gauge

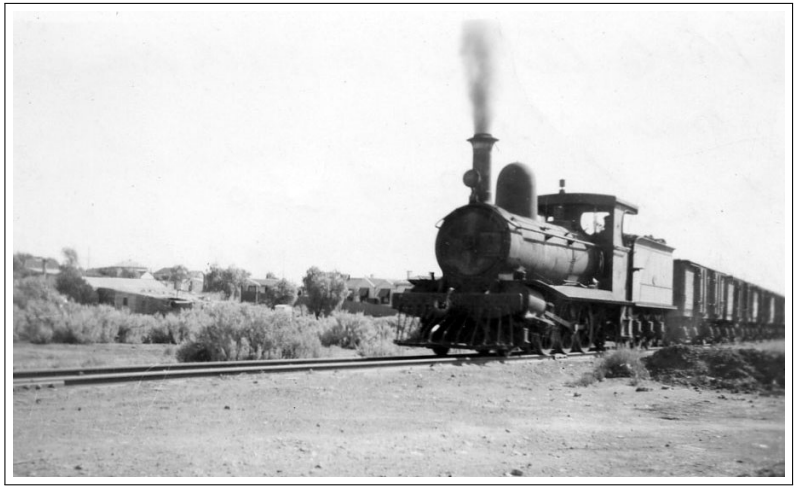
Perth, a more direct route was built by the South Australian Railways between Cockburn and Broken Hill, bypassing Silverton.



Silverton Tramway Co. - Y class 2-6-0 Steam Locomotive No.12 at the NRM on 1 September 1996 *(Chris Drymalik - NRM Collection 275-372-11530-k)*

When in 1888 the Company considered the purchase of its first locomotives, it made the logical choice of emulating the SAR'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 class and were the first of nineteen units built by Beyer Peacock and

placed in service between 1888 and 1907.



Silverton Tramway Co. Y12 shunting the North Mine at Broken Hill, New South Wales, on 21 February 1951 *(R Nicholls - NRM Collection 1-1-01065)*

Y12 was outshopped in 1893 carrying builder's number 3536, and saw just over seventy years of service. However, its 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. Y12 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.

The Y class 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 class on the Tramway was Y12 on 17 July 1961, the year that the diesels were introduced, but so popular were the engines that no less than three have been preserved - Y12, Y11 at Silverton and Y1 at Broken Hill. The last of the class to run was Y12, with a special train, on 13 September 1964. It was moved to the Mile End Railway Museum on 2 October 1965.



Silverton Tramway Co. Y12 at Railwaytown, Broken Hill, New South Wales, in December 1952 *(L J Williams - NRM Collection 2-71-a1359)*

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

Class operators	Broken Hill Proprietary Company
Condition	Excellent
Provenance	Broken Hill Proprietary Ltd
Ownership	Port Dock Station Railway Trust
Entered service	August 1914
Entered the museum	19 June 1969
Number in class	2
Class Builders	Baldwin, Philadelphia, United States of America
Builders Number	41242/1914
Tractive Effort	16,300 lbs (72.5 kN)
Wheel Arrangement	4-6-0

Table 7.20: Details of BHP 4-6-0 Steam Locomotive No.4 - Broken Hill Proprietary Company - Narrow Gauge



Broken Hill Proprietry Co. Steam Locomotive No.4 on the Whyalla & Iron Monarch line hauling a special passenger train 9 August 1964 *(Arnold Lockyer - NRM Collection 7-1069-a001-14)*

without those typically American appendages, Cowcatchers. The bells were removed shortly after their arrival.



Broken Hill Proprietary Co. Steam Locomotive No.4 being shunted at the NRM 31 December 2002 *(Chris Drymalik - NRM Collection 275-373-p1005964)*

They accounted for all main line haulage and could lift 850 tons away from Iron Knob. Their reign was short lived, however, as increasing ore production placed ever increasing demands on them, and the 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 ft. 6 in. gauge, could haul 2,000 ton trains unaided from Iron knob.



Broken Hill Proprietary Co. Steam Locomotive No.4 at Whyalla on 26 January 1958 *(NRM Collection 7-1069-a001-14)*

Nos.4 and 5 were relegated to secondary duties, shunting, work trains, and banking empty ore trains 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 Port Adelaide site on 11 November 1988.

Visitors will note that No.4 once more has its original 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.

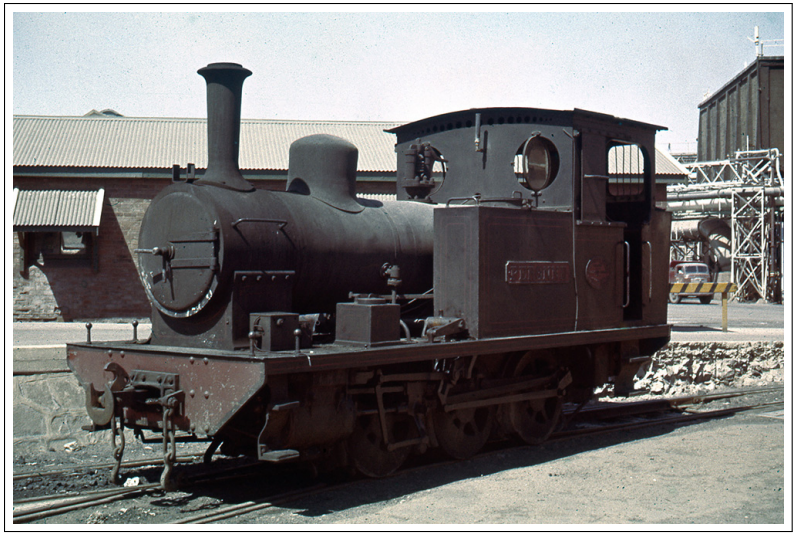
The Company owned just over two miles of sidings at Port Pirie, but

Class operators	Broken Hill Associated Smelters
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	Broken Hill Proprietary Ltd
Built by	Barclay Sons & Co. Limited 1545 of 1918
Entered service	1919
Entered the museum	10 February 1966
Length (over coupling points)	21 ft. 0 in. (6.400 metres)
Number in class	3
Total Weight	18 tons (18.288 tonnes)
Tractive Effort	6,800 lbs (30.25 kN)
Wheel Arrangement	0-6-0
Withdrawn	November 1965

Table 7.21: Details of 0-6-0 Steam Locomotive No.4 - *Peronne*



Broken Hill Associated Smelters Locomotives Peronne & Port Pirie in smelters yard at Port Pirie, 9 May 1952 *(Douglas Colquhoun - NRM Collection 2-71-a1350)*



Broken Hill Associated Smelters Locomotive *Peronne* at Port Pirie on 1 October 1962 *(NRM Collection 1-3-s00156)*

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 the British War Department a series of 3 ft. 6 in. 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,* and *Passchendale*, with *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's final boiler certificate was issued on 31st May 1963, and when it expired on 28 May 1964 it was not renewed having by that time been stored in the loco shed in a deteriorated condition. It was purchased from Broken Hill Associated Smelters in November 1965 by Mr. *F.B. Andrews* for £100, and presented to the Mile End Railway Museum[1]. 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

[1] Light Railways, Number 221, October 2011, p30, *Peronne - letter from Brian Andrews*



Broken Hill Associated Smelters Locomotive *Peronne* hauls a train at the NRM on 10 July 2010 *(Chris Drymalik - NRM Collection 275-373-p1084221)*

its return to Adelaide, it was sent directly to the under-construction Port Adelaide site.

It figured in the official opening of the Port Adelaide site, 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.track especially laid for it. *Peronne* is currently in a dismantled state pending decisions on its future role at the Museum.

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

THE SUGAR MILLS of Queensland are served by extensive networks of 2 ft. 0 in. 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, South Australia, 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 later renumbered No.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

Class operators	Miliquin Mill
Condition	Excellent
Ownership	National Railway Museum
Provenance	Millaquin Mill, Queensland
Entered service	1946
Entered the museum	25 May 1981
Length (over coupling points)	21 ft. 3½ in. (6.489 metres)
Number in class	13
Total Weight	16.00 tons (16.256 tonnes)
Tractive Effort	7,200 lbs (32.03 kN)
Wheel Arrangement	0-6-2T
Withdrawn	1978

Table 7.22: Details of 0-6-2T Steam Locomotive Qunaba Mill No.2 - *Skipper*



Steam Locomotive *Skipper* crosses the road at the Qunaba Mill, near Bundaburg, Queensland, with a cane train on 11 July 1975 *(Graham Ahern - NRM Collection 330-1405-b75-x0284)*



Qunaba Mill Steam Locomotive *Skipper* at the NRM on 16 July 2021 *(Chris Drymalik - NRM Collection 275-373-p1196489)*

cane locomotive for its collection. The necessary funds were raised and *Skipper* was purchased, arriving at Mile End on 25 May 1981.



Steam Locomotive *Skipper* at the Qunaba Mill, near Bundaburg, Queensland, on 11 July 1975 hauling a cane train *(Graham Ahern - NRM Collection 330-1405-b75-x0282)*

It was moved to the Museum on the former South Australian Railways locomotive transporter wagon WL8200, on 24 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.



CHAPTER 8

DIESEL LOCOMOTIVES

500 class Bo-Bo Diesel-Electric Locomotive No.515 - South Australian Railways - Broad Gauge 167

500 class Bo-Bo Diesel-Electric Locomotive No.517 - South Australian Railways - Broad Gauge 169

700 class Co-Co Diesel-Electric Locomotive No.703 - South Australian Railways - Broad Gauge 172

800 class Bo-Bo Diesel-Electric Locomotive No.801 - Australian National Railways - Broad Gauge 175

900 class A1A-A1A Diesel-Electric Locomotive No.900 - *Lady Norrie* - South Australian Railways - Broad Gauge 178

930 class Co-Co Diesel-Electric Locomotive No.930 - South Australian Railways - Broad Gauge 181

Ruston 0-4-0 Industrial Diesel Locomotive - ICI / Penrice Soda Products - Broad Gauge 185

DE class Bo-Bo Diesel-Electric locomotive No.91 - Commonwealth Railways - Standard Gauge 187

GM1 class A1A-A1A Diesel-Electric locomotive No.2 - Commonwealth Railways - Standard Gauge 189

ETSA Diesel-Hydraulic Locomotive No.1 - Electricity Trust of South Australia - Standard Gauge 194

NSU class A1A-A1A Diesel-Electric locomotive No.61 - Commonwealth Railways - Narrow Gauge 196


703
703
ANR
182D

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



500 class Bo-Bo Diesel-Electric Locomotive No.515 shunts the North Car yard, Adelaide Station in August 1983 *(Robert Haebich - NRM Collection 48-987-d162-14)*

THE SOUTH AUSTRALIAN RAILWAYS (SAR) 500 class diesel-electric locomotives were introduced between 1964 and 1969 to handle shunting and light duties across the network, replacing older steam locomotives. A total of 34 locomotives were built at the Islington Railway Workshops in Adelaide, numbered 500 to 533. Each was powered by an English Electric 6SRKT Mk II engine, producing 500 horsepower (373 kW), and featured a Bo-Bo wheel arrangement ideal for tight curves and lightly laid track.

The class was developed as part of the SAR's broader move to eliminate steam traction. With their arrival, older locomotives such as the F and Rx classes were gradually phased out. The 500s were compact and versatile, making them particularly suitable for smaller depots and rural branch lines. They could be found operating across both the broad and standard gauge networks thanks to the SAR's mixed-gauge infrastructure.

Visually, the 500 class stood out for their roof-mounted bells and a cab profile that recalled features of earlier steam locomotives. Their English Electric traction equipment was consistent with other contemporary SAR designs, such as the 800 and 830 classes, simplifying maintenance across the fleet.

Although reliable and well-suited to their roles, the 500s were eventually displaced by newer locomotives and changing operational

Class operators	South Australian Railways Australian National Railways Genesee and Wyoming
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Designer	SAR Islington
Class Builders	S.A.R. Islington Workshops
Model	500 Class
Number in class	33
Number series	500 - 533
Entered service	29 December 1966
Withdrawn	2 June 1992
Condemned	2 June 1992
Entered the museum	2 June 1992
Total Weight	56 tons (56,896 kilograms)
Maximum Axle Load	14.2t (14200 kilograms)
Length (over coupling points)	41 ft. 4 in. (12.59 metres)
Height	13 ft. 3½ in. (3.98 metres)
Width	9 ft. 4 in. (2.84 metres)
Bogie centres	20 ft. 6 in. (6.25 metres)
Engine type	EE 4SRKT
Horsepower	500 HP at 850 R.P.M.
Cylinders	4 in line
Gear Ratio	72:15
Wheel Arrangement	Bo-Bo
Generator	EE 827/4C
Traction Motors	4x EE 54B/2A
Tractive Effort (continuous)	133 kN at 6 km/h
Tractive Effort (starting)	139 kN
Fuel capacity	700 gallons (3,182 litres)
Maximum Speed	64 km/h

Table 8.1: Details of 500 class Bo-Bo Diesel-Electric Locomotive No.515 - South Australian Railways - Broad Gauge

needs. Withdrawals began in the 1990s, with some units sold to industrial operators or preserved by heritage groups.



Diesel-Electric Locomotive No.515 shunts the National Railway Museum on 27 July 2008 *(Chris Drymalik - NRM Collection 275-373-p1052061)*

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

500 class Bo-Bo Diesel-Electric Locomotive No.517 - South Australian Railways - Broad Gauge

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.

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.

Locomotive 517 was donated to the Museum by Genesee and Wyoming Australia in 2013, and is currently awaiting restoration.

Class operators	South Australian Railways Australian National Railways Genesee and Wyoming
Condition	Good
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Designer	SAR Islington
Class Builders	S.A.R. Islington Workshops
Model	500 Class
Number in class	33
Number series	500 - 533
Entered service	23 February 1967
Withdrawn	19 December 2013
Condemned	19 December 2013
Entered the museum	22 December 2013
Total Weight	56 tons (56,896 kilograms)
Maximum Axle Load	14.2t (14200 kilograms)
Length (over coupling points)	41 ft. 4 in. (12.59 metres)
Height	13 ft. 3½ in. (3.98 metres)
Width	9 ft. 4 in. (2.84 meters)
Bogie centres	20 ft. 6 in. (6.25 metres)
Engine type	EE 4SRKT
Horsepower	500 HP at 850 R.P.M.
Cylinders	4 in line
Gear Ratio	72:15
Wheel Arrangement	Bo-Bo
Generator	EE 827/4C
Traction Motors	4x EE 54B/2A
Tractive Effort (continuous)	133 kN at 6 km/h
Tractive Effort (starting)	139 kN
Fuel capacity	700 gallons (3,182 litres)
Maximum Speed	64 km/h

Table 8.2: Details of 500 class Bo-Bo Diesel-Electric Locomotive No.517 - South Australian Railways - Broad Gauge

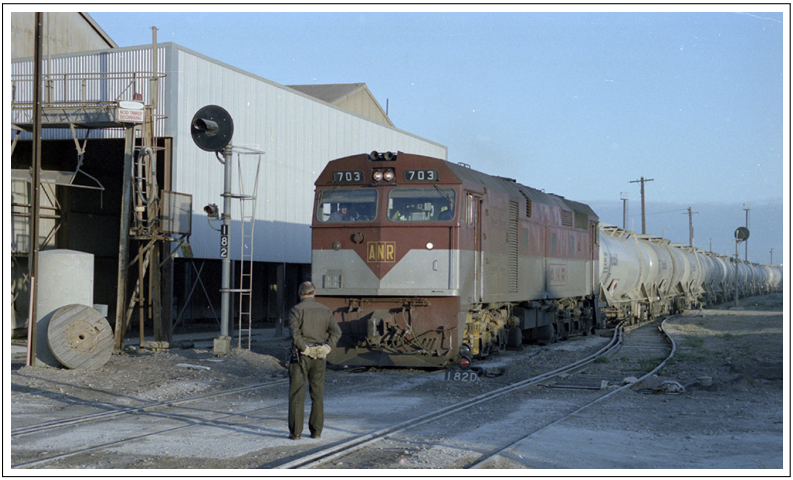


loco 517 with loco 965 at the Loco Depot Mile End *(Chris Drymalik Collection - NRM Collection 275-372-a-m0151)*



loco 517 shunting at Mile End c.1974 *(Barry Marshall Collection - NRM Collection 97-1262-z368)*

700 class Co-Co Diesel-Electric Locomotive No.703 - South Australian Railways - Broad Gauge



700 class Co-Co Diesel-Electric Locomotive No.703 at Birkenhead on an oil train in Australian National Railways livery *(Robert Haebich - NRM Collection 48-987-d164-02)*

BY DECEMBER 1970, the New South Wales Government Railways took delivery of the first of forty DL 500G locomotives from AE Goodwin. The new locomotives were classified as the 422 class and were the first 2nd generation Alco diesel locomotive to enter traffic in Australia. At the start of the 1970s, the South Australian Railways (SAR) needed more locomotives and placed an order for six DL 500G locomotives with slight modifications to the SAR's operating requirements. These locomotives were to become the 700 class, and they ended up becoming the last class of locomotives to be purchased by the SAR.

The six 700 class locomotives were delivered to the SAR between June 1971 and March 1972, with locomotives 700 to 702 being allocated to broad gauge and locomotives 703 to 705 on standard gauge. The six locomotives were painted Regal Red and silver upon delivery, though the three standard gauge units were quickly repainted into Mustard Pot livery to match the 600 and 830 class diesels on Standard gauge.

When Australian National Railways (AN) took over the country lines and interstate operations in South Australia in 1978, ownership of the 700 class was transferred to them. During their time operating under AN, the 700 class were regularly gauge converted between broad and standard gauge based on operational requirements. The first member



700 class Co-Co Diesel-Electric Locomotive No.703, with loco 704, on 27 November 1999 at Rocky River hauling grain freight *(Phil Curnow - NRM Collection 33-287-a08716)*



700 class Co-Co Diesel-Electric Locomotive No.703 being moved into Museum after being unloaded by crane on 9 January 2023 *(Chris Drymalik - NRM Collection 275-373-p1208179)*

Class operators	South Australian Railways Australian National Railways One Rail Australia
Condition	Excellent
Provenance	South Australian Railways, Australian National, & One Rail Australia
Ownership	Port Dock Station Railway Trust
Class Builders	AE Goodwin, Auburn, New South Wales
Builders Number	G6059/01
Number in class	6
Entered service	16 December 1971
Withdrawn	2016
Entered the museum	9 January 2023
Length (over coupling points)	18.67 metres
Total Weight	111.6 tonne
Traction Motors	6
Wheel Arrangement	Co-Co
Maximum Axle Load	18.6 tonne
Gear Ratio	65:18
Tractive Effort (starting)	389 kN
Tractive Effort (continuous)	311 kN at 11 km/h
Engine type	Alco 251 C
Cylinders	Four-stroke V12
Power	1490 kW
Maximum Speed	112 km/h
Fuel capacity	5455 litres

Table 8.3: 700 class Co-Co Diesel-Electric Locomotive No.703 - South Australian Railways - Broad Gauge

of the class to be withdrawn was Locomotive 702, when in 1994 it sustained extensive fire damage. 702 was then placed in store pending work, but was later scrapped in 1997. With the sale of Australian National in 1997,the local operations and locomotives were sold to Australian Southern Railroad which was eventually bought out by major shareholder Genesee & Wyoming becoming Genesee & Wyoming Australia (GWA). In 2020 GWA was renamed One Rail Australia.

Locomotive 703 entered service with the South Australian Railways on 16 December 1971 and in 1975 it was involved in a major accident at Crystal Brook when the new standard gauge railway bridge collapsed



700 class Co-Co Diesel-Electric Locomotive No.703 with the Indian Pacific sits in Port Pirie Station platform *(Bob Footner - NRM Collection 1-5-c0249b)*

during heavy rain and flooding. Locomotives 703 and 830 class diesel locomotive No.868 made it across the bridge before it collapsed, while the second 830 class locomotive No.874 did not. Locomotive 703 was transferred to Australian National Railways on the 1st of March 1978 and was eventually sold to Australian Southern Railroad on the 1st of November 1997. In 2016 locomotive 703 and all remaining 700 class locomotives were stored.

In 2022 One Rail Australia donated Locomotive 703 to the National Railway Museum. It was moved to the NRM Port Adelaide site during January 2023, and is currently under restoration.

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

THE FIRST ORDERS for broad-gauge diesel-electric motive power placed by the South Australian Railways 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 to 809.

Museum Locomotive No.801 was the second unit of the order, carrying

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Class Builders	English Electric, Rocklea, Queensland
Number in class	10
Entered service	9 June 1956.
Withdrawn	1992
Entered the museum	1992
Total Weight	72 tons (73,152 kilograms)
Length (over coupling points)	44 ft. 10 in. (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 8.4: Details of 800 class Bo-Bo Diesel-Electric Locomotive No.801 - Australian National Railways - Broad Gauge



Locomotive No.801 shunts the Gillman yard - 22 January 1977 *(Barry Marshall - NRM Collection 97-1262-d527)*



Locomotive No.801 crossing the Commercial Road Viaduct, Port Adelaide with a short freight - 1967 *(Peter Lovell - NRM Collection 1-8-244-12)*



Australian National liveried Locomotive No.801 with a train of sheep wagons on the wharf at Port Adelaide - 12 June 1983 *(Robert Haebich - NRM Collection 48-987-d173-18)*

works number A-002, and was placed in service on 9th June 1956.

The majority of the 800 class were allocated to the Port Adelaide depot where they replaced the small P class 2-4-0 tank engines, and provided shunting power for the area for the next thirty years. However, they were not restricted exclusively to these duties. They also regularly hauled transfer freight trains around suburban Adelaide, and occasionally worked local passenger services.

All members of the class were transferred to Australian National ownership on 1 March 1978 and continued in service into the early 1990s. Withdrawals then commenced, with many units being progressively retired and scrapped.

Locomotive No.801 was withdrawn in 1992 and acquired by the National Railway Museum. It remains in full working order and is occasionally used for shunting within the museum grounds.

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

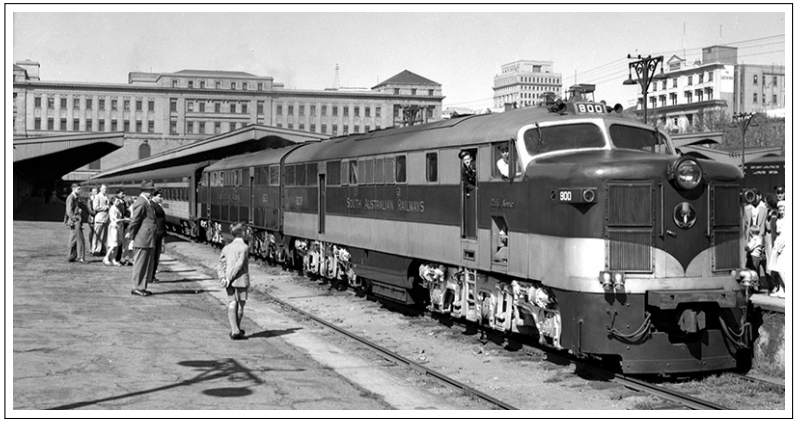


900 class A1A-A1A Diesel-Electric Locomotive No.900 at the NRM - 2 February 2011 *(Andrew Peters)*

THE FIRST MAIN line diesel electric locomotive to be placed in service on the Australian mainland was South Australian Railways

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Class Builders	S.A.R. Islington Workshops
Number in class	10
Entered service	12 September 1951
Withdrawn	1 July 1985
Entered the museum	18 August 1985
Length (over coupling points)	66 ft. 2 in. (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 8.5: Details of 900 class A1A-A1A Diesel-Electric Locomotive No.900 - *Lady Norrie* - South Australian Railways - Broad Gauge



Locomotive No.900 + No.903 with 'The Overland' at Adelaide Station - c.1950s *(Ron Stewien Collection - NRM Collection 215-1237-za055)*

No.900, *Lady Norrie*, which entered traffic on 10 September 1951. Of conventional design, with a carbody of pronounced similarity to contemporary Alco (USA) practice, 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.

Locomotive No.900 made a test run using the dynamometer car (see page 350) on a Port Pirie goods on 10 September 1951, and its first revenue run hauling the down *East-West Express* between Adelaide and Port Pirie on 12 September. It It continued to work this train until No.901 entered service on 2 November after which multiple unit trials were run on goods trains through the Adelaide Hills. On the 20 November both engines hauled *The Overland* between Adelaide and Tailem Bend and as more units became available they began working through to Serviceton. Thus were the 500B, 700 and 720B steam classes displaced from the Adelaide to Tailem Bend line and the 600C steam class from the section to Serviceton.



Locomotive No.901 + 908 at the head of a goods freight near Hanson, South Australia - 9 October 1976 *(Phil Curnow - NRM Collection 33-287-c24-082)*

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 1980's. For a brief period, triple-heading, they returned to



Locomotive No.901 + 905 + 902 on a goods freight at Forster Corner, Belair, South Australia - 9 October 1976 *(Michael Kelly - NRM Collection 227-975-02452)*

working *The Overland*. 900 and 909 worked to Coonalpyn on a *SteamRanger* 'Last passenger run' on 29 July 1984 but, on 1 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 18 August 1985. However, before being placed in the museum No.900 made one final journey when it was towed by goods train to Melbourne, and placed on display at the *'Austeam88 Festival'* celebrations on 23 October 1988.

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

NUMBER 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 20 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 DL500B). The FD series of locomotives formed Alco's "World Model" and could be found working in 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 (AN) took over



Locomotive No.930 (numbered as No.967) on a freight at Wandilo - c.1990 *(Australian National - NRM Collection 1-3-s06005)*



Locomotive No.930 at the Islington Workshops - 1 December 1955 *(South Australian Railways - NRM Collection 1-1-09228)*



Australian National Locomotive No.967 & VLine T393 at the Geelong Depot, Victoria - 18 August 1988 *(Barry Marshall - NRM Collection 97-1262-h396-19)*



SAR Locomotive No.930 at Kadina with a freight consist - 1 November 1962 *(Bill Callaghan - NRM Collection 107-1061-101)*

Class operators	South Australian Railways Australian National Railways
Condition	Fair
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Class Builders	A E Goodwin, Sydney, NSW
Number in class	37
Number series	930 - 966
Model	DL 500 B
Entered service	20 December 1955
Entered the museum	4 May 1990
Total Weight	104 tons (105,664 kilograms)
Length (over coupling points)	58 ft. 10-3/8 in. (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 8.6: Details of 930 class Co-Co Diesel-Electric Locomotive No.930 - South Australian Railways - Broad Gauge

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 May 1990.

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



ICI Ruston 0-4-0 Industrial Diesel Locomotive at the NRM - 29 December 2015 *(Chris Drymalik - NRM Collection 275-373-p1135611)*

Class operators	ICI / Penrice Soda Products
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	ICI / Penrice Soda Products
Entered service	1950
Withdrawn	1991
Entered the museum	5 December 1991
Number in class	1
Wheel Arrangement	0-4-0
Model	0-4-0 hydraulic Ruston Hornsby shunt locomotive

Table 8.7: Details of 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, later Penrice Soda Products, at Osborne. Unfortunately the loco no longer has it's 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.



ICI Ruston 0-4-0 Industrial Diesel Locomotive in operation at Osborne *(Arnold Lockyer - NRM Collection 7-1069-a163-02)*

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 locomotive became unsuitable for the task at hand and was stored. Meanwhile AN shunt loco 516 had 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 No.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.

Class operators	United States Army Transportation Corps New South Wales Government Railways Commonwealth Railways Australian National Railways
Condition	Fair - missing some mechanical parts
Ownership	Port Dock Station Railway Trust
Provenance	United States Army Transportation Corps, New South Wales Government Railways, Commonwealth Railways, Australian National
Built by	General Electric Company, USA
Number in class	2
Number series	DE90 - DE91
Model	B-B-88/88-4GE733
Entered service	1945
Entered the museum	1988
Engine type	2x Caterpillar D17000
Cylinders	V8 (4 stroke)
Bore & stroke	5¾ in. x 8 in. (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 ft. 5 in. (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 (57.8 kN @ 3.2 km/h)
Tractive Effort (starting)	26,300 lbs (117 kN)
Maximum Speed	35 mph (56 km/h)

Table 8.8: Details of DE class Bo-Bo Diesel-Electric locomotive No.91 - Commonwealth Railways - Standard Gauge

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 Standard 44-ton



Commonwealth Railways DE class Bo-Bo Diesel-Electric locomotive No.91 at the NRM - 13 December 2014 *(Chris Drymalik - NRM Collection 275-373-p1121714)*

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.



Commonwealth Railways DE91 shunting at Port Pirie *(Arno Ramp & Cliff Olds Collection - NRM Collection 21-241-a1609)*

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.

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



Commonwealth Railways Locomotive GM2 at the NRM - 12 September 2004 *(Chris Drymalik - NRM Collection 275-373-p1016128)*

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

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways & Australian National
Ownership	Port Dock Station Railway Trust
Built by	Clyde Engineering, Granville, NSW
Model	ML-1 (F class)
Number in class	11
Number series	GM1 - GM11
Entered service	17 November 1951
Withdrawn	6 March 1990
Entered the museum	2 August 1991
Total Weight	106 tons (107,696 kilograms)
Length (over coupling points)	60 ft. 10 in. (18.54 metres)
Wheel Arrangement	A1A-A1A
Engine type	GM EMD 567B
Cylinders	V16 (two stroke)
Bore & stroke	8½ in. x 10 in. (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 8.9: Details of GM1 class A1A-A1A Diesel-Electric locomotive No.2 - Commonwealth Railways - Standard Gauge



Commonwealth Railways Locomotive GM2 being shunted at the NRM - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053276)*

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.

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 car body 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.



Commonwealth Railways Locomotive GM2 on the turntable at the Port Pirie - 7 May 1952 *(Lionel Bates - NRM Collection 2-71-a1198)*

GM1 underwent its road trials over New South Wales Railways tracks on 24 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 17 November. All eleven were working by 8 July 1952.



Australian National Locomotives GM2 & GM18 on an express goods freight at Mambray Creek - 13 December 1989 *(Bob Grant - NRM Collection 335-1411-02789-13)*

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 1 March 1978, and the first were not condemned until 1988. Most have had a lifespan well in excess of thirty years and only in their final years were they displaced by more powerful classes. Some of the GM class are still in active service .

Locomotive GM2 was set aside by Australian National for preservation in a museum and was placed there on 2 August 1991.

Diesel-Electric vs Diesel-Hydraulic Locomotives

Railways in Australia have employed two principal types of diesel locomotives: **diesel-electric** and **diesel-hydraulic**. Both use internal combustion engines, but differ significantly in how they transmit power to the wheels.

In a diesel-electric locomotive, the diesel engine powers a generator or alternator, which produces electricity. This electricity drives traction motors mounted on the axles, causing the wheels to turn. Diesel-electric transmission is well suited to long-distance hauling and heavy freight. Although these locomotives are typically heavier—due to the generator, traction motors and cooling equipment—they offer robust performance and are relatively straightforward to maintain in remote regions. This made them the standard choice for mainline use across much of Australia. Notable examples include the Commonwealth Railways *GM class* and the South Australian Railways *930 class*.

In contrast, diesel-hydraulic locomotives use the diesel engine to power a hydraulic transmission system. Torque is transferred through fluid couplings or torque converters and mechanical gearboxes directly to the axles. This form of transmission tends to be lighter and can deliver more immediate response at lower speeds, making it ideal for shunting duties, narrow gauge lines, and industrial applications. However, the hydraulic components can be more mechanically complex and require specialised maintenance. Examples include the Queensland Railways *DH class*, ETSA Locomotive No.1 and various small industrial locomotives built by *Ruston & Hornsby*, which were used in places such as workshops, depots, and sugar mills.

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

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 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

Class operators	Electricity Trust of South Australia
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	Electricity Trust of South Australia Port Augusta
Built by	Clyde Engineering, Granville, NSW
Engine by	Maybach Motorenbau of Friedrichshafen, West Germany
Transmission	Mekydro
Entered service	1958
Entered the museum	1988
Length (over coupling points)	27 ft. 6 in. (8.382 metres)
Number in class	2
Total Weight	53.00 tons (53.85 tonnes)
Horsepower	545HP (406 kW)
Withdrawn	1988

Table 8.10: Details of ETSA Diesel-Hydraulic Locomotive No.1 - Electricity Trust of South Australia - Standard Gauge



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



ETSA Diesel-Electric Locomotive No.1 at the NRM *(Andrew Peters)*

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 were 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 locomotive in early 1951 with the Birmingham Carriage and Wagon

Class operators	Commonwealth Railways Australian National Railways
Provenance	Commonwealth Railways & Australian National
Ownership	Port Dock Station Railway Trust
Entered service	20 March 1955
Withdrawn	Pre 1980
Entered the museum	1985
Condition	Fair - missing some mechanical parts
Horsepower	925
Engine type	Sulzer 6LDA28
Traction Motors	4
Gear Ratio	65:14
Fuel capacity	750 gallons (3409 litres)
Total Weight	60 tons (60.96 tonnes)
Length (over coupling points)	46 ft. 4 in (14.122 metres)
Number in class	14
Bore & stroke	11 in. x 14.2 in. 279 mm × 360 mm
Maximum Axle Load	10 tons (10.160 tonnes)
Maximum Speed	50 mph
Tractive Effort (continuous)	15,300 lbs @ 15¼ mph (68.06 kN @ 24.5 km/h)
Tractive Effort (starting)	22,400 lbs (99.64 kN)
Wheel Arrangement	A1A-A1A

Table 8.11: Details of NSU class A1A-A1A Diesel-Electric locomotive No.61 - Commonwealth Railways - Narrow Gauge



Commonwealth Railways NSU61 & NSU56 posed for a photo at Marree *(Commonwealth Railways - NRM Collection 1-5-pd0687)*

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.



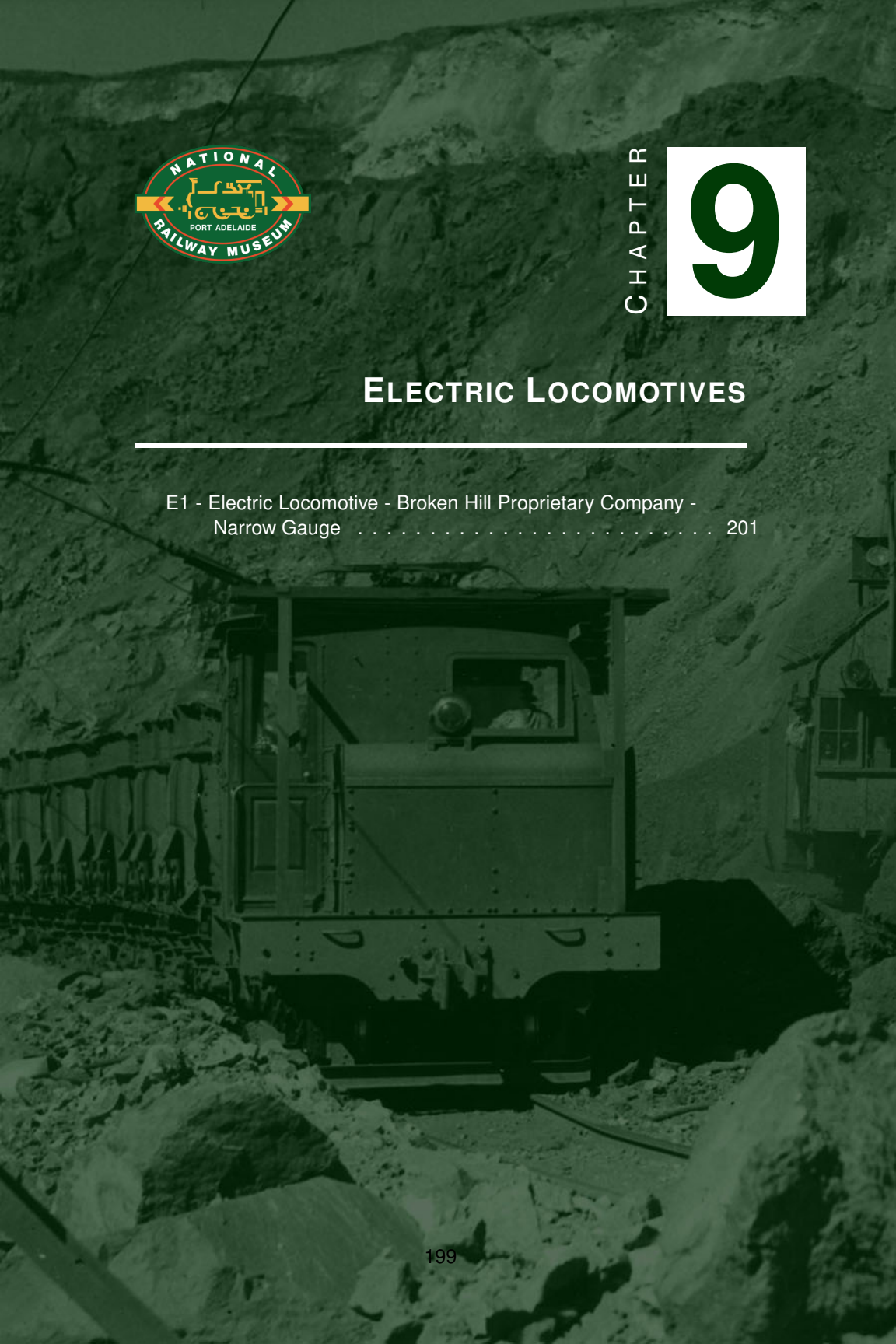
Commonwealth Railways NSU61 & NSU59 on the Alice Springs mixed at Beresford on the Central Australian Railway - 13 October 1974 *(Barry Marshall - NRM Collection 97-1262-c156)*

All fourteen NSU's entered service on the Central Australia 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 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 Australia Railway.

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

Locomotive NSU61 entered the Mile End Railway Museum in 1985, and was moved to Port Adelaide on 19 July 1988. It is an example of robust British engineering adapted to Australia's outback conditions.



CHAPTER 9

ELECTRIC LOCOMOTIVES

E1 - Electric Locomotive - Broken Hill Proprietary Company - Narrow Gauge 201



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

THIS ELECTRIC LOCOMOTIVE was the first of eight operated in South Australia by the Broken Hill Proprietary Company Limited on two little known quarry railways, at Iron Knob and Iron Monarch, about 50 km out of Whyalla, and at Rapid Bay, south of Adelaide.

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

Introduced at the ironstone quarries at Iron Knob in 1928, the three original locomotives, E1 to E3, were built by the Metropolitan-Vickers Electrical Co. Ltd. of Manchester and Sheffield, England. They 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.

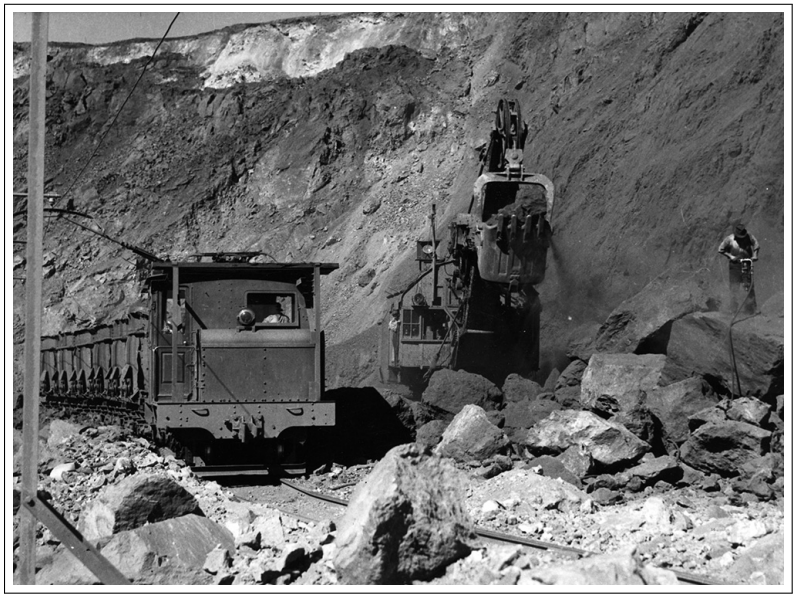
During World War II, the company commenced quarrying for limestone at Rapid Bay and two similar locomotives, E5 and E6, were supplied to the original design by Perry Engineering Co. Ltd. of Mile End, South Australia in 1942. Perry Engineering built another two locomotives, E7 and E8, to work at Iron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

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

Table 9.1: Details of Electric Locomotive E1 - Broken Hill Proprietary Company - Narrow Gauge



Metro-Vickers built, BHP Electric Locomotive No.E1 goes about its business at the Iron Knob quarry loading ore - c.1933 *(NRM Collection - 1-1-01185)*



Metro-Vickers built, BHP Electric Locomotive No.E2 at the Iron Knob quarry *(Ron Stewien Collection - NRM Collection - 215-1237-bl178)*



Metro-Vickers built, BHP Electric Locomotive No. E3 heads wagons loaded with ore at the Iron Monarch crusher *(NRM Collection - 1-1-11952)*

After the company replaced the railway systems in its quarries with road transport most of the locomotives were cut up for scrap. Locomotive 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 National Railway Museum in 1999.

CHAPTER 10

INDUSTRIAL AND AMUSEMENT LOCOMOTIVES

Malcolm Moore & Company Internal Combuston Locomotive - South Australian Harbors Board - Narrow Gauge 207

Ruston Hornsby Diesel Locomotives No.304 and No.306 - Waratah Gypsum Co - 2 Foot Gauge 208

Malcolm Moore Diesel Locomotive No.1514 - Waratah Gypsum Co - 2 Foot Gauge 211

Boomerang Train - Miniature Railway Locomotive - 10 Inch Gauge 213

Loco Number 1 - *Juliet* - Mile End Railway Museum - 18 Inch Gauge 215

Loco Number 2 - *Chitty* - Mile End Railway Museum - 18 Inch Gauge 216

Loco Number 4 - *Bub* - National Railway Museum - 457mm (18 Inch) Gauge 217

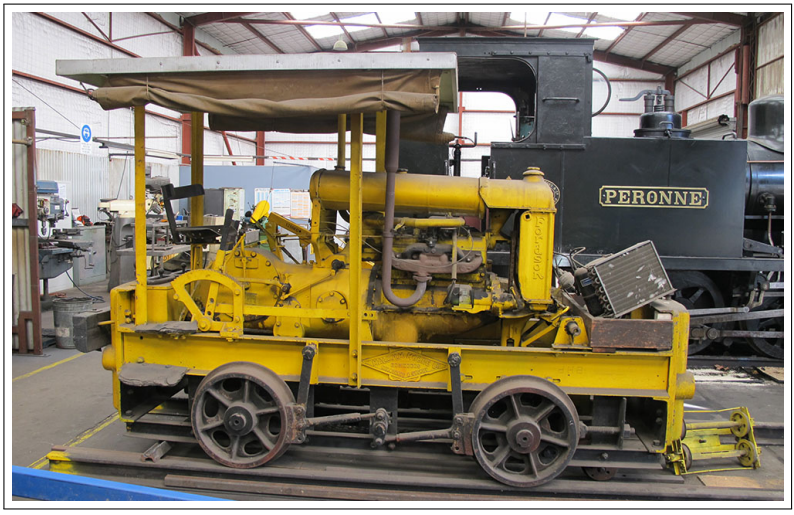
Loco Number 6 - *Bill* - National Railway Museum - 457mm (18 Inch) Gauge 221

Loco Number 7 - *Ken* - National Railway Museum - 457mm (18 Inch) Gauge 224

Loco Number 8 - *Len* - National Railway Museum - 457mm (18 Inch) Gauge 226



Malcolm Moore & Company Internal Combuston Locomotive - South Australian Harbors Board - Narrow Gauge



South Australian Harbors Board - Malcolm Moore & Company Internal Combuston Locomotive - 7 July 2014 *(Chris Drymalik - NRM Collection 275-373-p1118984)*

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 Fordson tractor was manufactured at Dagenham, Essex, UK in

Class operator	South Australian Harbors Board
Condition	Excellent
Provenance	Adelaide Cement Company South Australian Harbors Board
Ownership	Port Dock Station Railway Trust
Builder	Malcolm Moore & Company, Port Melbourne, Victoria, Australia - based on a Fordson Tractor
Entered service	1942
Entered the museum	18 December 1971
On loan to	Port Milang Railway Museum since 19 August 2014

Table 10.1: Details of Malcolm Moore & Company Internal Combuston Locomotive - South Australian Harbors Board - Narrow Gauge

1940 and was exported to Australia. It was converted to a rail tractor by Malcolm Moore Company, Melbourne in 1942 using a chassis dated c.1923, and sold to the Adelaide Cement Company for use at their Klein Point quarry on the lower Yorke Peninsula.

In March 1954, it was sold to the South Australian Harbors Board for use at the Port Price jetty on the upper Yorke Peninsula. The engine features four cylinders and runs on power kerosene, starting initially with petrol. It has four forward and four reverse gears, operated through a transfer box. Ignition is provided by a magneto.

The locomotive was received from the South Australian Harbors Board, Port Price, on 18 December 1971.

This exhibit is currently on loan to Port Milang Historic Railway Museum.

Ruston Hornsby Diesel Locomotives No.304 and No.306 - Waratah Gypsum Co - 2 Foot Gauge

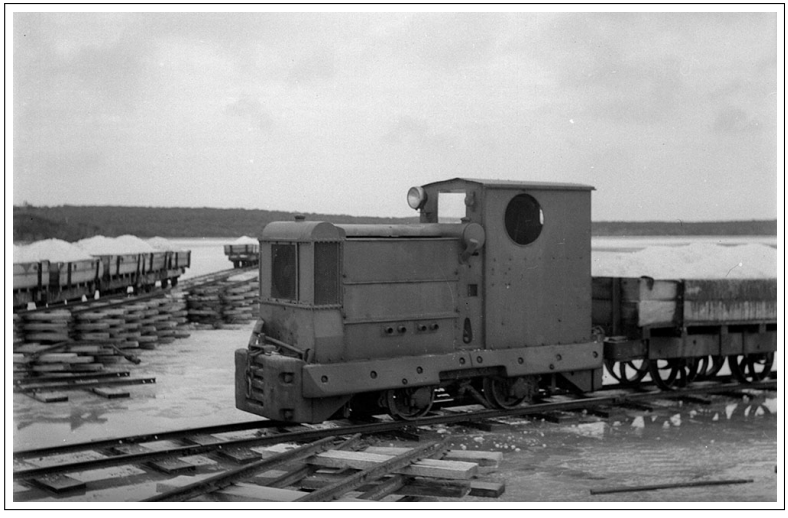
NOWADAYS IT IS largely forgotten that there used to exist, in South Australia, a number of small privately owned railways, built for industrial purposes, usually but not always to provide access to deep sea ports. Equally, it is not always remembered that what are now small seaside towns were once flourishing 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.

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. (610 mm)
Length	11 ft. 3 in. (3.429 metres)
Weight	5½ tons (5.588 tonnes)
Engine	Ruston 4 VRO, 48 h.p., roller chain drive to axles
Withdrawn	c.1960s
Entered the museum	25 November 1971
Ownership	Port Dock Station Railway Trust
On loan to	Port Milang Railway Museum

Table 10.2: 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. (610 mm)
Length	13 ft. 10 in. (4.216 metres)
Weight	10 tons (10.160 tonnes)
Engine	Ruston 4 YE, 82½ h.p., drive to axles by jack shaft connecting rods
Withdrawn	c.1960s
Entered the museum	25 November 1971
Ownership	Port Dock Station Railway Trust
On loan to	Sheaoak Log Historic Machinery Museum

Table 10.3: Details of Ruston Hornsby Diesel Locomotives No. 306 - Waratah Gypsum Co - 2 Foot Gauge



'The Ruston' Waratah Gypsum - Stenhouse Bay - 23 January 1947
(Arnold Lockyer - NRM Collection 7-1069-a095-10)



This photograph, taken on 23 January 1947, shows the Ruston engine 304 at left. Engine 'J' at right is hauling trucks from the salt lake *(Arnold Lockyer - NRM Collection 7-1069-a095-12)*



Waratah Gypsum locomotive 304 at the museum in 1991 *(Peter Meredew - NRM Collection 1-1-12279)*

One such port was Marion Bay, located at the southern tip of the Yorke Peninsula. Another, which operated until quite recently, was Stenhouse Bay. Both ports existed primarily to ship gypsum, which was found in large quantities in the surrounding area. The Hassell Marion Bay Gypsum Company operated two tiny steam locomotives on its line to Marion Bay until 1921, while another line used horse-drawn wagons to haul gypsum from Inneston to Stenhouse Bay until 1920.

In 1926 the Waratah Gypsum Company started business with a 2½ 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, Locomotives ‘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 Locomotive ‘H’, another Vulcan product, had a Caterpillar diesel engine. Locomotives ‘J’, ‘K’ and ‘M’ were built by Malcolm Moore of Melbourne, and were based on Fordson tractors. After the arrival of these units, 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 built engines, but differed in 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 wagons, each weighing 4½ tons and capable of carrying 8 tons of gypsum. The trains survived into the 1960s, when the task of transporting the gypsum was transferred to road vehicles. This little tramway operated on two foot gauge, and was one of several around the state. Unfortunately, none of these railways now survive.

Malcolm Moore Diesel Locomotive No.1514 - Waratah Gypsum Co - 2 Foot Gauge

IN 1926 THE Waratah Gypsum Company started business with a 2½ 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, Locomotives ‘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 Locomotive ‘H’, another Vulcan product, had a Caterpillar diesel engine. Locomotives ‘J’, ‘K’ and ‘M’ were built by Malcolm Moore of Melbourne, and were based on Fordson tractors.

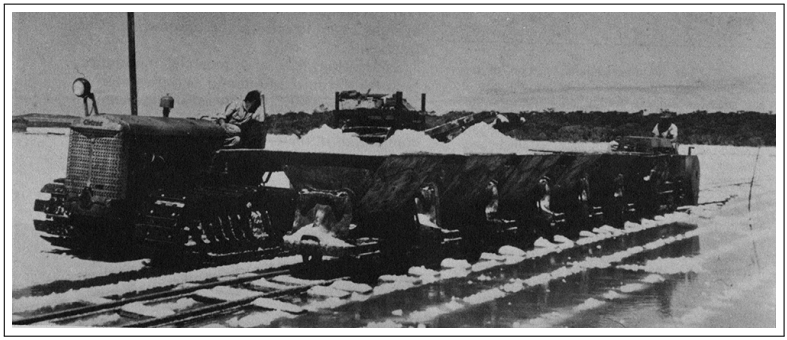
This tractor type locomotive was used at Stenhouse Bay prior to being transported to the NRM in 1990. It was built by Malcolm Moore, and subsequently rebuilt with the original Fordson engine being replaced by a Deutz diesel. The company originally had three of these units

Class operators	Waratah Gypsum Co
Condition	Good
Built	Malcolm Moore, Melbourne, Victoria
Builder's No.	1514
Entered the museum	1990
Ownership	Port Dock Station Railway Trust
Withdrawn	c.1960s

Table 10.4: Details of Malcolm Moore Diesel Locomotive No.1514 - Waratah Gypsum Co - 2 Foot Gauge



Stenhouse Bay Waratah Gypsum Pty Ltd Loco 1514 at the museum on 30th October 1990 *(Arnold Lockyer - NRM Collection 7-1001-034-241)*



Stenhouse Bay Waratah Gypsum Pty Ltd Loco 1514 (probably) in 1967. Harvesting salt from the bed of Snow Lake; lower Yorke Peninsula. *(Arnold Lockyer Collection - NRM Collection 7-1001-034-241)*

identified as ‘J’, ‘K’ and ‘M’, though the identify of this particular loco is uncertain it bears the number 1514.

To transport the gypsum, the company operated a fleet of 32 bogie trucks. Each truck weighed 4½ tons and could carry up to 8 tons of gypsum. The tramway remained in use until the 1960s, when road transport by took over. This small two-foot gauge tramway was one of several operating in South Australia at the time. Unfortunately, none of them have survived.

This locomotive is currently on loan to the Sheaoak Log Historic Machinery Museum.

Boomerang Train - Miniature Railway Locomotive - 10 Inch Gauge

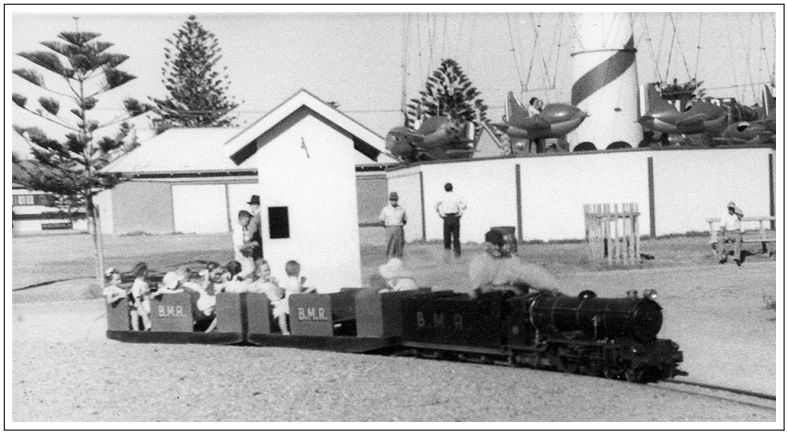
THIS STEAM 254MM (10inch) gauge locomotive, was built for the *Boomerang Miniature Railway* (so named because it ran on an oval track and always came back) by *Alfred Thomas Daniels* over a period of seven years.

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

Class operators	Misc
Condition	Excellent
Entered service	1935
Entered the museum	1989
Ownership	Port Dock Station Railway Trust
Cylinder	2½ in. bore 4¼ stroke
Valve motion	Walschaerts
Working pressure	90 lbs. square inch (620 kPa)
Tractive force	150 lb. (667 N)
Hauling capacity	2 tons (2.032 tonnes)
Total weight (engine and tender)	14 cwt (711 kg)
Length (engine and tender)	12 ft. 6 in. (3.810 metres)
Height to top of chimney	2 ft. 2 in. (0.660 metres)

Table 10.5: Details of Boomerang Train - Miniature Railway Locomotive - 10inch



Boomerang Train Miniature Railway Locomotive at Glenelg - c.1950s *(NRM Collection 1-1-08425)*



Boomerang Train Miniature Railway Locomotive at the Centenary Exhibition Wayville Showgrounds - 1936 *(Arnold Lockyer Collection - NRM Collection 7-1072-f384-05)*

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.

Loco Number 1 - *Juliet* - Mile End Railway Museum - 18 Inch Gauge



Loco Number 1 - *Juliet* hauling a train load of passenger train at the Mile End Railway Museum - 16 December 1973 *(Michael Kelly - NRM Collection 227-975-11314)*

THIS LITTLE LOCOMOTIVE was operated at the Mile End Railway Museum from October 1966 to September 1983.The locomotive was originally named by Australian Railway Historical Society and Museum Secretary J.A. Norris.

Class operators	Mile End Railway Museum
Condition	Excellent
Entered the museum	May 2005
Ownership	Port Dock Station Railway Trust
Entered service	1951
Withdrawn	1983

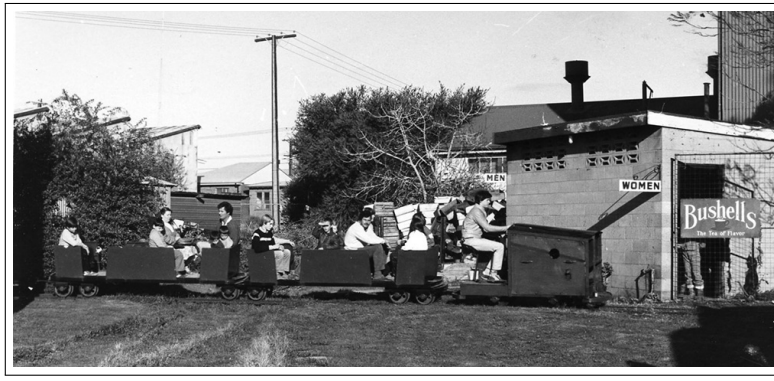
Table 10.6: Details of Loco Number 1 - *Juliet* - Mile End Railway Museum - 18 Inch Gauge

Juliet was donated to the National Railway Museum in May 2005 by J.A. Norris and E. Wolverson.



Loco Number 1 - *Juliet* in front of Steam Bus Lady of the Lake at the Mile End Railway Museum - 14th October 1973 *(Ron Fluck - NRM Collection 227-975-11314)*

Loco Number 2 - *Chitty* - Mile End Railway Museum - 18 Inch Gauge



Loco Number 2 - *Chitty* hauling a train load of passenger train at the Mile End Railway Museum - 1 June 1984 *(NRM Collection 1-1-05199)*

THIS LOCOMOTIVE WAS operated originally on 610mm gauge at Barry's Brickyard Torrensville until acquired by the Mile End Railway museum in September 1968, when it was re-gauged by

Class operators	Mile End Railway Museum
Condition	Excellent
Entered service	Barry's Brick yard: unknown Mile End: September 1968
Entered the museum	September 1968
Ownership	Port Dock Station Railway Trust
Engine	4 HP Moffat Virtue (Rosebery)
Withdrawn	1988

Table 10.7: Details of Loco Number 2 - *Chitty* - Mile End Railway Museum - 18 Inch Gauge

Hercus Enginering to 457 mm gauge for use on the museum's miniature railway.



Loco Number 2 - *Chitty* hauling a train load of firewood at the Mile End Railway Museum - 7 September 1985 *(NRM Collection 1-1-24057)*

Chitty gained it's name from the sound it would make, but also in homage to the movie Chitty Chitty Bang Bang. *Chitty* was withdrawn from museum service in 1988, and placed on static display.

Loco Number 4 - *Bub* - National Railway Museum - 457mm (18 Inch) Gauge

THIS CHARMING NARROW-GAUGE steam locomotive holds a special place in the history of the National Railway Museum. Originally constructed by a dedicated team of volunteers at the former Mile End

Railway Museum, the locomotive was lovingly handcrafted by volunteers for use on the Museum's original 457 mm (18 in.) gauge track. Designed with visual appeal in mind, the locomotive was built to provide children and families with a hands-on, rideable steam experience that captured the romance of early railway travel. Though it was initially intended for service at the Mile End site, a change in plans saw the locomotive transferred to the museum's new home in Port Adelaide, where it began active duty in 1988.



Loco Number 4 - *Bub* hauling a train load of passengers on the Semaphore to Fort Glanville Railway - 13 March 1993 *(Ron Fluck - NRM Collection 124-1339-09283)*

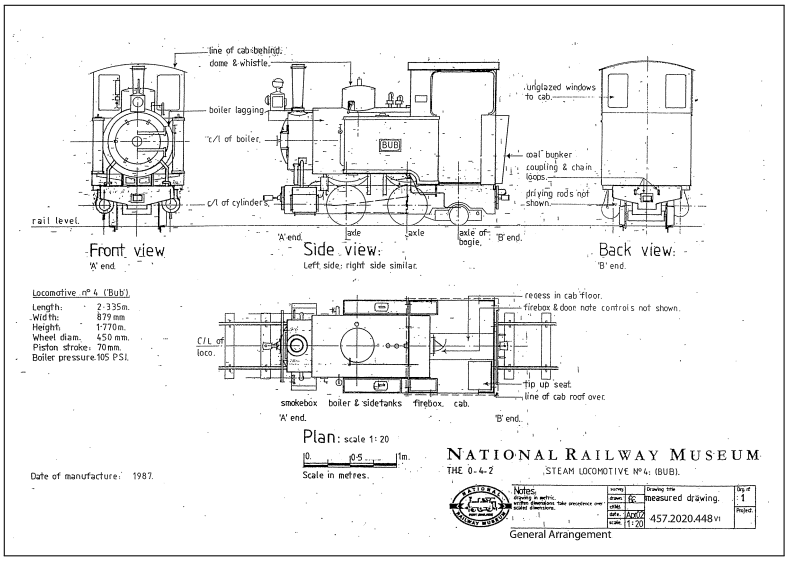
Since arriving at Port Adelaide, this locomotive has become an enduring part of the museum's living collection. It regularly operates on the museum's internal 457 mm gauge railway and, like its larger companion Locomotive Bill, also runs services along the popular Semaphore to Fort Glanville Railway during peak times. The engine's scale and style make it particularly appealing to younger visitors, offering an exciting introduction to steam technology in a safe and accessible format. With its gleaming brass fittings, classic steam whistle, and gently chuffing exhaust, the locomotive recreates the authentic sights, sounds, and smells of a bygone era, evoking memories for older generations and sparking curiosity in the next.

Over the decades, this small but mighty engine has become more than just a mode of transport - it has grown into a symbol of volunteer spirit and community heritage. Maintained by a passionate team of staff and volunteers, the locomotive continues to serve thousands of visitors each year, delivering joyful rides and unforgettable moments for

children and families. Its ongoing presence alongside Locomotive Bill reinforces the museum's commitment to keeping rail history alive not just through static displays, but through living, working machines. Whether steaming through the museum grounds or rolling along the scenic Semaphore coastline, this engine plays a vital role in sharing the story of Australia's railway past with generations to come.



Loco Number 4 - *Bub* sits alongside the Callington Station building at the National Railway Museum - 29 May 2004 *(Chris Drymalik - NRM Collection 275-373-p1013828)*



Drawing of Loco Number 4 - *Bub* - National Railway Museum - 457 mm (18 inch) Gauge

Class operators	National Railway Museum
Condition	Excellent
Ownership	National Railway Museum
Date of Manufacture	1987
Manufactured by	volunteers at the Mile End Railway Museum
Colour	Process Blue
Entered Service	1988
Road Number	No.4
Weight	2 tonne approx
Height	1770 mm
Length	2335 mm
Width	879 mm
Boiler Pressure	105 psi
Cylinder diameter	115 mm
Stroke	180 mm
Wheel diameter	400 mm
Fuel	Coal

Table 10.8: Details of Loco Number 4 - *Bub* - National Railway Museum - 457 mm (18 inch) Gauge

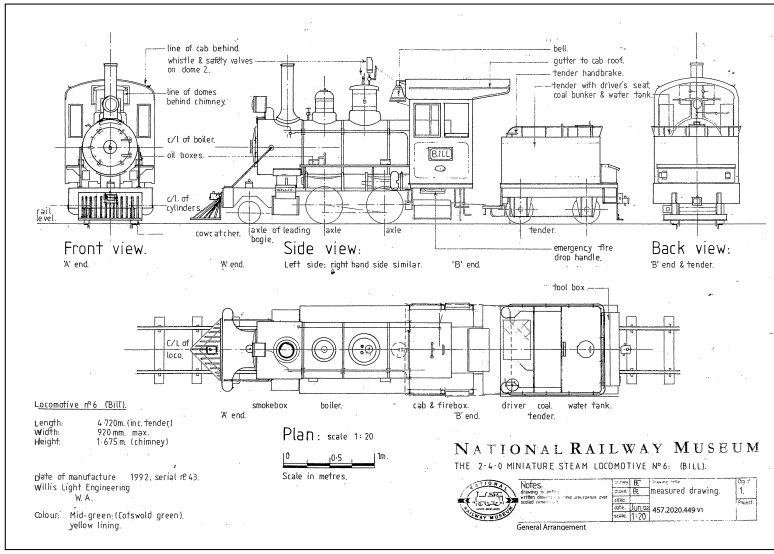
Loco Number 6 - *Bill* - National Railway Museum - 457mm (18 Inch) Gauge

LOCOMOTIVE BILL IS the larger of the two 457 mm (18 in.) gauge steam locomotives owned and operated by the National Railway Museum in Port Adelaide, South Australia. Built in 1993, this eye-catching miniature steam engine was custom-designed specifically for the museum by *Ian Willis* of Willis Light Engineering, a specialist manufacturer based in Western Australia. The locomotive was commissioned to meet the museum's need for a reliable, powerful steam engine capable of hauling passenger trains around the museum site, and along the Semaphore to Fort Glanville Railway - a popular attraction that offers visitors an immersive experience of heritage rail travel on a scenic seaside route. With its robust construction and classic steam-era aesthetics, Locomotive Bill is a favourite among visitors and volunteers alike.

Ian Willis brought decades of experience to the project, having built a reputation across Australia for designing and fabricating 7¼ inch gauge heavy-duty live steam locomotives. These engines were commonly used in commercial miniature railways, known for their durability and strong pulling capacity despite their small scale. Drawing on this background, Willis took one of his proven designs and meticulously scaled it up to suit the museum's 457 mm (18 in.) gauge.

Class operators	National Railway Museum
Condition	Excellent
Ownership	National Railway Museum
Date of manufacture	1992
Manufactured by	Willis Light Engineering. (WA)
Colour	Larch Green
Entered Service	1993
Road Number	No.6
Weight	3.5 tonne
Height	1675 mm
Length	4720 mm Inc. tender
Width	920 mm
Boiler Pressure	140 psi
Cylinder Diameter	130 mm
Stroke	180 mm
Wheel diameter	400 mm
Fuel	Coal

Table 10.9: Details of Loco Number 6 - *Bill* - National Railway Museum - 457 mm (18 inch) Gauge



Drawing of Loco Number 6 - *Bill* - National Railway Museum - 457 mm (18 inch) Gauge



Loco Number 6 - *Bill* with a 5-car train on the Semaphore to Fort Glanville Railway - 28 December 2012 *(Bob Grant - NRM Collection 335-1410-40D12-1136)*

The result was a finely engineered steam locomotive that combines the charm and detail of a traditional engine with the strength required for regular public service. Locomotive Bill showcases the best of Australian craftsmanship, blending mechanical precision with nostalgic appeal.



Loco Number 6 - *Bill* at the Semaphore terminus of the Semaphore to Fort Glanville Railway - 17 January 2004 *(Chris Drymalik - NRM Collection 275-373-p1010562)*

Throughout the year, Locomotive Bill serves as the workhorse of the Semaphore to Fort Glanville Railway, transporting passengers along the 1.7-kilometre coastal line. The engine operates primarily during the warmer months when tourist activity peaks, and returns to the National Railway Museum during the off-season for scheduled maintenance, inspections, and occasional duty within the museum's grounds. During these periods, Bill also provides operational relief for the museum's smaller steam locomotive Bub, ensuring continued service during special events or busy periods. Its regular maintenance is crucial for preserving both safety and performance, allowing the engine to remain in active service while honouring its original design and craftsmanship.

More than just a piece of moving history, Locomotive Bill is a symbol of the museum's commitment to preserving and celebrating Australia's rich rail heritage in an engaging, hands-on way.

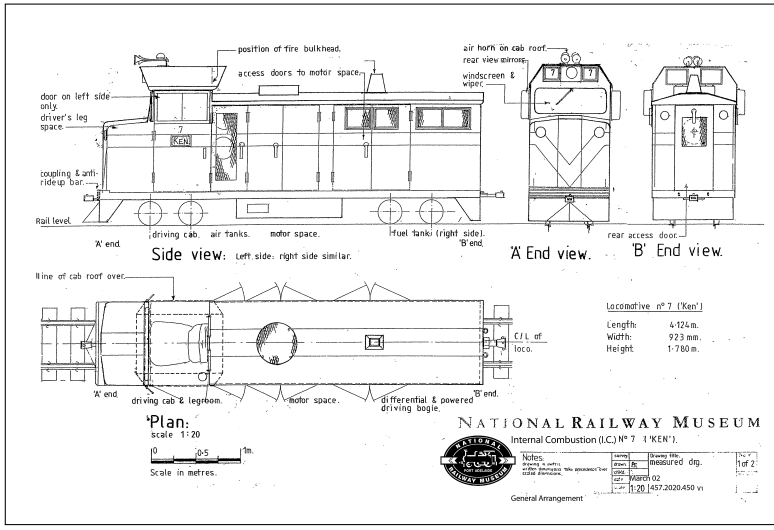
Semaphore and Fort Glanville Tourist Railway

The Semaphore and Fort Glanville Tourist Railway departs from the foot of the jetty at the end of the popular Semaphore Road cafe strip, and parallels the esplanade and the sand dunes of one of Adelaide's most popular swimming beaches, before passing through the dunes near historic Fort Glanville.

The railway operates on a narrow gauge track measuring 457 mm (18 inches), originally laid in 1992 to coincide with the Centenary of the Port Adelaide Municipal Tramways. Since then, it has become a much-loved part of local tourism and community heritage. The line spans approximately 1.7 kilometres and follows the scenic esplanade, providing striking views of the coast and beach-goers.

Trains are hauled by the NRM's small diesel locomotives or steam engines. The line operates primarily during summer weekends, public holidays, and school vacation periods. The journey is popular with families, history enthusiasts, and tourists alike.

Loco Number 7 - *Ken* - National Railway Museum - 457mm (18 Inch) Gauge



Drawing of Loco Number 7 - *Ken* - National Railway Museum - 457 mm (18 inch) Gauge

THE BACKBONE OF operations on the National Railway Museum's 457 mm (18 in.) gauge railway isn't just steam-powered - it's also supported by internal combustion locomotives like Locomotive Ken.

Class operators	National Railway Museum
Condition	Excellent
Ownership	National Railway Museum
Date of Manufacture	1995
Manufactured by	National Railway Museum Volunteers
Colour	Green. (Originally it was red)
Entered Service	1996
Road Number	No.7
Weight	2 tonne approx.
Height	1780 mm
Length	4124 mm
Width	923 mm
Wheel diameter	300 mm approx.
Engine	Chrysler 245 Hemi from a CL Valiant
Fuel	Petrol
Fuel Capacity	50 litres
Transmission	Borg Warner 35
Differential	Triumph Stag type

Table 10.10: Details of Loco Number 7 - *Ken* - National Railway Museum - 457 mm (18 inch) Gauge



Loco Number 7 - *Ken* with loaded train arrives at the NRM's Callington Station - 22 October 2017 *(Chris Drymalik - NRM Collection 275-373-p1153308)*



Loco Number 7 - *Ken* sitting in front of the Callington Station building at the NRM - 30 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222458)*

This powerful and reliable engine was designed and built entirely by museum volunteers, showcasing the skill, dedication, and ingenuity of the workshop team that helps keep the museum running behind the scenes.

Ken entered service in 1996, purpose-built to handle regular duties on the museum's miniature railway, especially during times when steam locomotives are unavailable or undergoing maintenance. At its heart is a piece of classic Australian motoring history: a Chrysler 245 Hemi engine, originally found in the CL model Valiant car. Known for its durability and smooth performance, this six-cylinder engine was cleverly adapted for rail use, offering a unique blend of automotive and railway engineering.

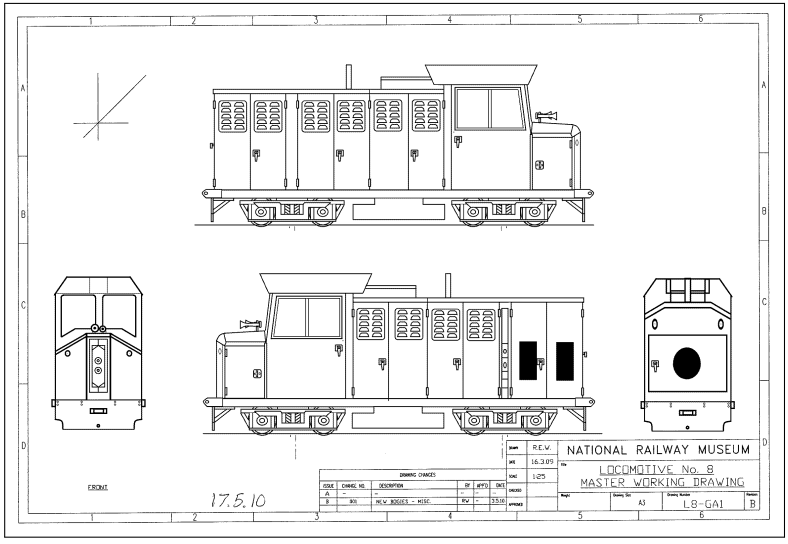
Loco Number 8 - *Len* - National Railway Museum - 457mm (18 Inch) Gauge

LOCOMOTIVE LEN, ALSO known as No.8, is a 457 mm (18 in.) gauge locomotive at the National Railway Museum in Port Adelaide, South Australia. It is part of the museum's collection of miniature railway engines and plays an active role in providing passenger rides around the museum's grounds.

Len is designed to closely resemble modern full-sized locomotives, albeit on a smaller scale. The locomotive is powered by a diesel

Class operators	National Railway Museum
Condition	Excellent
Ownership	National Railway Museum
Date of manufacture	2023
Manufactured by	National Railway Museum Volunteers
Colour	Regal Red
Entered Service	2024
Road Number	No. 8
Weight	3.5 tonnes
Height	2080 mm
Length	5000 mm
Width	1100 mm
Wheel diameter	330 mm
Engine	Mazda R2 naturally aspirated from an E2200 van
Fuel	Diesel
Fuel Capacity	200 litres
Transmission	Mazda from a E2200 van
Differentials	Holden Commodore
Transfer Box	From a Nissan 720 ute

Table 10.11: Details of Loco Number 8 - *Len* - National Railway Museum - 457 mm (18 inch) Gauge



Drawing of Loco Number 8 - *Len* - National Railway Museum - 457 mm (18 inch) Gauge



Loco Number 8 - *Len* undergoing trails at the NRM - 21 July 2018
(Chris Drymalik - NRM Collection 275-373-p1162285)

engine, and its compact size and bright, colorful livery make it a popular attraction for visitors, especially families and children, as it offers a hands-on experience of rail history in an accessible form. Operating on the museum's 457 mm gauge track, Locomotive Len contributes to the museum's mission of preserving and showcasing Australia's railway heritage.

CHAPTER 11

RAILCARS

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McINTYRE Bros
Stradbrook STORE
STORE
ANCHOR BRAND GROCERIES
WOODROOFE'S

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, as there had been the Caldwell Vale railcar that operated between Goolwa and Victor Harbour, and a small railcar at Port Lincoln, but the scale of the replacement was new.

Mr Webb did not just order one railcar as had been done before, but he initially ordered a fleet of twelve from the Indiana firm of Service Motors. These petrol railcars 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 railcar 41). The earlier railcars 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 cars, as delivered, were painted in a bright colour scheme of royal blue and lemon yellow. 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 passengers the efficiency of the new railcar.

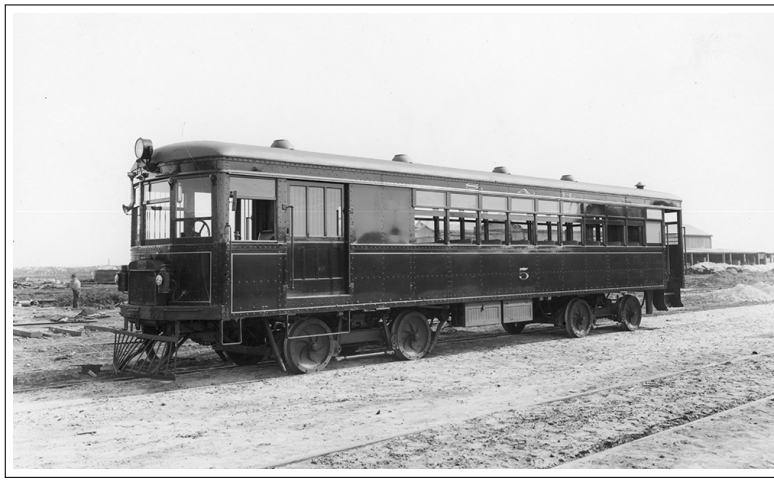
During the 1930's the original 68 h.p. petrol engines were all removed and replaced by Gardiner 102 h.p. diesel engines, except for No. 7, which was given a Deutz 110 h.p. air-cooled diesel engine.

Class operators	South Australian Railways
Condition	Good
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Built by	(Service Motors) Brill Car Co, USA
Number in class	12
Model	55 class
Entered service	9 June 1924
Withdrawn	1968
Entered the museum	22 October 1968
Length (over coupling points)	43 ft. 5 in. (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 11.1: Details of Brill Railcar No.8 - South Australian Railways - Broad Gauge

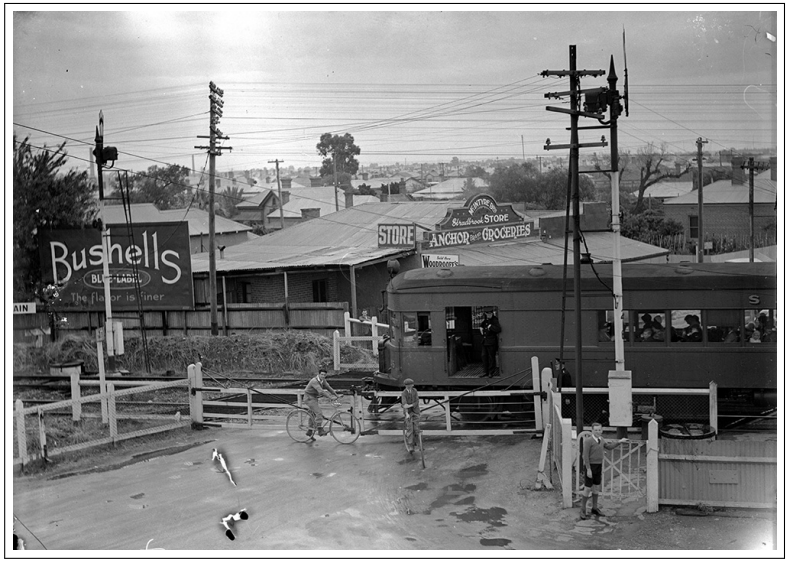


Brill Railcar No.8 in the platform at original Port Dock Station, Port Adelaide *(Barry Marshall - NRM Collection 97-1262-z026)*



Brill Railcar No.5 - South Australian Railways Workshops Islington - c.1936 *(STA Collection - NRM Collection 5-103-2060)*

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.

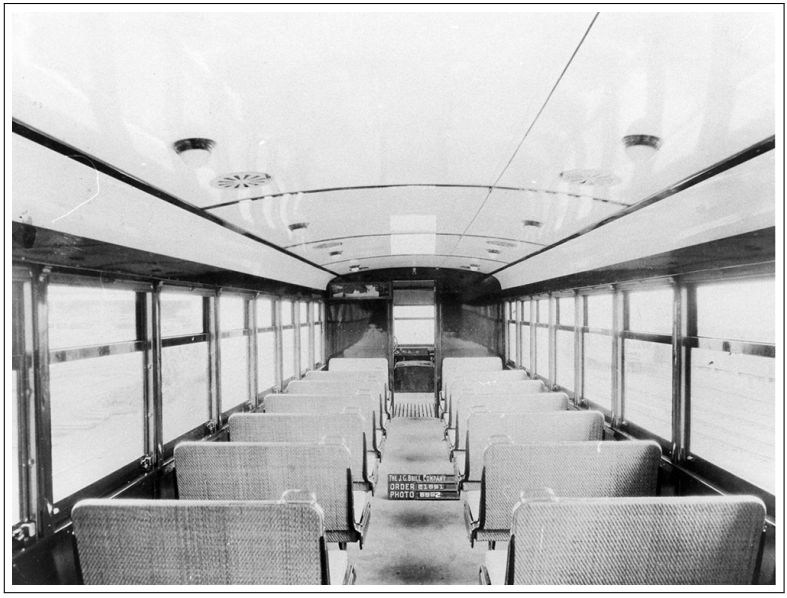


A 55 Class Brill Railcar crosses Torrens Road at Ovingham - February 1936 *(NRM Collection 97-1262-z026)*

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.

There can be no doubt that the introduction of these small railcars 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 railcars that was to culminate in the luxurious air-conditioned Bluebird of some thirty years later.

Railcar No.8 is currently not on formal display as it undergoing a full restoration in the Goods Shed. h



Brill Railcar interior - c.1927 *NRM Collection 5-103-2060)*

Class operators	South Australian Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
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	9 March 1973
Length (over coupling points)	58 ft. 6 in. (17.83 metres)
Total Weight	27 tons (27,432 kilograms)
Engine type	Cummins diesel
Seating capacity	34

Table 11.2: Details of Brill Railcar No.41 - South Australian Railways - Broad Gauge

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

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



Brill Railcar No.41 with a trailer car on the evening Victor Harbour passenger - January 1961 *(NRM Collection 1-3-s06144)*

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 railcars 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 surburban services. Regrettably, these cars were renowned for their rough riding qualities.

As built, these railcars seated 61, had petrol engines and a series of small windows similar to those of the 55 class. By the end of their



Brill Railcar No.41 at Long Gully - c.1970 *(John Gordon - NRM Collection 551-549-0108)*



75 Class Brill Railcar interior - c.1939 *(NRM Collection 1-1-09306)*

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 ‘Milk Bar Cars’ because of the high-back seating.

All the railcars 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 railcars were fitted with remote control equipment to allow multiple unit operation.



75 Class Brill Railcar interior - c.1939 *(NRM Collection 1-1-09307)*

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 railcars and the more modern Bluebird 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 railcar into the care of the Museum. He had earlier purchased it from the South Australian Railways.

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways / Australian National
Built by	S.A.R. Islington Workshops
Number in class	12
Model	250
Entered service	13 February 1957
Withdrawn	1995
Entered the museum	3 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 ft. 3 in. (23.850 metres)
Seating capacity	52 passengers

Table 11.3: 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.

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 Tailem Bend and Victor Harbour. 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, Tailem Bend in 1981, Gladstone in 1982 and Victor Harbour 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.

Bluebird railcar 257 entered the museum on 3 May 1995, and is the only member of the class that was not converted into a crew car for use on interstate freight services.



Bluebird Diesel Railcar No.257 sitting in the platform at Wanbi in South Australia's Murray Mallee - 12 March 1972 *(Cliff Olds - NRM Collection 21-241-a1746)*



Bluebird Diesel Railcar No.257 sits in the platform at the head of a 5-car set that was the last regular service to Victor Harbour - 29 April 1984 *(Chris Roads - NRM Collection 44-981-d471)*



Tailem Bend platform hosts Bluebird Diesel Railcar No.257 on the up Mount Gambier passenger service - 4 April 1990 *(David Parsons - NRM Collection 80-1260-a07-11)*



Interior view of the passenger compartment of Bluebird Diesel Railcar No.257 taken at the NRM - 22 February 2020 *(Chris Drymalik - NRM Collection 275-374-p1181316)*

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



Red Hen Diesel Railcar No.321 sitting in the platform at Bridgewater - 5 July 1987 *(Robert Haebich - NRM Collection 48-987-d065-02)*

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.

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



Red Hen Diesel Railcar No.321 interior during one of its special passenger trips at the NRM - 15 July 2007 *(Chris Drymalik - NRM Collection 275-373-p1036387)*



Red Hen Diesel Railcar No.321 with Trailer No.875 and Railcar No.400 arriving at Blackwood - c.1995 *(Phillip Wood - NRM Collection 406-377-c0006)*

Class operators	South Australian Railways State Transport Authority TransAdelaide
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways
Built by	S.A.R. Islington Workshops
Model	300 Class
Number in class	74
Entered service	12 April 1957
Withdrawn	15 December 1996
Entered the museum	15 December 1996
Length (over coupling points)	65 ft. 8 in. (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 11.4: Details of Red Hen Diesel Railcar No.321 - State Transport Authority - Broad Gauge

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 began constructing a new fleet of diesel railcars designed specifically for Adelaide's suburban rail services. Two configurations were produced: the 300 class, featuring a single driving cab, and the 400 class, equipped with driver controls at both ends for bidirectional operation.

Each railcar body was built around a fabricated steel framework, clad

Class operators	South Australian Railways State Transport Authority TransAdelaide
Condition	Excellent
Ownership	Port Dock Station Railway Trust
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	17 September 1959
Withdrawn	15 December 1996
Entered the museum	15 December 1996
Length (over coupling points)	65 ft. 8 in. (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 11.5: Details of Red Hen Diesel Railcar No.400 - State Transport Authority - Broad Gauge

in welded steel sheeting. The original livery featured a satin maroon body, silver roof, and black bogies. This colour scheme was later replaced with the standard suburban red used across the Adelaide network.

Bogies were also manufactured at the Islington Workshops, although some units were later retrofitted with modified bogies that had previously supported Overland carriages.

Passenger compartments were fitted with cold cathode fluorescent lighting, along with low-voltage emergency lights. Seating consisted of fixed tubular steel frames. Initially, from the 1950s through to 1961, seat coverings were made of vinyl in colours such as cherry red and Flanders blue, though green, brown, and grey also appeared occasionally. From 1968, upholstery was updated to a custom blue-green tone that coordinated with newly introduced green interior wall panels.

Interior wall finishes included plastic laminate in blue linen, tan linen, or plain green, while flooring varied between red linoleum and



Red Hen Diesel Railcar No.400 in the platform at Semaphore *(Roger Wheaton Collection - NRM Collection 528-527-2576)*



Red Hen Diesel Railcar No.400 on a regular passenger arriving at Pinera in the Adelaide Hills - February 1970 *(John Gordon - NRM Collection 551-549-0111)*

blue-yellow chequerboard vinyl tiles depending on the car and era of refurbishment.

Each railcar was powered by two six-cylinder diesel engines of the lay-over type. These were connected via hydraulic torque converters and gearboxes, transmitting power to the bogies to provide reliable suburban traction.



Red Hen Diesel Railcar No.400 interior after restoration at the NRM - 9 February 2013 *(Chris Drymalik - NRM Collection 275-373-p1106585)*

Between 1955 and 1971, a total of 111 units were constructed: 74 of the 300 class and 37 of the 400 class. Popularly known as *Red Hens*, these railcars became a mainstay of Adelaide's suburban rail network. They remained in regular service until the late 1970s, when more modern railcars began to arrive.

The withdrawal of the fleet began in the mid-1980s, and by late 1996, the last of the Red Hens had been retired from regular service, closing a notable chapter in South Australia's railway history.

Budd Railcar CB1 - 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

Class operators	Commonwealth Railways Australian National Railways
Condition	Very good
Provenance	Commonwealth Railways & Australian National
Ownership	Port Dock Station Railway Trust
Built by	The Budd Co., Philadelphia, Penn, USA
Number in class	3
Model	RDC-1
Entered service	6 March 1951
Withdrawn	31 December 1990
Entered the museum	7 August 1996
Length (over coupling points)	85 ft. (25.908 metres)
Total Weight	49¼ tons (50,038 kilograms)
Engine type	GM 110 x 2 - 2 stroke
Cylinders	6
Bore & stroke	5 in. x 5.6 in. (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 11.6: Details of Railcar Budd CB1 - Australian National Railways - Standard Gauge

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



Commonwealth Railways liveried Railcar Budd CB1, CB2 and Trailer BM76 sits in the platform at Port Augusta station - 24th April 1952 *(Wal Jack - NRM Collection 4-96-1653)*



Australian National liveried Railcar Budd CB1 on an Iron Triangle Limited sits in the platform at Keswick Passenger Terminal - 31st October 1986 *(John Parkes - NRM Collection 275-498-s0008)*

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.



Railcar Budd CB1 passenger compartment - 18 May 2019 *(Chris Drymalik - NRM Collection 275-373-p1173426)*

Following the opening of the Port Augusta to Whyalla line, Budd railcars 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.



Railcar Budd CB1 driver's compartment - 7 May 2016 *(Chris Drymalik - NRM Collection 275-373-p1137467)*

Railcar 2000 class Power Car No.2006 - South Australian State Transport Authority and TransAdelaide - Broad Gauge

THE 2000 - 2100 CLASS are diesel hydraulic railcars and trailer cars that were built for the then State Transport Authority (STA) by Comeng, for use on the Adelaide metropolitan rail network. The 2000 - 2100 class railcars were the first modern suburban railcars in South Australia, and the second in Australia to feature air conditioning, semi-automatic side doors and a PA address system. They were also the last diesel hydraulic type railcars built for a railway operating in South Australia.

The stainless steel body shell of the 2000 - 2100 class railcars was based on the American Budd SPV-2000, Metroliner and Amfleet car designs. The body shells were built by Comeng, in Granville New South Wales, and were railed to their Adelaide plant at Dry Creek for fitting out internally, except for prototype cars 2001 and 2101 which were completed in New South Wales.

The first power car (2001) entered service on the 22 February 1980 and the last power car (2012) entered service on the 18 August 1981. The class was dubbed 'Supertrains' by the media and the general public, but most railway staff and railway enthusiasts were quick to give them their more iconic nickname 'Jumbos'. The 2000 - 2100 class

Class operators	State Transport Authority TransAdelaide
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian State Transport Authority, TransAdelaide
Built by	Comeng
Number in class	12
Withdrawn	August 2015
Entered the museum	10 July 2016
Length (over coupling points)	25.5m metres
Total Weight	68 tonnes
Engine type	2x turbocharged Cummins six cylinder underfloor diesel enginesl
Horsepower	390 kW (520 hp) Per engine
Seating capacity	64

Table 11.7: Railcar 2000 class Power Car No.2006 - South Australian State Transport Authority and TransAdelaide - Broad Gauge



Railcar 2000 - 2100 class set with Car No.2108, No.2006 and No.2107 at Lonsdale station - 14 January 1992 *(Arnold Lockyer Collection - NRM Collection 7-1072-f375-30)*



Railcar 2000 class Power Car No.2006 interior - 18 May 2019 *(Chris Drymalik - NRM Collection 275-373-p1173442)*

railcars earnt this nickname due to their unique raised driving cab, which was very similar in principle to that of the Boeing 747 Jumbo aircraft.

The 12x 2000 class power cars were originally built with two; V12 MAN turbocharged diesel engines. These original diesel engines proved to be poor performers and were replaced by two Cummins turbocharged six cylinder diesel engines. They railcars were usually operated in a two-car set (power car-trailer car) or three-car set (trailer car-power car-trailer car) configurations.



Railcar 2000 class Power Car No.2006 being shunted at the NRM - 29 October 2016 *(Chris Drymalik - NRM Collection 275-373-p1142304)*

In the mid to late 2000s two 2000 class power cars (2003 and 2006) were refurbished internally and mechanically. From 2010 onwards a large percentage of the 2000 class power cars received the new Adelaide Metro Livery. In February 2014 the 2000 and 2100 railcars were no longer permitted to operate on the Belair and Seaford lines due to electrification of part of the system. They were formally retired in August 2015. Two power cars and two trailers were preserved, with the remainder of the fleet being scrapped in June 2016.

2000 class power car 2006 entered service on the 17th November 1980 and was withdrawn from service in 2015. During 2007 power car 2006 was refurbished inside and out, and was one of two power cars to be so treated. In June 2016 the Department for Planning, Transport and Infrastructure (DPTI) kindly donated cars 2006 and 2112 to the Museum.

Railcar 2100 class Trailer Car No.2112 - South Australian State Transport Authority and TransAdelaide - Broad Gauge

INTRODUCED IN 1980, the 2000 - 2100 class railcars marked a major step forward for suburban rail travel in South Australia. Built

Class operators	State Transport Authority TransAdelaide
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian State Transport Authority, TransAdelaide
Built by	Comeng
Number in class	18
Withdrawn	August 2015
Entered the museum	10 July 2016
Length (over coupling points)	25.5m metres
Total Weight	42 tonne
Seating capacity	98

Table 11.8: Railcar 2100 class Trailer Car No.2112 - South Australian State Transport Authority and TransAdelaide - Broad Gauge

by Comeng for the State Transport Authority (STA), these stainless steel diesel-hydraulic railcars and trailers were the first modern passenger railcars to enter service on Adelaide's metropolitan network. They also hold the distinction of being the last diesel-hydraulic railcars built for any South Australian railway.

Designed with passenger comfort and convenience in mind, the 2000 - 2100 class were among the first Australian suburban railcars to offer air conditioning, semi-automatic side doors, and a public address system - features that were cutting-edge at the time. Their sleek stainless steel design drew inspiration from several American commuter vehicles, including the Budd SPV-2000, Metroliner, and Amfleet carriages.

The body shells were constructed at Comeng's plant in Granville, New South Wales, and transported to Dry Creek in Adelaide for internal fit-out. Exceptions were cars 2001 and 2101, which were fully completed in New South Wales. The first trailer cars, 2101 and 2102, entered service on 22 February 1980. The final trailer, 2118, joined the fleet in August 1981.

Dubbed 'Supertrains' by the media, these railcars quickly became better known by a more enduring nickname: the 'Jumbos'. This affectionate title was inspired by their distinctive raised driving cab, reminiscent of the upper deck on a Boeing 747 Jumbo Jet.

The 18x 2100 class trailer cars have to be operated with a power car, as they are not fitted with diesel motors or any source of electrical power. They were usually operated in two-car set (power car-trailer



Railcar 2100 class Trailer Car No.2112 in a 3-car set departing Adelaide Station - c.1980 *(I. Hammond - NRM Collection 1-1-01285)*



Railcar No.2112, No.2010, and No.2109 on an up passenger at Dry Creek - 10 February 2015 *(Phil Curnow - NRM Collection 33-325-15R0816)*

car) or three-car set (trailer car-power car-trailer car) configurations.

In the mid to late 2000s three 2100 class trailer cars (2103, 2112 and 2116) were refurbished internally and mechanically. From 2010 onward a large percentage of the 2100 class trailer cars received the new Adelaide Metro Livery.

In February 2014 the 2000 and 2100 class railcars were no longer permitted to operate on the Belair and Seaford lines due to clearances as a result of the electrification of the Seaford line. The 2000-2100 class railcars were retired in August 2015 and were sent to scrap in June 2016, with two power cars and two trailers being preserved.



Railcar 2100 class Trailer Car No.2112 interior - 18 February 2017
(Chris Drymalik - NRM Collection 275-373-p1144774)

CHAPTER 12

PASSENGER CARRIAGES

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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.



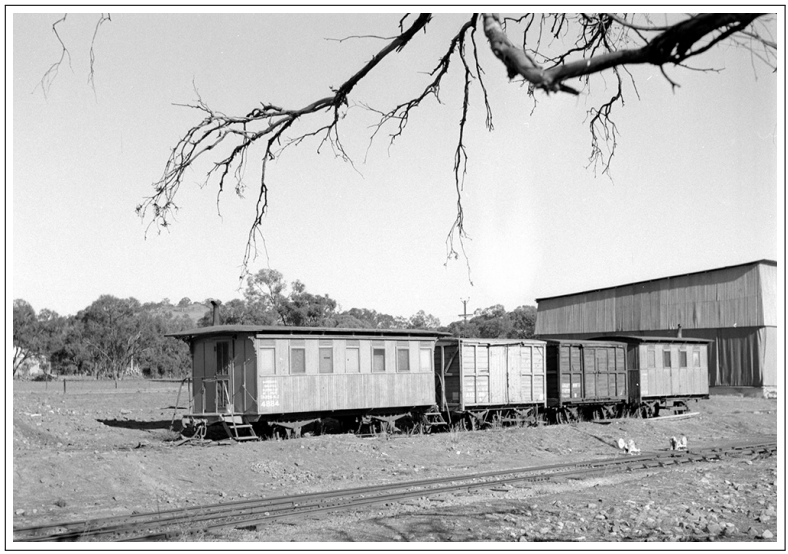
Passenger Car No.3 as work car No.4884 at Peterborough - 5 April 1969 *(Phil Curnow - NRM Collection 33-287-b05702)*

Number 3 was issued new to the Port Pirie section of the narrow

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Entered service	December 1877
Entered the museum	25 September 1969
Length (over coupling points)	28 ft. 9 in. (8.763m)
Number in class	8
Seating capacity	32
Withdrawn	1966

Table 12.1: Details of Passenger Car No.3 - South Australian Railways - Narrow Gauge

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.



Work Car No.4884 as part of a camp train on the Wilmington line - May 1962 *(Arnold Lockyer Collection - NRM Collection 7-1069-a135-16)*

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 enginemen. 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 enginemen.

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 brake vans 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 rolling stock 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.



Passenger Car No.3 after it's full restoration - 10 October 2009 *(Chris Drymalik - NRM Collection 275-373-p1072749)*

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

NO.144 IS ONE of the many 3 ft. 6 in. gauge passenger cars of the South Australian Railways with 31 ft. 6 in. 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.

Lavatory and water facilities began to be introduced in 3 ft. 6 in. gauge carriages from 1885. Over time, nearly all of the Short Tom cars were eventually equipped with these amenities, even though construction of cars without such features continued for some years afterwards.

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 with no internal partitions and longitudinal seats.

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

Table 12.2: Second class car - No.144 - South Australian Railways - Narrow Gauge



Second class car - No.144 interior during an event at the NRM - 3 July 2004 *(Chris Drymalik - NRM Collection 275-373-p1014764)*



Second class car - No.144 being hauled behind Locomotive Peronne at the NRM - 22 August 2020 *(Chris Drymalik - NRM Collection 275-373-p1187481)*

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 as part of a programme providing ambulance vans on both 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 railcar 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 19 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.



Second class car - No.144 sits beside SAR Locomotive Y97 at mid north siding of Eurelia - 13 May 1970 *(Murray Billett - NRM Collection 17-232-mb-n119-14)*

Side Loading (Dogbox) Sitting Car 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 provide when the first lavatory-equipped car on the South Australian Railways was built.

These lavatory-equipped cars were, like their suburban sister, popularly known as dogbox 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 dogboxes were built between 1898 and 1922, and even until the end of the 1950's 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 auto-coupling, and about the same time a number lost



Dogbox Car No.294 being shunted at the NRM - 27 December 2003 *(Chris Drymalik - NRM Collection 275-373-p1009700)*

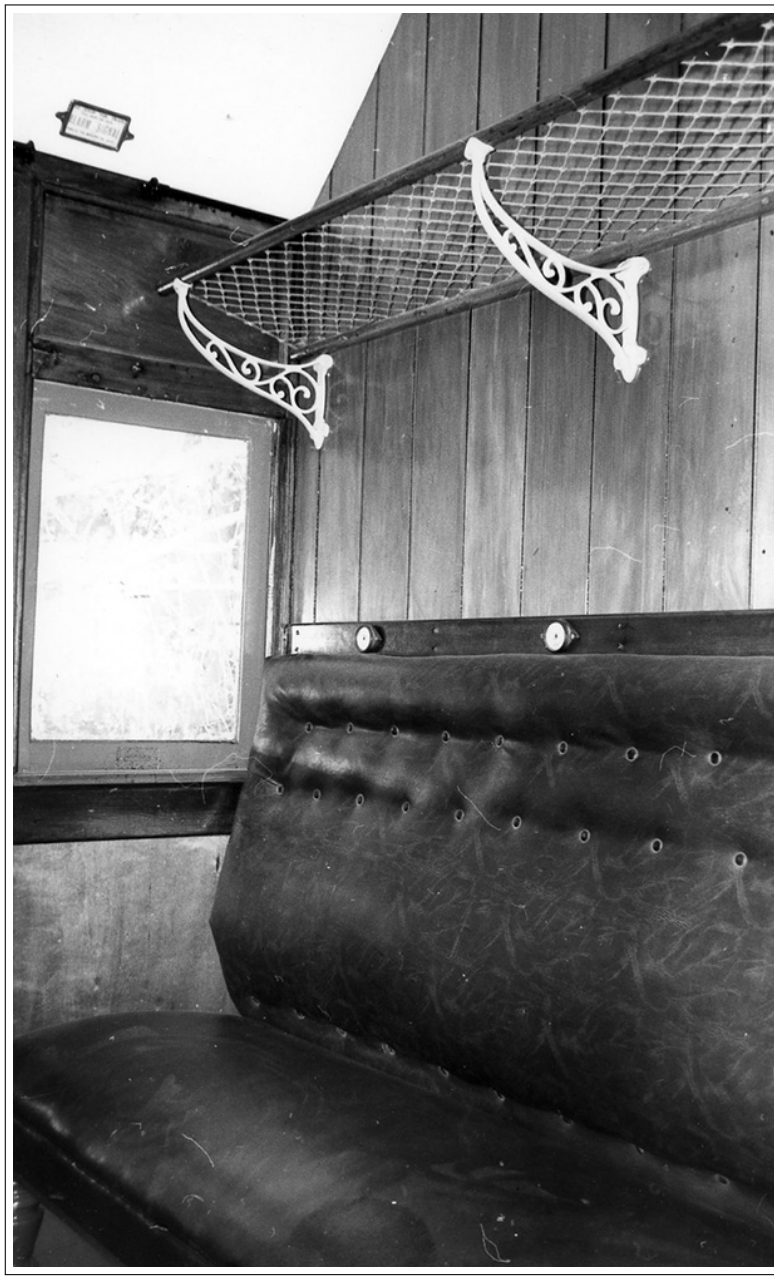
Class operators	South Australian Railways
Condition	Exterior: Good Interior: Needs Restoration
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Entered service	21 December 1910
Withdrawn	1966
Entered the museum	7th November 1966
Length (over coupling points)	47 ft. 2 in. (14.376 meters)
Seating capacity	50

Table 12.3: Details of Side Loading (Dogbox) Sitting Car No.294 - South Australian Railways - Broad Gauge

their gas lighting in favour of electricity (although some retained gas lighting for the whole of their lives.)

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

Carriage No.294 was issued to traffic as a second class carriage, but was altered to a composite in December 1920, and then back to



Dogbox Car No.294 interior - 1979 *(NRM Collection 1-1-03208)*



Accident Train Car No.294 sits in the yard at Tailem Bend, with a Caboose Class Brake Van in the background - 1963 *(David Voysey Collection - NRM Collection 461-452-b327)*

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 Tailem 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.

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

Class operators	South Australian Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways
Entered service	29 August 1913
Entered the museum	19 October 1978
Length (over coupling points)	55 ft. 5 in. (16.891 meters)
Number in class	4
Seating capacity	43 2nd class passengers
Withdrawn	29 May 1978

Table 12.4: Details of Centenary Baggage No.376 - South Australian Railways - Broad Gauge



Centenary Baggage No.376 + Car No.376 in Gawler yard on a race day - 15 May 1963 *(William Callaghan - NRM Collection 107-1061-038)*

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 ft. 6 in., with a maximum width over extremities of 10 ft. 10 in..

The Glenelg line cars were the basis for the numerous end and centre loading surburban 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 ft. 0 in., gave them greater route availability. However, none of them were



Centenary Baggage No.376 interior at the NRM - 19 July 2003 *(Chris Drymalik - NRM Collection 275-373-p1008028)*

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 43x 2nd class passengers, while during 1952 the seating was advised as 19x 1st class passengers and 24x 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 broad 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 on a regular Adelaide to Loxton service, while No.376 was one of the last Glenelg cars in service on Murray Bridge to Tailem Bend local trains until damaged by fire during September 1977, being condemned on 29 May 1978.



Centenary Baggage No.376 stabled in the Adelaide Station Yard - 23 December 1971 *(Douglas Colquhoun - NRM Collection 2-71-a4427)*

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



Suburban End and Centre Loading Car No.446 being shunted at the NRM - 27 December 2003 *(Chris Drymalik - NRM Collection 275-373-p1009698)*

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.

Car No.446 was built by J.S.Bagshaw and Sons and entered service

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

Table 12.5: Details of Suburban End and Centre Loading Car No.446 - South Australian Railways - Broad Gauge

on 16th June 1919. It was altered little during its life, except for auto couplers and the fitting of through gangways in 1936..

It was renumbered to car No.72 when allocated to SteamRanger in 1978. After a number of years out of service, the History Trust of South Australia transferred it to the museum in 1995.



Suburban End and Centre Loading Car No.446 (Numbered as No.72) sits in the North Car Sidings at Adelaide Station - 4 May 1979
(Douglas Colquhoun - NRM Collection 2-71-a7097)

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	12 October 1937
Withdrawn	13 October 1981
Entered the museum	11 January 2001
Length (over coupling points)	71 ft. 9 in. (21.875 metres)
Seating capacity	64

Table 12.6: 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 cream and classified as 500 and 600 class 'main line corridor passenger cars'. Built completely at the Islington workshops, each car measured 21.875 metres (71 ft. 9 in.) long and 2.890 metres (9 ft. 6 in.) wide, with a height of 4.025 metres (13 ft. 2 in.) above the rail.

The 4x first class cars were numbered 500-503 and had seating accommodation for 42 passengers in 7 compartments. The 8x second class cars were numbered 600-607 and accommodated 64 passengers in 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, and chrome fittings. First class compartments additionally were 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,



Second Class Compartment in South Australian Railways Steel Second Class Main Line Corridor Passenger Car No.606 - 2 April 2010 *(Chris Drymalik - NRM Collection 275-373-p1080046)*



South Australian Railways Steel Second Class Main Line Corridor Passenger Car No.606 - 29 May 2010 *(Chris Drymalik - NRM Collection 275-373-p1082702)*



Steel Second Class Main Line Corridor Passenger Car No.606 in red/silver livery stabled in the North Car Sidings Adelaide Station Yard - March 1983 *(John Parkes - NRM Collection 275-498-n106-14)*

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 19.120 metres (62 ft. 9 in.) 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 that a first class passenger travelling alone did not have to sit alongside 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 No.606 was withdrawn from service in 1981 and sold to SteamRanger. It eventually became surplus to requirements and was transferred to the National Railway Museum in late 2000, arriving on site on 11th January 2001. The car has been returned to its original South Australian Railway Green and Cream livery.

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 became 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*, had been built for the Chicago & Alton Railroad in 1864 and its immediate success led to the setting up

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	19 May 1928
Withdrawn	6 September 1988.
Entered the museum	6 September 1988
Length (over coupling points)	82 ft. 4 in. (25.09 metres)
Tare Weight	76 tons (77,216 kilograms)

Table 12.7: Details of Pullman Dining Car *Adelaide* - South Australian Railways - Broad Gauge



South Australian Railways Pullman Dining Car *Adelaide* being shunted at the NRM - 29 April 2017 *(Chris Drymalik - NRM Collection 275-373-p1150065)*

of the company.

His first dining car, the *President*, was built in 1867 for the Great Western Railway of Canada. Known as a 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.



Pullman Dining Car *Adelaide* interior set for a special function - 1979 *(STA Collection - NRM Collection 5-98-sc0321a)*

Dining car *Adelaide* was ordered from the Pullman company, along with the sleeping cars *Mount Lofty* and *Macedon* in 1926, for use on the Adelaide to Melbourne Express, and is a typical example of North American car building practices of the time. At 75 tons it was found to



South Australian Railways Pullman Dining Car *Adelaide* being shunted at the NRM - 12 September 2004 *(Chris Drymalik - NRM Collection 275-373-p1016154)*

be too heavy. Its inclusion in the train consist (then limited to eleven E-type cars over the Mount 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 6 September 1988.

The Overland - Adelaide & Melbourne Passenger Train

The Overland is one of Australia's longest-running named passenger trains, having operated continuously between Adelaide and Melbourne since 1887. Originally known as the *Adelaide Express*, or *Melbourne Express* depending on its direction, the train was conceived as part of the first direct rail connection between the South Australian and Victorian colonial capitals, symbolising a major achievement in intercolonial cooperation.

Renamed *The Overland* in 1926, the service became renowned for its overnight timetable, comfortable accommodation, and quality catering. For much of its history, the train was jointly operated by the *South Australian Railways (SAR)* and the *Victorian Railways (VR)*, with operational responsibility divided at the border town of *Serviceton*. Here, locomotives and crews would be changed. This shared arrangement remained in place well into the 1970s.

The line was constructed to *broad gauge* (1600 mm), and remained so until the opening of a *standard gauge* connection between Melbourne and Adelaide in 1995. Prior to this, The Overland had always operated over the broad gauge route via Ballarat, Ararat, and Bordertown. On the Victorian side, the train was typically hauled by VR's double-headed A2 class steam locomotives, and later by powerful B, S, and N class diesels. These were matched on the SAR side by locomotives such as the 500, 600, and 930 class.

In its heyday, The Overland featured a mix of modern *steel-bodied carriages*, including sleeping cars, dining facilities, and air-conditioned saloons, many of which were built at the Islington (SA) and Newport (VIC) workshops. It was one of the most prestigious trains in Australia, catering to business travellers, tourists, and intercity passengers alike.

The postwar years saw a gradual decline in long-distance rail patronage. The introduction of faster air travel and improvements to the highway network reduced the appeal of overnight trains. Despite this, The Overland continued, eventually becoming part of the *Australian National Railways* system in the 1980s. The service was later transferred to private operators, including Great Southern Railway (now Journey Beyond), who run it as a *daylight service* several times per week.

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



V&SAR Joint Stock Sleeping Car *Allambi* being shunted at the NRM - 20 March 2010 *(Chris Drymalik - NRM Collection 275-373-p1079943)*

ALLAMBI IS 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 carriages previously used on the service. 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.

This particular vehicle is one of a batch of four sleeping cars sold to the Victorian Railways in 1972, for use on *'The Vinelander'* service between Melbourne and Mildura, after new more modern sleeping

Class operators	Victorian and South Australian Railways V/Line Victorian Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	Victorian and South Australian Railways
Built by	South Australian Railways, Islington, SA
Entered service	9 December 1949
Transferred to VR	31 May 1972
Stored	September 1993
Entered the museum	28 November 2008
Number in class	10
Length over couplers	78 ft. 3 in. (23.85 metres)

Table 12.8: Details of V&SAR Joint Stock Sleeping Car *Allambi* - Victorian and South Australian Railways - Broad Gauge



V&SAR Joint Stock Sleeping Car *Allambi* interior - 24 May 2014 *(Chris Drymalik - NRM Collection 275-373-p1117761)*



Vline Locomotive N453 hauls the Vinelander near Mildura - 14 December 1990 *(Bob Grant - NRM Collection 335-1411-02490-18)*

cars were constructed and given the same names. When *'The Vinelander'* serviced ceased operation on the 12th September 1993, all four sleeping carriages where placed in long term storage.

In early 2008, the museum learned that the carriage might become surplus to future railway needs. After reaching out to VicTrack, the museum received a favourable response regarding the potential transfer of the vehicle into the collection. VicTrack subsequently recommended to the Victorian Minister for Transport that the carriage be made available to the National Railway Museum for display. The State of Victoria donated the carriage, with the museum covering the cost of its road transport from Melbourne to Adelaide. It arrived at the museum on 28th November 2008.

Much of the significance of the car lies in its preservation in near



Newly constructed V&SAR Joint Stock Sleeping Car *Allambi* at Islington Workshops - c.1949 *(NRM Collection 1-1-14892)*

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

Named Inter-State Passenger Trains

Named interstate passenger trains in Australia hold a special place in the nation's railway history. These services typically transported passengers over long distances, and their names often became synonymous with the routes, roles, or prestige they represented. Although many of these trains are no longer in operation, they remain iconic and form an enduring part of Australia's rich railway heritage.

They serve as a reminder of the central role that rail once played in the development of the nation—particularly in the era before widespread air travel and long-distance road transport.

Train Name	Route
Federal City Express	Sydney - Canberra
Indian Pacific	Sydney - Perth
Intercapital Daylight	Sydney - Melbourne
Intercolonial Express	Adelaide - Melbourne
Great South Pacific Express	Sydney - Kuranda
Great Southern	Adelaide - Brisbane
Silver City Limited	Adelaide - Broken Hill
Southern Aurora	Sydney - Melbourne
Southern Cross Express	Melbourne - Sydney - Canberra
Spirit of Progress	Melbourne - Albury (later extended to Sydney)
The Alice	Sydney - Alice Springs
The Ghan	Adelaide - Alice Springs - Darwin
The Overland	Adelaide - Melbourne
The Southern Spirit	Adeladie - Melbourne - Brisbane
Trans-Australian Express	Port Augusta - Kalgoorlie - Perth (later extended to Port Pirie)

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

Table 12.10: Details of Sleeping Car No.112 - *Baroota*- South Australian Railways - Narrow Gauge

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

SOUTH AUSTRALIAN RAILWAYS CARRIAGES became known as much for their remarkable longevity as for their service. It is perhaps no surprise, then, that by the time the main line to Broken Hill was converted from narrow to standard gauge in 1970, some of these carriages were already more than seventy years old. The gauge conversion led to the widespread withdrawal and condemnation of many narrow gauge vehicles, bringing an end to decades of faithful service.

Most of these narrow gauge 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, No.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 No.112 in 1900, and this was completed as a sleeping car, while the last two cars, No.113 and 114, were built as sitting up cars.

No.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 No.112 two seats facing one another pulled down to form a lower berth in *Pullman* style. Eighteen first class passengers were



Sleeping Car No.112 - *Baroota* interior - 18 June 2022 *(Chris Drymalik - NRM Collection 275-373-p1205101)*



Sleeping Car No.112 - *Baroota* at Islington Workshops - c.1900 *(NRM Collection 1-1-03865)*

carried in sleeping berths.

On 29 July 1907, No.112 emerged from the Islington Workshops 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 6 June 1917, No.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.



Sleeping Car No.112 - *Baroota* - 18 June 2022 *(Chris Drymalik - NRM Collection 275-373-p1205111)*

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



Cafeteria Car No.C1 interior as built - 1947 *(NRM Collection 1-1-15043)*

THE CAFETERIA CAR C1 is one of the standout exhibits at the National Railway Museum, offering visitors a nostalgic glimpse into mid-20th-century rail travel. Built by the South Australian Railways at its Islington Works in 1947, the broad gauge (1600 mm) *Cafeteria*

Class operators	South Australian Railways Australian National Railways Victorian Railways (VLine)
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways
Condition	Good (not operational)
Entered service	1947
Entered the museum	28 June 1988
Built by	South Australian Railways, Islington, SA
Number in class	1
Withdrawn	1984

Table 12.11: Details of *Cafeteria Car* No.C1 - South Australian Railways - Broad Gauge



Cafeteria Car No.C1 interior at the NRM - 17 July 2005 *(Chris Drymalik - NRM Collection 275-373-p1023467)*

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.

Designed for comfort and efficiency, the *Cafeteria* Car C1 features a streamlined interior with polished stainless steel surfaces, checker-board flooring, and retro-style yellow seating. The car's layout includes serving counters and dining tables, reflecting the dining standards of its era. Large windows provide ample natural light, enhancing the authentic experience of train travel from the 1940s.

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.

Beyond its role as a historical exhibit, the *Cafeteria* Car C1 is available for private hire at the National Railway Museum. It serves as a unique venue for children's birthday parties, offering a memorable setting for celebrations . Visitors can bring their own food and decorations to personalise the event. The car's distinctive ambience makes it an ideal choice for those seeking a themed venue with character.



Cafeteria Car No.C1 interior as built - 1947 *(NRM Collection 1-1-15042)*



Cafeteria Car No.C1 in the Island Loading Dock at the Adelaide Station - 14 October 1951 *(C.C. Singleton - NRM Collection 1-1-14867)*

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



Sleeping Car *Onkaparinga* at the NRM - 27 April 2013 *(Chris Drymalik - NRM Collection 275-373-p1108260)*

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.

Class operators	South Australian Railways Victorian and South Australian Railways
Condition	Excellent
Provenance	South Australian Railways, Victorian & South Australian Railways
Ownership	Port Dock Station Railway Trust
Built by	Victorian Railways Newport Workshop, Victoria
Number in class	14
Entered service	16 June 1911
Condemned	19 October 1972
Entered the museum	6 June 1988
Length (over coupling points)	75 ft. (22.86 metres)

Table 12.12: Details of Sleeping Car *Onkaparinga* - Victorian and South Australian Railways - Broad Gauge



Joint Stock Sleeping Car interior - c.1911 *(STA Collection - NRM Collection 5-103-0972b)*

Externally the cars were 22.8 metres (75 ft.) 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.

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 where located at each end of the carriage.

Finished in Art-Nouveau style, the carved panelling, 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 where photographs of scenic South Australia and Victoria.

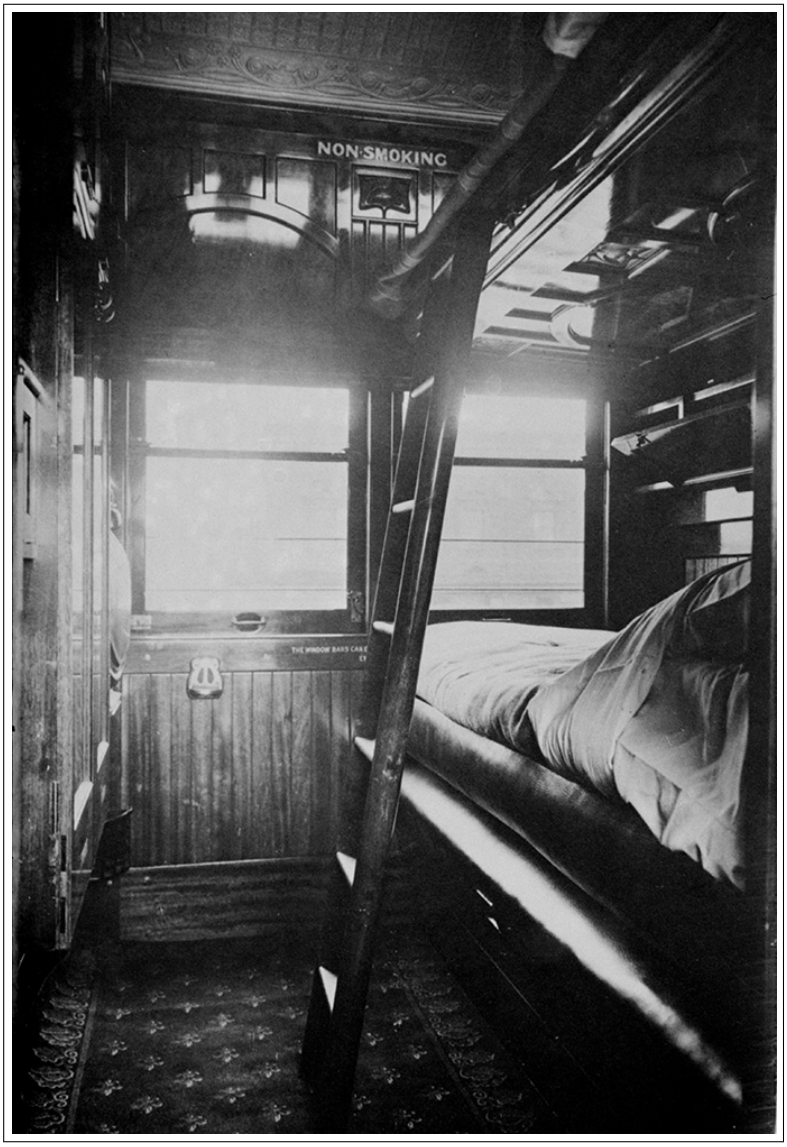
Externally a row of bevelled mirrors, with an engraved starburst pattern, was placed above each window. The paint work was a red brown with elaborate outlining.



Joint Stock Sleeping Car Onkaparainga at Marbury School, Algate in 1979 *(NRM Collection - NRM Collection 1-8-042-22)*

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 rolling stock began in 1949 and resulted in the eventual withdrawal of the wooden carriages from *The Overland*. Sleeping car *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 where it has been fully restored.



Joint Stock Sleeping Car set up for night use - c.1911 *(Chris Drymalik Collection - NRM Collection 275-374-x021)*

South Australian Railways Commissioners Car *Murray* - South Australian Railways - Broad Gauge

IN MAY 1933, THE South Australian Government authorised the expenditure of £7,500 for the construction of a new inspection car for the Railways Commissioner.

Officially known as the South Australian Railways (SAR) Commissioner's Car, the *Murray* car was the last timber bodied car built at Islington Works and when introduced on 1 October 1934 was claimed to be the most up to date car of its kind in the Commonwealth.

It exemplifies the craftsmanship and luxury associated with early 20th century rail travel. 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 £9,977. 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 brake van (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 was attached to any train, the observation end would be trailing whenever practicable.

Class operators	South Australian Railways Australian National Railways State Transport Authority
Condition	Good
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Built by	South Australian Railways, Islington, SA
Entered service	1 October 1934
Withdrawn	11 June 1997
Entered the museum	11 June 1997
Number in class	1

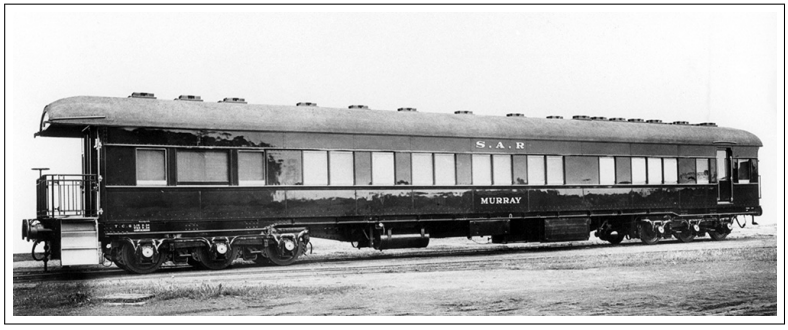
Table 12.13: Details of South Australian Railways Commissioners Car *Murray* - South Australian Railways - Broad Gauge



South Australian Railways Commissioner's Car *Murray* private compartment wash facilities - 17 March 2007 *(Chris Drymalik - NRM Collection 275-373-p1033596)*



South Australian Railways Commissioner's Car *Murray* dining saloon - 17 March 2007 *(Chris Drymalik - NRM Collection 275-373-p1033599)*



South Australian Railways Commissioner's Car *Murray* - c.1934 *(STA Collection - NRM Collection 5-103-1734)*



South Australian Railways Commissioner's Car *Murray* Sleeping Compartment - c.1934 *(NRM Collection 1-1-14933)*



South Australian Railways Commissioner's Car *Murray* Main Saloon - c.1934 *(NRM Collection 1-1-22462)*

When the observation end was not trailing, the curtains got drawn round the 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 stored in the Adelaide Rail Yards north car sheds. In 1987 it was transferred to Australian National, entering Islington on 10 September 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 being transferred to the National Railway Museum for display.

On 11 June 1997 it was delivered to the Museum. Throughout its service, the Murray Car hosted several notable figures, including the Railways Commissioner and members of the Royal Family. It is maintained by the History Trust of South Australia, with conservation efforts overseen by Artlab Australia.



South Australian Railways Commissioner's Car *Murray* on an Inspection train at Barmera - June 1954 *(Arnold Lockyer - NRM Collection 7-1074-dg08-04)*

Vice Regal Car - South Australian Railways - Broad Gauge



HRH Duke of Edinburgh boarding South Australian Railways the Vice Regal Car at Murray Bridge - 4 March 1974 *(Barry Marshall - NRM Collection 97-1262-b555)*

THE VICE REGAL CAR, is a distinguished example of mid-20th century rail luxury. Constructed at the South Australian Railways Islington Workshops, it was introduced into service on 2 April 1940 and remained operational until its withdrawal on 28 July 1988. It was designed to accommodate the Governor of South Australia and members of the Royal Family during their travels on the South

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Number in class	1
Built by	South Australian Railways, Islington, SA
Entered service	2 April 1940
Withdrawn	28 July 1988
Entered the museum	28 July 1988

Table 12.14: Details of Vice Regal Car - South Australian Railways - Broad Gauge



The South Australian Railways Vice Regal Car at the NRM - 2 April 2010 *(Chris Drymalik - NRM Collection 275-373-p1080079)*



The South Australian Railways Vice Regal Car Observation Saloon - c.1940 *(NRM Collection 1-1-01003)*

Australian Railways broad gauge network. It was the first air-conditioned carriage on the South Australian Railways, a significant advancement at the time.

The car features a steel body with a timber-panelled interior, reflecting the craftsmanship and luxury associated with the era. The interior was finished with Queensland Maple, English Grey Sycamore, and Queensland Cedar.

The car has separate bedrooms for the Governor and his wife divided 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.

Throughout its service, the Vice Regal Car hosted several notable figures, including the Governor and members of the Royal Family. It is maintained by the History Trust of South Australia, with conservation efforts overseen by Artlab Australia.



The South Australian Railways Vice Regal Car trails on the rear of *The Overland* at Clapham, South Australia - c.February 1974 *(Hugh Williams - NRM Collection 251-338-s65-25)*

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

IN THE EARLY 1900's a rolling stock 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.



V&SAR Second Class Sitting Car 42BE at the NRM - 2 June 2018 *(Chris Drymalik - NRM Collection 275-373-p1161542)*

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

Class operators	South Australian Railways Victorian and South Australian Railways
Condition	Excellent
Provenance	South Australian Railways, Victorian & South Australian Railways
Ownership	Port Dock Station Railway Trust
Built by	S.A.R Islington Workshops
Entered service	29 October 1923
Condemned	16 October 1974
Entered the museum	16 April 1975
Length (over coupling points)	73 ft. 8 in. (22.453m)
Bogie centres	53 ft. 10 in. (16.4 metres)
Height	13 ft. 8 in. (4.16 metres)
Width	9 ft. 6 in. (2.89 metres)
Seating capacity	72

Table 12.15: Details of V&SAR Second Class Sitting Car 42BE - South Australian Railways - Broad Gauge

complement comprised 14 first class sleeping cars, 10 first class sitting cars, 10 second class sitting cars, 6 brake vans, 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 brake vans 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 brake vans were constructed at Islington Workshops, South Australia (except that the first two jointly owned brake vans 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 brake vans 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



V&SAR Second Class Sitting Car 42BE compartment - 29 December 2002 *(Chris Drymalik - NRM Collection 275-373-p1005953)*

Railways' principles. During 1910, the Victorian classification system was simplified and these latter classifications were carried by joint stock vehicles until they were condemned.



V&SAR Second Class Sitting Car 42BE with other cars in the platform at Tailem Bend - 1968 *(John Ramsey - NRM Collection 336-1413-a0719)*

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)

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 with 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.

Carriage '42BE' is one of the later second class cars and was issued to traffic from Islington Workshops on 29 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. (Sleeping car *Onkaparinga* was the other car and the 'CE's' and 'D' vans had partial sheathing).

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



Intercolonial Port Office Van 018 after restoration - 20 March 2010 *(Chris Drymalik - NRM Collection 275-373-p1079924)*

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.

When new Post Office vans were constructed for the Express in 1908 it become the exclusive property of the South Australian Railways who renumber it No.258. Having little use as a mail van, it was converted in 1916 to Officers' Inspection car *Murray*. When the new

Class operators	South Australian Railways Victorian and South Australian Railways
Condition	Excellent
Entered service	January 1887
Entered the museum	27 June 1991
Number in class	3
Ownership	Port Dock Station Railway Trust
Provenance	Victorian & South Australian Railways, South Australian Railways
Withdrawn	1966

Table 12.16: Details of Post Office Van O18 - *Willochra* - Victorian and South Australian Railways - Broad Gauge



Intercolonial Port Office Van 018 after restoration - 27 March 2010
(Chris Drymalik - NRM Collection 275-373-p1080006)

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.

After being condemned, in 1966, it was used for accommodation on a farm at Jabuk and eventually ended up at Old Tailem Town Historic Village. In June 1991 it was moved to the Museum, and has been fully restored to its Post Office van format.

Trans-Australian Lounge Car AFA93 - 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 (standard 4 ft. 8½ in. gauge - 1435 mm). 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, lounge car, dining car, second class sleeper-lounge car, two second class sleeping cars and combination brake and power van.

The gathering place for first class passengers was the AFA class lounge cars. Each car was meticulously designed to offer an unparalleled travel experience, featuring a fully air-conditioned interior

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways Australian National Railways
Ownership	Port Dock Station Railway Trust
Built by	Wegmann, Kassell, Germany
Number in class	3
Entered service	15 November 1952
Withdrawn	November 1980
Entered the museum	23 January 1996
Length (over coupling points)	75 ft. 2 in. (22.9 metres)

Table 12.17: Details of Trans-Australian Lounge Car AFA93 - Commonwealth Railways - Standard Gauge



Commonwealth Railways - Lounge Car AFA93 - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053270)*

- a rare luxury at the time. Its layout was thoughtfully divided into three distinct sections to cater to the diverse preferences of its first class passengers:

- Smoking Room: A refined space where guests could enjoy a cigar or cigarette in comfort, featuring period-appropriate furnishings.
- Music Room: An area dedicated to relaxation and entertainment. Equipped with a piano, this space allowed passengers to enjoy live music during their journey.
- Ladies Reading Room: A tranquil retreat offering a selection of reading materials, providing a serene environment for guests to unwind and relax.

Each carriage was adorned with exquisite craftsmanship, featuring wall panelling cut from the carefully matched roots of elm trees,



Commonwealth Railways - Lounge Car AFA93 Music Room - 28 December 2002 *(Chris Drymalik - NRM Collection 275-373-p1005908)*

creating a warm and richly textured interior. Adding to the sense of regional pride and artistry, intricate inlays depicting local castles from the area where the lounge cars were built were set into the walls using a variety of fine woods. Seating throughout was upholstered in soft, durable moquette, while the smoking saloon offered a touch of distinction with its deep red leather - a bold, luxurious contrast that spoke to the refined tastes of first class travellers.

Externally AFA93 is a striking example of mid-century modern design, characterised by 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 the carriage, signifying the Commonwealth Railways branding.

In 1964, AFA93 underwent a significant transformation, being converted to narrow gauge (3 ft. 6 in. - 1067 mm) to serve on the legendary narrow gauge Ghan route between Marree and Alice Springs. For over 15 years, it carried passengers through the heart of the Australian outback, offering a rare blend of rugged adventure and refined comfort. When services along the route ended in 1980, the carriage was retired and placed into storage by Australian National. Recognising its historical significance, the carriage was later donated to the National Railway Museum, arriving at its new home in Port Adelaide on 23rd February 1996

Fully restored in its original Commonwealth Railways livery in 2001,



Lounge Car AFA93 Music Room when in service on the Commonwealth Railways - c.1970s *(Michael Carter - NRM Collection 1-3-s02575)*

Lounge Car AFA93 offers visitors an immersive glimpse into the opulence of mid-20th century Australian rail travel. Step aboard, and you're immediately enveloped in the ambience of a golden age: the warm sheen of polished timber walls, the gentle creak of finely upholstered seating, and the inviting hush of a space designed for conversation, contemplation, and comfort. It's more than a look into the past - it's an invitation to imagine what it was like to glide across the vast Australian Outback in first class, air-conditioned luxury.

Trans-Australian Turtle Back Roofed First Class Sleeping Car AR33 - Commonwealth Railways - Standard Gauge

FIRST CLASS SLEEPING Car AR33 was constructed by the Commonwealth Railways in 1920 for use on its standard gauge 4 ft. 8½ in. (1435 mm) Trans-Australian service that operated between Port Augusta to Kalgoorlie service.

It was the first of a new larger style of wooden carriage that featured a distinctive turtle back (arched) roof, a design that not only enhanced its aesthetic appeal but also contributed to its structural integrity. The carriage was crafted to accommodate 20 passengers in ten twin-berth compartments. Rich timber panelling adorned the walls, complemented by plush upholstery and fine detailing that reflected the

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways Australian National Railways
Built by	Commonwealth Railways Port Augusta Workshops
Entered service	28 April 1920
Entered the museum	29 November 1995
Length (over coupling points)	76 ft. 7 in. (21.81 metres)
Sleeping capacity	20

Table 12.18: Details of Trans-Australian Turtle Back Roofed First Class Sleeping Car AR33 - Commonwealth Railways - Standard Gauge

opulence of the era. Each compartment was equipped with comfortable berths, providing passengers with a restful haven during the multi-day journey across the Nullarbor Plain. Externally the carriage was finished in a chocolate and cream livery.



Trans-Australian First Class Sleeping Car AR33 exterior - 21 September 2001 *(Chris Drymalik - NRM Collection 275-373-p1053344)*

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



Trans-Australian First Class Sleeping Car AR33 interior - 25 May 2001
(Chris Drymalik - NRM Collection 275-373-p1000945)

The Trans-Australian Passenger Train

The *Trans-Australian* was a celebrated long-distance passenger train operated by the Commonwealth Railways, and later by Australian National. It ran between *Port Augusta, South Australia* and *Kalgoorlie, Western Australia*, crossing the vast and isolated expanse of the Nullarbor Plain. Launched in 1917, the train was a direct result of the construction of the *Trans-Australian Railway* - a project that physically united the Australian continent via rail, fulfilling a key promise made at the time of Federation.

At the time of its inception, the Trans-Australian was Australia's first truly intercolonial passenger train to run on a single continuous *standard gauge* (1435 mm) track, a rarity in a country then plagued by incompatible rail gauges. While its eastern and western connections still required cumbersome gauge changes, the Trans-Australian formed a continuous rail link across 1700 km of arid desert between the two terminal towns, offering both logistical connectivity and symbolic unity.

The train quickly became known for its comfort and resilience. It provided passengers with sleeping carriages, dining services, and even amenities such as a shower - significant luxuries given the remote conditions and multi-day journey. Staffed entirely by Commonwealth Railways crews, it offered high standards of service and reliability, despite extreme heat, wind, and the total isolation of much of the route.

The Trans-Australian helped tie the eastern states to Western Australia both symbolically and practically. By the 1930s, it connected with trains to Adelaide and, after the completion of the standard gauge link to Kalgoorlie in 1969, it became possible for passengers to travel entirely by rail from Sydney to Perth without changing trains. A major milestone in Australian rail history.

Dieselisation came in the 1950s, replacing the earlier steam-hauled consists. Commonwealth Railways introduced streamlined locomotives and stainless steel rolling stock during the 1960s, keeping pace with changing passenger expectations. The train's operation later passed to Australian National Railways in the 1970s.

In its final decades, the Trans-Australian continued to serve regional communities and long-distance travellers, although air travel and changing logistics patterns gradually reduced its relevance. The service was ultimately discontinued in 1991, ending over 70 years of continuous operation.

Today, the legacy of the Trans-Australian lives on in preserved rolling stock, oral history, and its contribution to nation-building. The railway line it once ran along remains a vital freight and passenger corridor now used by transcontinental services like the *Indian Pacific* passenger train



Trans-Australian First Class Sleeping Car AR33 interior - 21 September 2001 *(Chris Drymalik - NRM Collection 275-373-p1001803)*

In 1966 it was fitted with narrow gauge (3 ft. 6 in. - 1067 mm) bogies and transferred to Marree to for operation on the legendary narrow gauge Ghan route to Alice Springs. 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 place in storage at Port Pirie, were unfortunately it was heavily vandalised. In 1995 it was offered to the Museum, being delivered by road on 29 November 1995.

During 2001 it was fully restored externally and painted in Commonwealth Railways livery. Restoration of it's interior is not yet fully completed.

Trans-Australian Turtle Back Roofed Dining Car DA52 - 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 uphold this exacting standard, the Port Augusta Workshops built Dining Car DA52, which commenced service on 21 July 1930. The carriage stands as a shining example of the elegance and comfort that once defined Australian First Class rail travel.

By all Australian standards of the time, it was an impressive vehicle, it

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

Table 12.19: Details of Trans-Australian Turtle Back Roofed Dining Car DA52 - Commonwealth Railways - Standard Gauge



Trans-Australian Turtle Back Roofed Dining Car DA52 exterior - 6 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1002019)*



Trans-Australian Dining Car DA52 dining saloon after full restoration at the museum - 20 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1002166)*

measured 76 ft. 7 in. (23.42 metres) in length, 10 ft. 6 in. (3.19 metres) in width and was 14 ft. 6 in. (4.41 metres) high. The Commonwealth Railways were at that time constructing the largest wooden passenger carriages in Australia.

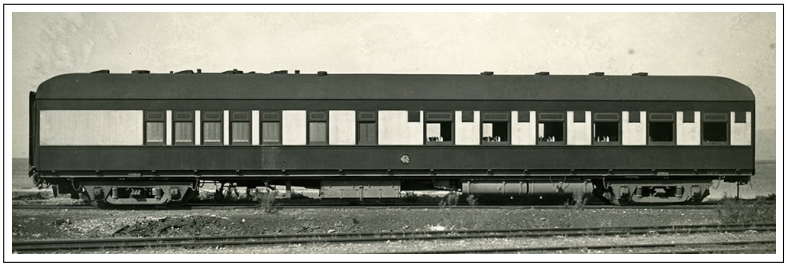
The car was designed with a graceful 'turtle-back' (arched) roof, a common style of the time, and its original livery was equally eye-catching - chocolate and cream sides complemented by a mustard coloured roof. This combination gave the carriage a distinguished, stand-out appearance as it moved through the harsh and dusty terrain of Outback Australia.

The interior featured ornate timber panelling made from Queensland Black Bean and expensive fittings. Monogrammed china, polished



Trans-Australian Dining Car DA52 Kitchen after full restoration at the museum - 29 May 2009 *(Chris Drymalik - NRM Collection 275-373-p1066692)*

silver and flower arrangements adorned each of the twelve tables that seated a total of 48 passengers.



The newly completed Trans-Australian Turtle Back Roofed Dining Car DA52 was photographed by the Commonwealth Railway at Port Augusta Workshops prior to entering official service - 1930 *(NRM Collection 1-1-24265)*

The kitchen area, now on display to visitors, was a hive of activity during service - chefs and attendants working in tight quarters to deliver full-course meals to passengers, all while the train raced across the Nullarbor Plain.

One of the most innovative features of DA52 was the early adoption of

mechanical air conditioning. In 1939, just nine years after its debut, DA52 was retrofitted with a Carrier air conditioning system. At a time when the vast Australian interior could be unbearably hot during the desert summers. This upgrade provided an unprecedented level of comfort for passengers - further cementing the carriage's reputation as a symbol of modernity and luxury.



From polished cutlery to white linen service, the DA52 crew brought a touch of refinement to the raw vastness of the Trans-Australian Railway - c.1930 *(Chris Drymalik Collection - NRM Collection 275-372-a-a0134)*

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 rolling stock in the 1960s and 70s, the car was relegated to less important use.

DA52 served faithfully for more than 50 years, witnessing countless journeys and adapting to changing passenger expectations over the decades. It was finally withdrawn from active passenger service on 31 March 1981, after which it was allocated for departmental use on the standard gauge accident train, until being placed in storage in 1987.

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

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

CHAPTER 13

BRAKE VANS

Brake Vans on Australian Railways 321

12 Wheel Brake Van No.276 - South Australian Railways - Broad Gauge 321

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8300 Class Brake Van No.8394 (AVAP396) - South Australian Railways - Broad Gauge 326

AVEP Class Brake and Crew Van No.349 - Commonwealth Railways - Standard Gauge 329

7550 class Bogie Composite Brake Van No.7553 - South Australian Railways - Narrow Gauge 333


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Brake Vans on Australian Railways

BRAKE VANS, also known as *guards vans* in Australia, were once an essential part of nearly every goods and mixed train. Positioned at the rear of the train, these vehicles served both operational and administrative purposes. Most importantly, they provided a place for the train Guard and featured a manually operated brake to assist in controlling the train's speed, especially on long descents or in emergency situations.

The use of brake vans dates back to the early days of rail transport in the 19th century, when train braking systems were either rudimentary or entirely absent from individual wagons. In this era, braking relied heavily on locomotive control and the rear van. Equipped with a handbrake linked to brake blocks acting on the wheels, the guard could apply additional braking force as needed.

Brake vans were often fitted with lookout positions, such as raised cupolas or bay windows, allowing the guard to observe the train for signs of problems like dragging equipment, hot axle boxes, or shifted loads. They also carried tools, signal lamps, detonators, and forms for managing train running and recording delays.

In Australia, brake vans were a common sight on all systems, with designs varying by state and railway authority. The South Australian Railways, for example, developed a number of distinct brake van types for use on both goods and mixed trains, often including facilities for parcels or light mail duties in rural areas.

With the advent of more advanced continuous braking systems, such as the Westinghouse air braking and other train brake systems, the operational necessity of the brake van diminished. From the late 20th century, the widespread adoption of *end-of-train devices (EOTs)*, which electronically monitor air brake pressure and train integrity, led to the gradual phasing out of brake vans.

Today, brake vans are no longer used in regular train operations, but they remain a familiar sight on heritage lines and in museums, preserving the memory of the Guard's once vital role.

12 Wheel Brake Van No.276 - South Australian Railways - Broad Gauge

UNTIL THE 1960'S the standard South Australian Railways 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 brake vans were short vehicles of less than forty feet, but in 1910 construction began on

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Entered service	23 December 1912
Entered the museum	21 January 1966
Length (over coupling points)	62 ft 10 ins. (18.897 metres)
Number in class	12
Withdrawn	29 November 1965

Table 13.1: Details of 12 Wheel Brake Van No.276 - South Australian Railways - Broad Gauge

what was to be a class of long vans on two six-wheel bogies. These eleven 'twelve-wheel brake vans' were to become the standard main line brake vans.



A South Australian Railways 12 Wheel Brake Van on the rear of passenger train hauled by a 520 Class steam engine *(Cliff Olds - NRM Collection 2-71-c4088)*

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.



South Australian Railways 12 Wheel Brake Van No.276 being shunted at the NRM - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053244)*

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 class 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 brake vans in the mid 1960's, and were condemned by late 1966.

Brake Van No.4074 - South Australian Railways - Broad Gauge

BRAKE VAN 4074 was built in 1919 by the South Australian Railways as a composite brake van with accommodation for 20 second class passengers. It as one of 62 similar brake vans that were used at the rear of goods trains.

Class operators	South Australian Railways
Condition	Good
Entered service	29 May 1919
Entered the museum	1 April 1995
Ownership	History Trust of South Australia
Provenance	South Australian Railways

Table 13.2: Details of Brake Van No.4074 - South Australian Railways - Broad Gauge



South Australian Railways Brake Van No.4074 on the rear of a train at Tonsley, South Australia, 22 May 1971 *(Douglas Colquhoun - NRM Collection 2-71-c4088)*

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 brake van 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 (1600 mm) brake vans introduced in 1925.

Class operators	South Australian Railways
Condition	Excellent
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Entered service	1925
Length (over coupling points)	37 ft. 10 in. (11.531 metres)
Number in class	40
Withdrawn	8 October 1968.
Entered the museum	8 October 1968

Table 13.3: Details of Caboose No.4367 - South Australian Railways - Broad Gauge



Almost identical to the Museum's, South Australian Railways Caboose No.4383 on rear of a freight train at Dry Creek - 9 May 1962 *(Douglas Colquhoun - NRM Collection 2-71-a0954)*



South Australian Railways Caboose No.4367 - 25 May 2001 *(Chris Drymalik - NRM Collection 275-373-p1000925)*

Each van was equipped with bunks, cooking facilities, food cupboards and a Guard's 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 brake vans 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 8 October 1968.

8300 Class Brake Van No.8394 (AVAP396) - South Australian Railways - Broad Gauge

THE "AVAP" BRAKE 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.

In 1961 the South Australian Railways commenced building the remainder of the class numbered 8314 to 8394. The design was

Class operators	South Australian Railways Australian National Railways
Condition	Good
Provenance	South Australian Railways, Australian National
Ownership	Port Dock Station Railway Trust
Entered service	1971
Number in class	94
Entered the museum	1995
Withdrawn	19 November 1994
Length (over coupling points)	40 ft. 2½ in. (12.255 metres)

Table 13.4: Details of 8300 Class Brake Van No.8394 (AVAP396) - South Australian Railways - Broad Gauge



South Australian Railways Brake Van No.8394 at the NRM on 25 March 2017 *(Chris Drymalik - NRM Collection 275-373-p1149339)*



South Australian Railways Brake Van No.8394 guard compartment interior at the NRM 24 September 2016 *(Chris Drymalik - NRM Collection 275-373-p1140917)*

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 AVAP396 was built as number '8394' but was recoded 'AVAY396' in 1983 to meet the new Australia-wide classification of freight vehicles. It was later recoded 'AVAP' despite no modifications being made to the actual vehicle.

From the mid 1980's it was allocated to the Chief Mechanical Engineer at Port Pirie until being written off on 19th November 1994.

AVEP Class Brake and Crew Van No.349 - Commonwealth Railways - Standard Gauge



Commonwealth Railways - Brake and Crew Van AVEP349 - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053261)*

THIS BRAKE VAN WAS built by Comeng, of Granville, NSW for the Commonwealth Railways. It entered service as narrow gauge (1067 mm) brake van NHRE85 on 2 August 1971 at Darwin. In 1976, when the Darwin operation ceased, it was transferred to Marree.

These brake vans were used on the long haul runs where crews worked in relays, one crew being on duty, while the other relaxed or



Commonwealth Railways - Brake and Crew Van AVEP349 - kitchen & dining compartment - 5 October 2002 *(Chris Drymalik - NRM Collection 275-373-p1005301)*

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways, Australian National
Ownership	Port Dock Station Railway Trust
Entered service	2 August 1971
Entered the museum	16 December 1996
Number in class	23
Withdrawn	1996
Length (over coupling points)	48 ft. 2 in. (14.681 metres)

Table 13.5: Details of Brake and Crew Van AVEP349 - Commonwealth Railways - Standard Gauge



Commonwealth Railways Relay Brake Van AVEP349 - crew compartment set up for night/sleeping use - 26 May 2001 *(Chris Drymalik - NRM Collection 275-373-p1000975)*



Commonwealth Railways - Brake and Crew Van AVEP349 - crew compartment set up for day use - 5 October 2002 *(Chris Drymalik - NRM Collection 275-373-p1005305)*

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 and continued to operate on services on freight trains. It arrived at the museum on 16 December 1996, and has been fully restored in it's original Commonwealth Railways livery.

7550 class Bogie Composite Brake Van No.7553 - South Australian Railways - Narrow Gauge



South Australian Railways - 7550 class Bogie Composite Brake Van No.7553 on the rear of a freight train at Port Pirie - 25 January 1958 *(Douglas Colquhoun - NRM Collection 2-194-r-0269)*

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 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.

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.



South Australian Railways - 7550 class Bogie Composite Brake Van No.7553 - Guards Compartment - 3 July 2044 *(Chris Drymalik - NRM Collection 275-373-p1014775)*



South Australian Railways - 7550 class Bogie Composite Brake Van No.7553 - Passenger Compartment - 12 August 2014 *(Chris Drymalik - NRM Collection 275-373-p1119917)*

Class operators	South Australian Railways Australian National Railways
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways, Australian National
Built by	S.A.R. Islington Workshops
Number in class	4, plus 1 for BHP Whyalla
Entered service	September 1938
Withdrawn	9 December 1987
Entered the museum	10 May 1988
Length (over coupling points)	36 ft. 6 in. (11.12 metres)
Tare Weight	11 tons 1 cwt 2 qtrs (11,226 kilograms)

Table 13.6: Details of 7550 class Bogie Composite Brake Van No.7553 - South Australian Railways - Narrow Gauge

Brake van No.7553 was acquired by Australian National in March 1978, but it saw little subsequent service other than an occasional use on the Wilmington line. and was officially removed from active service in 1986. It was obtained by the Museum on 9 December 1987 and placed at the museum on 10 May 1988.

CHAPTER 14

SERVICE STOCK

5-ton Travelling Crane No.2327 - South Australian Railways - Broad Gauge 339

G class 4-wheel Steel Open Wagon No.363 - South Australian Railways - Broad Gauge 340

Accident Crane No.3 - South Australian Railways - Broad Gauge 341

AMW Bogie Match Wagon No.4015 - South Australian Railways - Broad Gauge 344

Toyota Land Cruiser Hi-Rail - Genesee and Wyoming Australia - Standard Gauge 345

Truck Placer TP135 - South Australian Railways - Broad Gauge 347

Dynamometer Car - Victorian and South Australian Railways - Broad Gauge 350

ESV Workmen's Van No.8131 - South Australian Railways - Broad Gauge 353

Tea & Sugar Butcher's Van FA640 - Commonwealth Railways - Standard Gauge 355

Tea & Sugar Pay Car PA281 - Commonwealth Railways - Standard Gauge 357

Tea & Sugar Provision Van VPA1340 - Commonwealth Railways - Standard Gauge 360

TSB Class Tank Wagon No.691 - Commonwealth Railways - Standard Gauge 363

Water Tank Wagon No.5506 - South Australian Railways - Narrow Gauge 364



5-ton Travelling Crane No.2327 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Good
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Built by	Cowans, Sheldon & Co., Carlisle, England
Entered service	1881
Entered the museum	16 September 1970
Number in class	2
Withdrawn	1970

Table 14.1: Details of 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. Crane 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. It was originally designated Crane No.3 (Adelaide), while its twin, No 2326, was assigned to Port Adelaide as Crane No.3 (Port Adelaide). Around 1903, they were renumbered as 2326 and 2327 respectively.



5-ton Travelling Crane No.2327 - 25 May 2001 *(Chris Drymalik - NRM Collection 275-373-p1000921)*

In 1932, both cranes were paired with match wagons to support their

operations: G class 4-wheel open steel wagon No.1101 was coupled with No.2326, and G363 was paired with No.2327.

G class 4-wheel Steel Open Wagon No.363 - South Australian Railways - Broad Gauge



G class 4-wheel Steel Open Wagon No.363 at the Mile End Railway Museum with Crane No.2327 - c.1970 *(Bob Footner - NRM Collection 1-3-s09684)*

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 in. sided steel open wagons built between 1894 and 1903. Used to carry

Class operators	South Australian Railways
Condition	Fair
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Number in class	47
Entered service	25 April 1902
Withdrawn	1969
Entered the museum	16 September 1970
Length (over coupling points)	20 ft. 10 in. (6.35 metres)

Table 14.2: Details of G class 4-wheel Steel Open Wagon No.363 - South Australian Railways - Broad Gauge

11 tons of general freight they were soon eclipsed by the larger Y class open wagons which were introduced in 1909. Most were converted to F class flat wagons in 1932, and the remainder used for departmental purposes.

No.363 assumed its role as match-wagon in 1932, was written off in 1969, and placed in the Mile End Railway Museum on 10 September 1970. It was moved to the Port Adelaide site on 18 June 1987.

Accident Crane No.3 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways / Australian National
Built by	Cowans, Sheldon & Co., Carlisle, England
Entered service	1925
Withdrawn	1995
Entered the museum	3 May 1995.
Number in class	1
Length over Couplers	21.490 metres
Weight	110.2 tonnes

Table 14.3: Details of Accident Crane No.3 - South Australian Railways - Broad Gauge



Accident Crane No.3 at the NRM - 12th February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092310)*

Accident and Breakdown Trains

Throughout much of the 20th century, Australia's state and federal railways operated dedicated *accident* or *breakdown trains* that could be rapidly dispatched to the scene of derailments, collisions, or infrastructure failures. These specially prepared trains were critical to railway operations, helping restore traffic, assist injured personnel, and investigate the cause of serious incidents.

A typical breakdown train consisted of a range of specialised vehicles, including:

- A heavy, rail-mounted **breakdown crane** to lift derailed wagons and locomotives
- **Tool vans** carrying jacks, rerailing ramps, cutting equipment, timbers, and chains
- **Crew accommodation cars**, often converted from older guards or passenger cars
- Space for **medical supplies** or coordination in case of injuries

These trains were strategically located at key depots such as Adelaide, Melbourne, Sydney, and Port Augusta, and could be dispatched quickly with minimal preparation. In more remote areas, lighter breakdown outfits were maintained, tailored to local needs and rolling stock.

The South Australian Railways, for example, maintained separate breakdown equipment for its broad and narrow-gauge networks, while the Commonwealth Railways operated similar trains along the Trans-Australian line. In Western Australia, the Western Australian Government Rrailways used steam cranes and purpose-built vans to respond to incidents across the system.

With the development of modern track machinery, heavy road cranes, and improved accident response coordination, the use of dedicated accident trains declined from the 1980s onward. Today, most rail operators rely on contracted emergency services, hi-rail vehicles, and containerised equipment sets that can be moved by road. However, preserved breakdown vehicles and cranes still survive at several railway museums across Australia.

Accident Crane No.3 is a significant piece of railway heritage, representing the South Australian Railways (SAR) commitment to safety and operational efficiency during the early 20th century. This 60-ton capacity steam-powered crane was constructed in 1925 by Cowans Sheldon & Co, of Carlisle, England, and was designed specifically for lifting and recovering derailed rolling stock and equipment. Its robust build and powerful lifting capabilities made it an essential tool for rail maintenance and emergency response operations.



Accident Crane No.3 in South Australian Railways service *(NRM Collection 1-1-15231)*



Accident Crane No.3 in South Australian Railways service *(NRM Collection 1-1-15232)*

The crane is mounted on a 4-axle bogie, allowing it to traverse the broad gauge tracks of the South Australian network. Its diesel powered engine (originally steam-powered until 1971) drives a system

of pulleys and gears, enabling the lifting of heavy loads up to 60 tons. The crane's design includes a distinctive boom, which provides the necessary reach and stability for lifting operations. Additionally, it was equipped with outriggers to stabilise the crane during lifting procedures.

To enhance its operational efficiency, Accident Crane No.3 was paired with match wagon AMW4015. This wagon was equipped to carry tools and the crane's jib when travelling to incident sites.

AMW Bogie Match Wagon No.4015 - South Australian Railways - Broad Gauge

BOGIE MATCH WAGON No.4015 was built by Gray Brothers, Port Adelaide in 1916 for the South Australian Railways as part of an order for 'W' class open wagons. It was converted in 1929 to a specialised railway vehicle designed to support the operation of Accident Crane No.3, by carrying tools and the crane's jib when travelling to incident sites for recovery operations.

AMW4015 is part of a limited class of three such wagons that operated with large Accident Cranes purchased by the South Australian Railways in the 1920s. When it was withdrawn from active service in 1995, along with Accident Crane No.3, the wagon was donated to the museum by Australian National.

See also 'Accident Crane No.3' on page 341.

Class operators	South Australian Railways Australian National Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways / Australian National
Built by	Gray Brothers, Port Adelaide
Number in class	3
Entered service	17 February 1916
Convert to match wagon	1 July 1929
Withdrawn	1995
Entered the museum	3 May 1995

Table 14.4: Details of AMW Bogie Match Wagon No.4015 - South Australian Railways - Broad Gauge



AMW Bogie Match Wagon No.4015 holding the jib of Crane No.3 at the NRM - 31 May 1995 *(Douglas Colquhoun - NRM Collection 2-194-z-1270)*

Toyota Land Cruiser Hi-Rail - Genesee and Wyoming Australia - Standard Gauge

A 'HI-RAIL' VEHICLE is basically a road vehicle that can operate on rail track and road. 'Hi-Rail' is an amalgam of the words Highway and Railway.

'Hi-Rail' vehicles are converted road vehicles, which retain their normal road wheels, but are fitted with additional flanged steel wheels for running on rails. Propulsion is transferred to the head of the rail through the conventional road tyres with the rail wheels used to guide the vehicle along the track. The rail wheels can be lowered or raised by hydraulics, to suit the method needed.

Class operators	Australian National Genesee and Wyoming Australia
Condition	Very Good
Built by	Toyota Motor Corporation/Aries Rail
Gauge	Standard
Entered service	1996 / 1997
Withdrawn	December 2016
Entered the museum	7 December 2016
Ownership	Port Dock Station Railway Trust
Provenance	Australian National, Genesee and Wyoming Australia

Table 14.5: Details of Toyota Land Cruiser Hi-Rail - Genesee and Wyoming Australia - Standard Gauge



The Hi-Rail Toyota Land Cruiser at the NRM - 10 December 2016
(Chris Drymalik - NRM Collection 275-373-p1142760)

This particular vehicle was built by the Toyota Motor Corporation at its Honsha plant, Japan in 1996, and exported to Australia. Upon entering Australia the vehicle was purchased by Australian National Railways, who fitted it with 'Hi-Rail' equipment for use on track inspections.

Following the sale of Australian National Railways in 1997, ownership of this vehicle was transferred to Genesee and Wyoming Australia. Between 2001 and 2004 it was used for inspections during the construction of the Alice Springs to Darwin railway. Following completion of the railway in 2004 the vehicle was used around Genesee and Wyoming Australia's broad and standard gauge system in South Australia.

The vehicle was retired by Genesee and Wyoming Australia in December 2016, and generously donated to the NRM in full working order.



An Australian National Hi-Rail sits in the siding at Mount Lofty as a freight hauled by Vline diesel locos G525 and C508 passes - c.1990s *(Australian National - NRM Collection 14-223-ans063)*

Truck Placer TP135 - South Australian Railways - Broad Gauge

A TRUCK PLACER is small tractor that has hydraulically fitted railway wheels which can be raised or lowered, enabling it to be used on rail tracks. Fitted with a coupling at one end, the Truck Placer can attach itself to railway wagons and quickly relocate, or position them ready to be attached to a passing freight train. Similarly they can re-locate incoming railway wagons detached from a train, saving a great deal of train running time.

The South Australian Railways introduced Truck Placers from around

Class operators	South Australian Railways Australian National Genesee and Wyoming Australia
Condition	Very Good
Gauge	Broad
Entered the museum	2014
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways, Australian National, Genesee and Wyoming Australia

Table 14.6: Truck Placer TP135 - South Australian Railways - Broad Gauge



The Truck Placer after being restored at the NRM - 17 November 2020 *(Chris Drymalik - NRM Collection 275-373-p1188883)*

1965/66. They were primarily used to replace local railway horses engaged in shunting duties at busy country locations.

The NRM Truck Placer was used at Keith and Tintinara, where it was busy shunting livestock, fuel tank, grain and fertiliser wagons.

It was donated to the NRM by Mr. Roger Size, of Karoonda, and subsequently fully restored and painted in 2021.



The ease with which the Truck Placer can be turned whilst operating at the NRM - 4 October 2014 *(Chris Drymalik - NRM Collection 275-373-p1120815)*



A South Australian Railways Truck Placer in action at Bordertown, South Australian - December 1967 *(Barry Marshall - NRM Collection 97-1262-0575)*

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.

Equipped with an array of instruments, the Dynamometer Car was used to measure various parameters during operational tests. Its design enabled it to be coupled to locomotives, providing a direct assessment of their performance under actual working conditions. This capability was crucial for the development and refinement of railway technology during the early 20th century.

The carriage entered service in 1932, with construction costs being shared jointly between the Victorian and South Australian Railways.

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.

The dynamometer car was a 'rolling laboratory'. It gave railways a way

Class operators	South Australian Railways Australian National Railways Victorian and South Australian Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	Victorian and South Australian Railways Joint Stock
Built by	South Australian Railways
Number in class	1
Entered service	1932
Withdrawn	3 May 1995
Entered the museum	3 May 1995

Table 14.7: Details of Dynamometer Car - Victorian and South Australian Railways - Broad Gauge



Victorian and South Australian Railways Dynamometer Car at the NRM - 2 April 2010 *(Chris Drymalik - NRM Collection 275-373-p1080111)*



V& SAR Dynamometer Car in 'The Overland' larch green and golden yellow livery at Mile End - c.1952 *(Ron Stewien - NRM Collection 215-1237-s0146)*



Victorian and South Australian Railways Dynamometer Car instrument table - 18 May 2019 *(Chris Drymalik - NRM Collection 275-373-p1173401)*



V& SAR Dynamometer Car is immediately behind SAR locomotive 900 during it's first trail run - 1951 *(David Parsons Collection - NRM Collection 17-336-mb-b21-a23)*

to scientifically test trains without needing to build dedicated test tracks.

The data gathered helped:

- Improve locomotive efficiency and safety.
- Inform design changes.
- Validate manufacturer claims.

The Dynamometer Car's original livery was a deep crimson red, being repainted in the mid 1930s in 'The Overland' larch green and golden yellow. Then in the 1940s orange for a year or so, then finally yellow.

It was 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

THE SOUTH AUSTRALIAN Railways utilised a variety of employee sleeping vans (ESVs) to accommodate railway workers during extended assignments, particularly in remote or rural areas. These vans were essential for maintaining operations on track gangs, maintenance crews, and other departmental staff working away from their home depots.

Employee Sleeping Van No.8131 is built on the underframe of SAR's Webb-style brake van No.4383. It was introduced to service in June 1963 as part of a broader initiative to provide comfortable lodging for railway workers stationed at remote depots.

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	June 1963
Underframe entered service	15th June 1928 as Webb Caboose Brake Van
Purchased by Museum	4 May 1990

Table 14.8: Details of ESV Workmen's Van No.8131 - South Australian Railways - Broad Gauge



South Australian Railways - Workmen's Van No.8131 at the NRM - 28 January 1996 *(Chris Drymalik - NRM Collection 275-372-11456-k)*

It was acquired by the museum in 1990



South Australian Railways - Workmen's Van No.8131 at the NRM - 16 December 2006 *(Chris Drymalik - NRM Collection 275-373-p1031702)*

Tea & Sugar Butcher's Van FA640 - Commonwealth Railways - Standard Gauge

THE *Tea and Sugar* was the life line of the Nullarbor. It began life very in the 20th 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

Class operators	Commonwealth Railways Australian National
Condition	Good
Number in class	2
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways & Australian National
Built by	Commonwealth Railways
Entered service	20 November 1944
Withdrawn	11 September 1982
Entered the museum	2 August 1988
Length over couplers	15 ft 6½ in. (16.320 metres)

Table 14.9: Details of Tea & Sugar Butcher's Van FA640 - South Australian Railways - Standard Gauge

formally recognised with the provision of dedicated vehicles for use as a travelling supply van, butcher shop and a fruit and vegetable van.

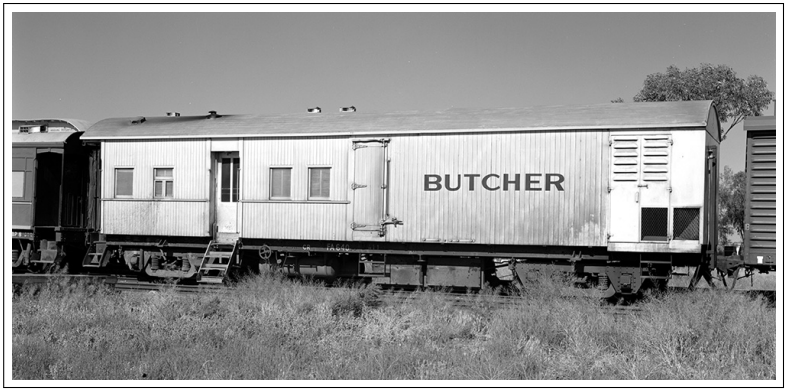


Tea & Sugar Butcher's Van FA640 at the NRM - 27 July 2008 *(Chris Drymalik - NRM Collection 275-373-p1052021)*

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 sheep that were slaughtered enroute, as no suitable method of refrigeration was available to keep meat fresh for long periods.



Butcher's Van FA640 in service on the Commonwealth Railways Tea & Sugar train - c.1967 *(Commonwealth Railways - NRM Collection 14-219-a80-421b)*



Butcher's Van FA640 in service on the Commonwealth Railways Tea & Sugar train - c.1967 *(Commonwealth Railways - NRM Collection 14-219-a80-421a)*

In 1944 two new bodies were built for use as mobile butcher cars, one of these was van FA640, which entered service on 20 November 1944. It was constructed on a 45 ft. (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 11 September 1982. They were stored at Port Augusta and Stirling North for six years until FA 640 was delivered to the Museum on 2 August 1988 and the other tendered for disposal. Prior to being obtained by the Museum FA640 was badly vandalised and many fittings stolen, but has since been fully restored.

Tea & Sugar Pay Car PA281 - Commonwealth Railways - Standard Gauge

PAY CAR PA281 was one of three identical vehicles constructed by Commonwealth Engineering for the Commonwealth Railways. It entered service on 24 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 Australia Railway.

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

Class operators	Commonwealth Railways Australian National
Condition	Excellent
Number in class	3
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways & Australian National
Entered service	24th March 1972
Withdrawn	approx 1995
Entered the museum	16 February 2006
Length over coupler	15.164 metres

Table 14.10: Details of Tea & Sugar Pay Car PA281 - Commonwealth Railways - Standard Gauge



Tea & Sugar Pay Car PA281 at Port Augusta shortly after delivery from Commonwealth Engineering - 1972 *(Commonwealth Railways - Chris Drymalik Collection b10-14c)*

separates the paymaster from the customer. The next compartment, which is separated from 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 a centre mounted end door that allows for access to vehicle coupled to the pay car.



Tea & Sugar Pay Car PA281 at the NRM - 21 September 2008 *(Chris Drymalik - NRM Collection 275-373-p1053290)*

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 to 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 vehicle's 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 vehicle's TIMS rolling stock record shows it last being serviced/repaired 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 Australia 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 moved to the Islington Workshop for storage.

In February 2006 the museum purchased the vehicle. It was transferred by road to Port Adelaide on 16 February 2006.

Tea & Sugar Provision Van VPA1340 - Commonwealth Railways - Standard Gauge



Tea & Sugar Provision Van VPA1340 at the NRM - 27 July 2008 *(Chris Drymalik - NRM Collection 275-373-p1052022)*

THIS VAN WAS used to service railway settlements on the Tea & Sugar train that operated weekly between Port Augusta and

Class operators	Commonwealth Railways Australian National
Condition	Good
Number in class	2
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways & Australian National
Entered service	14 December 1955
Withdrawn	3 May 1986
Entered the museum	2 August 1988
length over coupler	18.290 metres

Table 14.11: Details of Tea & Sugar Provision Van VPA1340 - Commonwealth Railways - Standard Gauge



The Butcher Van & Provision Van can clearly been seen as tje Tea & Sugar Train sits in the siding at Bookaloo -22 February 1973 *(Barry Marshall - NRM Collection 97-1262-g062-2016)*

Kalgoorlie on the Trans-Australian Railway. Groceries, hardware, etc. were supplied from the Provision store at Port Augusta.

In 1955 the two purpose-built brand new all steel framed vehicles were constructed for use as Provision Vans on the Tea &Sugar. Entering service on 14 December 1955, VPA1340 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 3rd May 1986 with VPA1340 being transported to Museum on 2 August 1988. The vans had become surplus 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’).



Provision Van VPA1340 staff quarters at the NRM - 27 October 2001
(Chris Drymalik - NRM Collection 275-373-p1002231)



Tea & Sugar Provision Van VPA1340 shop interior at the NRM - 16 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1002145)*

TSB Class Tank Wagon No.691 - Commonwealth Railways - Standard Gauge

WAGON TSB NO.691 is one of 60 TSB class tank wagons used to transport water for domestic or railway purposes on the standard gauge Trans-Australian railway of the Commonwealth Railways. Good quality water was scarce on the Trans-Australian Railway, so it was necessary to transport it by rail to many of the

Class operators	Commonwealth Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways
Number in class	60
Length over body	18 feet (5.48 metres)
Water capacity	4,000 gallons (18,184 litres)
Entered service	1915
Withdrawn	1964
Entered the museum	26 October 1993
Length over couplers	20 ft. 6½ in. (6.261 metres)

Table 14.12: Details of TSB Class Tank Wagon No.691 - Commonwealth Railways - Standard Gauge



Commonwealth Railways - TSB Class Tank Wagon No.691 at the NRM - 20 March 2010 *(Chris Drymalik - NRM Collection 275-373-p1079912)*

isolated settlements along the line that lacked a permanent water source.

During the line's construction phase, the Commonwealth Railways ordered S. Perry & Co. in South Australia and Westralia Ironworks in Western Australia to each build 30 tank wagons. Each wagon measured 18 feet over the body, 8 feet in width, and had a water capacity of 4,000 gallons. All were delivered to the Port Augusta and Kalgoorlie depots during 1915.

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

Class operators	South Australian Railways
Condition	Good
Ownership	History Trust of South Australia
Provenance	South Australian Railways
Water Capacity	2,000 gallons (9,092 litres)
Entered service	10 July 1914
Convert to Tank Wagon	3 March 1923
Withdrawn	13 April 1977
Entered the museum	1 September 1977
Length over coupling points	17 ft 9 in. (2.36 metres)

Table 14.13: Details of Water Tank Wagon No.5506 - South Australian Railways - Narrow Gauge

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.



Water tank No.5506 at the NRM - 14 April 2001 *(Chris Drymalik - NRM Collection 275-373-p1000712)*

Originally used on the Peterborough Division No.5506 was sent to the South-East Division 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 13 April 1977. On 1st September of the same year it was placed in the Mile End Railway Museum, being transferred to the

Port Adelaide site on 23 September 1988.



CHAPTER

15

FREIGHT WAGONS

AOWF Bogie Timber Open Wagon No.58 - ex OW class No.5840 - South Australian Railways - Broad Gauge 369

BAS Class Ballast Wagon No.615 - Commonwealth Railways - Standard Gauge 370

Cf Class 4-wheel Cattle Van No.26 - South Australian Railways - Broad Gauge 372

DA Class Covered Van No.4346 - South Australian Railways - Broad Gauge 373

DWf Class 4-wheel Louvred Van No.4724 - South Australian Railways - Broad Gauge 375

FB Class Flat Cars Nos.8500, 8536, and 8657 - South Australian Railways - Broad Gauge 376

FNT Class Bogie Flat Wagon No.7850 - South Australian Railways - Narrow Gauge 379

HFN Class 4-wheel Hopper Wagon No.5108 - South Australian Railways - Narrow Gauge 380

M Bogie Steel Vans No.7436, 7038 & MG39 (ex M7497) - South Australian Railways - Broad Gauge 382

N class 4-wheel Wooden Van No.251 - South Australian Railways - Broad Gauge 385

OB Open Wagon No.32 - South Australian Railways - Broad Gauge 387

OF class Steel Open Wagon No.439 - South Australian Railways - Broad Gauge 388

ON Class Bogie Ore Hopper No.929 - Silverton Tramway Company - Narrow Gauge 389

RBP Class bogie refrigerator car No.9003 - South Australian Railways - Broad Gauge 390

Sf Class 4-wheel Sheep Van No.160 - South Australian Railways - Broad Gauge 392

TC Class Fuel Tank No.8463 - South Australian Railways - Broad Gauge 394

TV Class Tank Car No.4872 - South Australian Railways - Broad Gauge 395

V Class bogie Covered Van (outside frame), No. 260 - Commonwealth Railways - Standard Gauge 396

V Class Steel 4-wheel Louvred Van No.1990 - South Australian Railways - Narrow Gauge 398

WL Class Bogie Well Wagon No.8200 - South Australian Railways - Broad Gauge 400

Y Class 4 wheel steel open wagon No.3582 - South Australian Railways - Broad Gauge 402

Y Class 4-wheel Open wagon (drop-sides) No.5017 (restored as CR NGAS373) - Commonwealth Railways - Narrow Gauge 404

Y Class 4-wheel Open wagon (drop-sides) No.5019 - South Australian Railways - Narrow Gauge 406

YY Class 4-wheel Open wagons Nos.4913, 4927 and 4947 - South Australian Railways - Narrow Gauge 407

Z Class 4-wheel Steel Hopper Wagon No.3236 - South Australian Railways - Broad Gauge 409

AOWF Bogie Timber Open Wagon No.58 - ex OW class No.5840 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways, & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	30 June 1944
Built by	South Australian Railways
Number in class	50
Entered the museum	1995
Length over coupling point	45 ft. 10 in. (13.970 metres)

Table 15.1: Details of 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 constructed as OW5840, and reclassified as OWS58 on 12th March 1974. In 1980, it was later re-coded as part of the AOWF class, though it remained largely unchanged in design.

AOWF58 was obtained by the museum in 1995.



AOWF Bogie Timber Open Wagon No.58 at the NRM - 25 May 2001
(Chris Drymalik - NRM Collection 275-373-p1000890)

Class operators	Commonwealth Railways Broken Hill Proprietary Company Limited (BHP)
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways & BHP
Condition	Good
Entered service	11 March 1916
Entered the museum	6 March 2001
Length (over coupling points)	20 ft. 6 in. (6.25 metres)
Load Weight	50 tons
Number in class	125
Tare Weight	6 tons 15 cwt (6.86 tonnes)

Table 15.2: Details of BAS Class Ballast Wagon No.615 - Commonwealth Railways - Standard Gauge

BAS Class Ballast Wagon No.615 - Commonwealth Railways - Standard Gauge

ONE OF 125 Ballast Wagons used on the standard gauge Trans-Australian 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 March 2001.



Commonwealth Railways - Standard Gauge gauge BAS Class Ballast Wagon No.616 (identical to No.615) sits in the Port Augusta Yard in 1964, with derelict L class steam engines behind *(Chris Drymalik collection - NRM Collection 275-372-a-m0040)*



Commonwealth Railways - Standard Gauge BAS Class Ballast Wagon No.615 at the museum - 17th January 2015 *(Chris Drymalik - NRM Collection 275-373-p1124039)*

Cf Class 4-wheel Cattle Van No.26 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	28 January 1954
Condemned	23 November 1982
Entered the museum	24 January 1983
Number in class	100
Tare Weight	7 tons 15 cwt (7.87 tonnes)
Load Weight	9 head of cattle
Length (over coupling points)	20 ft. 10 in. (6.35m)

Table 15.3: Details of Cf Class 4-wheel Cattle Van No.26 - South Australian Railways - Broad Gauge



Cf Class 4-wheel Cattle Van No.26 at the NRM - 31 May 1995
(Douglas Colquhoun - NRM Collection 2-194-z-1269)

LIKE THE SF Class cattle wagon, 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 23 November 1982 and passed to the Mile End Railway Museum on 24 January 1983. It was transferred to the Port Adelaide site on 5 June 1987.

DA Class Covered Van No.4346 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Entered service	17 May 1923
Condemned	12 February 1987
Entered the museum	28 May 1987
Ownership	Port Dock Station Railway Trust
Number in class	71
Length (over coupling points)	23 ft. 2 in. (7.0612m)
Tare Weight	10 tons 3 cwt
Load Weight	12 tons

Table 15.4: Details of DA Class Covered Van No.4346 - South Australian Railways - Broad Gauge

THE SEVENTY-ONE VANS vans in the 'DA' class were built by various builders between 1900 and 1923, and were used for the carriage of goods of non-perishable nature that required ventilation. Originally classed 'A' they were re-classed 'DA' during the 1920s.

No.4346 was the second last of the series, built in May 1923, by the Perry Engineering Co., Mile End. In 1964 it was sent to Gillman Yard for use as a tool van, replacing N251, until written off. It was placed in the museum on 28 May 1987.



DA Class Covered Van No.4346 with the two Adzing Plant Cranes in the Gillman Yard - 11 November 2004 *(Robert Haebich - NRM Collection 48-987-d029-23)*



DA Class Covered Van No.4346 at the NRM - 11th November 2004 *(Chris Drymalik - NRM Collection 275-373-p1016078)*

DWf Class 4-wheel Louvred Van No.4724 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Entered service	17 January 1945
Written Off	13 August 1983
Entered the museum	24 July 1986
Ownership	Port Dock Station Railway Trust
Number in class	550
Length (over coupling points)	22 ft. 10 in. (6.96 metres)
Tare Weight	9 tons 12 cwt
Load Weight	15 tons

Table 15.5: Details of DWf Class 4-wheel Louvred Van No.4724 - South Australian Railways - Broad Gauge



DWf Class 4-wheel Louvred Van No.4724 at the NRM - 26 August 2017 *(Chris Drymalik - NRM Collection 275-373-p1151939)*

THE PRACTICE BY the South Australian Railways of building 4-wheel versions of larger bogie cars, and vice versa, extended to many types. When this occured 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 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.

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. No.4724 was placed in the Mile End Railway Museum on 24 July 1986. It was moved to the Port Adelaide site on 5 June 1987.

FB Class Flat Cars Nos.8500, 8536, and 8657 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Very good
Ownership	Port Dock Station Railway Trust
Entered service	No.8500 - 2 April 1927 No.8536 - 14 May 1927 No.8657 - 24 September 1927
Entered the museum	No.8500 - 28 June 1988 No.8536 - 22 September 1991 No.8657 - 4 March 1991
Number in class	200 (No.8500 to 8699)
Length (over coupling points)	45 ft. 10 in. (13.97 metres)
Tare Weight	16 tonne

Table 15.6: Details of FB Class Flat Cars Nos.8500, 8536 and 8657 - South Australian Railways - Broad Gauge

BUILT IN THE 1920s, as part of Commissioner William Webb's ambitious modernisation of the South Australian Railways (SAR), these wagons were designed for carrying general freight. They operated on most of the South Australian Railways broad gauge system and were a regular sight on freight trains carrying a wide variety of goods.

With their robust steel frame and open deck design, FB wagons were ideal for carrying oversized or awkwardly shaped loads - everything from machinery and timber to containers and vehicles. Their low height and lack of sides made loading and unloading easier, especially with cranes or forklifts.

Flat wagon FB No.8536 was converted in 1941 to carry aircraft wings.



FB Class Flat Car No.8668 loaded with wool bales *(STA Collection - NRM Collection 5-103-cu16)*



FB Class Flat Car No.8648 loaded with wool bales at possibly North Adelaide - 1952 *(Douglas Colquhoun - NRM Collection 2-71-a2893)*

Following the 1975 transfer of SAR assets to Australian National, the FB wagons underwent gradual withdrawal or reclassification. Many were either retired, scrapped, or repurposed. Those that continued in service were re-coded under ANR's National Freight Classification System as 'AFFA' class.

Some wagons were rebuilt into different classes, such as No.8657 which became a 'AFBF' class, with structural modifications better to suit its new role.



FB Class Flat Car No.8536, now in the NRM collection, is seen here in service with ANR loaded with a portable generator *(Barry Marshall - NRM Collection 97-1262-z022)*



FB Class Flat Car No.8536 at the NRM - 1 July 2017 *(Chris Drymalik - NRM Collection 275-373-p1151246)*

FNT Class Bogie Flat Wagon No.7850 - South Australian Railways - Narrow Gauge

Class operators	South Australian Railways Australian National
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways & Australian National
Condition	Good
Entered service	29 July 1942
Withdrawn	1989
Entered the museum	1989
Length over buffers	25 ft (7.62 metres)

Table 15.7: Details of FNT Class Bogie Flat Wagon No.7850 - South Australian Railways - Narrow Gauge

WAGON NO.7850 IS a preserved example of the FNT class flat wagons, a versatile series of freight wagons built for the South Australian Railways (SAR) during the Second World War. Constructed in 1942 at the SAR's Islington Railway Workshops, this wagon was built for use on the state's extensive narrow-gauge network, particularly across the Eyre Peninsula.

The FNTs featured a long, open deck with timber flooring and steel underframes, offering flexibility for cargo of varying shapes and sizes. As freight transport modernised, some were later adapted to carry containerised loads, gaining lashing points or fittings to secure goods.

Wagon No.7850 remained in service for several decades, continuing to operate after the 1975 transition of SAR assets to Australian National Railways. It remained unchanged for most of it's working life, other than being fitted with stanchions for timber traffic work in 1986, and was eventually withdrawn from active service in 1989 as part of a broader phase-out of older narrow-gauge rolling stock.

Flat wagon No.7850 was obtained by the museum in 1989.



FNT Class Bogie Flat Wagon No.7850 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092316)*



Agricultural machinery on FNT Class Bogie Flat Wagon No.7850, No.7838 and No.7874 at Gladstone, South Australia - August 1980 *(J & V Burgess - NRM Collection 1-8-135-12)*

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.

Wagon No.5108 served primarily on the Peterborough Division, a crucial segment of the SAR's narrow-gauge operations. In its later years, it operated on the Gladstone to Wilmington branch. After decades of service, it was withdrawn from active duty in 1989 and acquired by the museum. It was on loan to the Pichi Richi Railway during 1989.

Class operators	South Australian Railways Australian National
Condition	Good
Entered service	21 December 1912
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways & Australian National
Withdrawn	1989
Entered museum	5 September 1989
Number in class	25
Length (over coupling points)	17!ft. 9 in. (5.41 metres)
Tare Weight	5 tons 3 cwt
Load Weight	11 tons

Table 15.8: Details of HFN Class 4-wheel Hopper Wagon No.5108 - South Australian Railways - Narrow Gauge



HFN Class 4-wheel Hopper Wagon No.5108 at the NRM - 12 February 2911 *(Chris Drymalik - NRM Collection 275-373-p1092317)*



HFN Class 4-wheel Hopper Wagon No.5108 in the yard at Gladstone - 1989 *(Australian National - NRM Collection 14-217-16-17)*

M Bogie Steel Vans No.7436, 7038 & MG39 (ex M7497) - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Built by	American Car & Foundry Co.
Number in class	500
Entered service	7038 - 25 April 1925 7436 - 7 December 1925 7497 (MG39) - 23 December 1925
Condemned	7038 - 17 October 1987 7436 - 23 November 1982 7497 (MG39) - 4 April 1987
Length over couplers	38 ft, 10 in. (11.840 metres)

Table 15.9: Details of M Bogie Steel Vans No.7436, 7038 & MG39 (ex M7497) - South Australian Railways - Broad Gauge

Railway Advertising Vans

Railway advertising vans have a unique and colourful place in Australia's transport history. Long before digital billboards and online marketing, these mobile billboards rolled across the country, promoting everything from beer and banking to fresh produce and transport services. Typically, they were repurposed freight vans transformed into eye-catching canvases, helping brands reach audiences in towns and rural areas served by the nation's extensive rail networks.

Advertising on railway rolling stock began in the early 20th century and peaked in the post-war period. Each state had its own approach to rail advertising, reflecting local railway management and wagon availability.

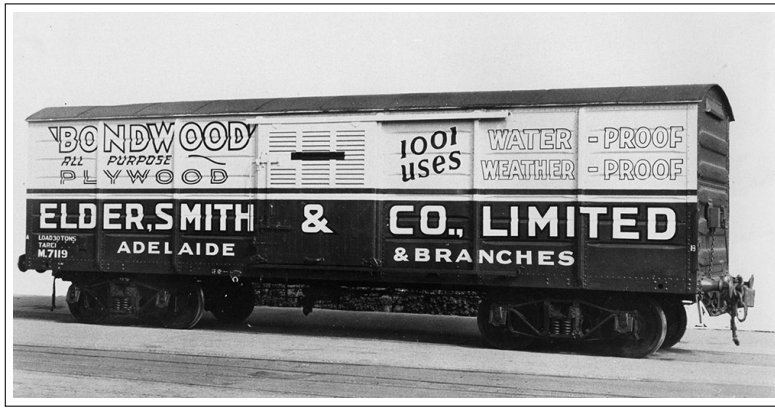
Examples include:

- Western Australia: From the 1920s onward, the Western Australian Government Railways began leasing advertising space on freight vans. Commonly used classes included the D, DA, FD, and V vans. These box-shaped wagons provided ample flat surface area for hand-painted signs, often featuring local goods or tourism promotions. By the 1950s, advertising had become a regular feature on these vehicles.
- Victoria: In Victoria, the UB class louvre vans became the go-to choice for advertising. Their slatted sides made them ideal for large painted or printed signs, visible from station platforms and along country routes. These vans regularly bore the names of well-known Victorian brands, and a number of scale model reproductions now preserve their legacy in miniature form.
- South Australia: the M class vans, which were integral to the South Australian Railways during the 1920s and beyond.



Victorian Railways - BLX Bogie Steel Van No.86 painted in Stephens Railex Congratulates advertising sitting at Mile End *(Bob Footner - NRM Collection 1-3-s09716)*

A TOTAL OF 500 M class 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.



South Australian Railways - M Bogie Steel Van No.7199 painted in Elder Smith advertising *(NRM Collection 1-1-22455)*



South Australian Railways - M Bogie Steel Van No.7038 - 29 January 1990 *(Chris Roads - NRM Collection 44-981-d143)*

At various times other 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 numbers. Between 1978 and 1981, all the vans 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 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. M7436 carries West End livery, M7038 TNT livery and MG39 Farmers' Union livery.



South Australian Railways - MG Bogie Steel Van No.39 - 1 November 1989 *(NRM Collection 1-1-12190)*



South Australian Railways - M Bogie Steel Van No.7436 - 29 January 1990 *(Chris Roads - NRM Collection 44-981-d146)*

N class 4-wheel Wooden Van No.251 - South Australian Railways - Broad Gauge

THIS IS AN 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

Class operators	South Australian Railways
Condition	Good
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Number in class	10
Entered service	29th October 1901
Withdrawn	1964
Length (over coupling points)	19 ft. 3 in. (5.8674 metres)

Table 15.10: Details of N class 4-wheel Wooden Van No.251 - South Australian Railways - Broad Gauge

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.



N class 4-wheel Wooden Van No.251 sitting in the Gillman Yard - 25th May 1957 *(Douglas Colquhoun - NRM Collection 2-71-a0974b)*

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 Port Adelaide site on 8th December 1988.



South Australian Railways N class 4-wheel Wooden Van No.251 at the NRM - 21 June 2003 *(Chris Drymalik - NRM Collection 275-373-p1007532)*

OB Open Wagon No.32 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Built by	American Car & Foundry Co.
Number in class	600
Entered service	1 June 1925
Entered the museum	1988
Length over couplers	45 ft. 10 in. (13.970 metres)

Table 15.11: Details of OB Steel 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 as an 'O' class. These steel-bodied open wagons were primarily used for transporting bulk goods such as wheat, coal, and general freight.

The 'OB' class was a rebuild of the original 'O' class wagons. The principal alteration was being fitted with new doors that had improved hinges and seals. To distinguish them from the older wagons, those

with seals had the doors painted red, retaining the existing livery of grey body and white lettering on a black data panel.



South Australian Railways OB Steel Open Wagon No.32 at the NRM *(Hugh Williams - NRM Collection 251-338-s28-30)*

OB32 was obtained by the museum in 1988.

OF class Steel Open Wagon No.439 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	16 Augusta 1951
Written off	13 June 1986
Number in class	501
Length over couplers	24 ft. 10¼ in. (7.580 metres)

Table 15.12: Details of OF class Steel Open Wagon No.439 - South Australian Railways - Broad Gauge

THE OF CLASS open wagon was a general traffic wagon used by the South Australian Railways (SAR). They were introduced in the early 1950s as part of a modernisation effort to replace the ageing Y class wagons. These wagons were designed for the transportation of bulk goods such as grain, coal, and general freight. A total of 501 wagons where constructed between 1947 and 1952 with road numbers from 1 to 501.

The wagons featured a robust steel construction, which provided greater durability and capacity compared with their predecessors.



OF class Steel Open Wagon No.439 at the museum - 29 June 2013
(Chris Drymalik - NRM Collection 275-373-p1109239)

They were equipped with pressed steel doors and arch bar bogies, which were common features in the SAR's rolling stock during that era. The wagons were designed to be versatile, accommodating various types of bulk freight.

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 and Port Pirie. This traffic was progressively

Class operators	Silverton Tramway Company
Ownership	Port Dock Station Railway Trust
Provenance	Silverton Tramway Company
Condition	Fair
Length over buffers	25 ft. 9 in. (7.85 metres)
Condition	Good (after basic restoration)
Tare Weight	9.5 tonne
Load Weight	31.0 tonne
Withdrawn	January 1970

Table 15.13: Details of ON Class Bogie Ore Hopper No.929 - Silverton Tramway Company - Narrow Gauge



Silverton Tramway ON at Peterborough - 6 February 2008 *(Chris Drymalik - NRM Collection 275-373-p1045954)*

converted into larger and modern wagons, using the standard gauge railway, culminating in ON929 being placed out of use in January 1970.

It is an example 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, including those of the Silverton Tramway Co Ltd.

RBP Class bogie refrigerator car No.9003 - South Australian Railways - Broad Gauge

BOGIE REFRIGERATOR CAR No.9003 was built at South Australian Railway's Islington Workshops in 1933 as a standard RB Class refrigerator car. 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 re-classed RRP9003, and later being re-classed RBP9003 on 19 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 Bluebird Railcars.

No. 9003 became Australian National Railway property during the sale the South Australian Railways country operations to the

Class operators	South Australian Railways Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways / Australian National
Entered service	7 October 1933
Withdrawn	20 February 1985
Entered the museum	31 March 2004
Length (over coupling points)	38 ft. 10 in. (11.84 metres)
Load Weight	33 tons (33.53 tonnes)
Number in class	44
Tare Weight	19 tons 12 cwt (19.92 tonnes)

Table 15.14: Details of RBP Class bogie refrigerator car No.9003 - South Australian Railways - Broad Gauge



Bluebird Railcar No.259 with RBP9003 at Blyth - 15 April 1976 *(Barry Marshall - NRM Collection 97-1262-g092-3075)*



RBP Class bogie refrigerator car No.9003 at the museum - 2 June 2018 *(Chris Drymalik - NRM Collection 275-373-p1161594)*

Commonwealth. On 28 May 1980 it was reclassified ARPY9003 and condemned on 20th February 1985.

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

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Ownership	Port Dock Station Railway Trust
Condition	Good
Entered service	December 1952
Condemned	23 November 1982
Entered the museum	24 January 1983
Number in class	180
Tare Weight	9 tons 6 cwt (9.46 tonnes)
Load Weight	80 sheep (40 per deck)
Length (over coupling points)	20 ft. 10 in. (6.35 metres)

Table 15.15: Details of 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 capacity of 80 sheep, provided the means by which farmers could ship smaller numbers of sheep - 40 per deck.



Sf Class 4-wheel Sheep Van No.160 at the museum - 15 April 1995 *(Chris Drymalik - NRM Collection 275-372-11332-k)*



Sf Class 4-wheel Sheep Van No.163 + No.160 stored at Penfiled - 12 January 1983 *(Ron Fluck - NRM Collection 124-1338-pd336-09)*

The Museum's vehicle, No.160, was placed in service in December 1952, taken into Australian National stock in March 1978, and condemned on 23 November 1982. It was placed in the Mile End Railway Museum on 24 January and sent to the Port Adelaide site on 5 June 1987.

TC Class Fuel Tank No.8463 - South Australian Railways - Broad Gauge

Class operators	Victorian Railways South Australian Railways
Provenance	Victorian Railways & South Australian Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	1926
Entered the museum	1 April 1995
Number in class	2
Capacity	4,500 gallons (20,457 litres)
Length over couplers	24 ft 10-3/8 in. (7.58 metres)

Table 15.16: Details of 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 as tank wagon No.69. It was designed for the efficient and safe transportation of liquid fuels, featuring a cylindrical steel tank mounted on a four-wheel underframe for the broad gauge tracks of the Victorian and South Australian Railways networks. These tank cars played a crucial role in supplying fuel to various depots, supporting both industrial and residential needs.

It was transferred from the Victorian Railways to the South Australian Railways in 1961.



TC Class Fuel Tank No.8499 + No.8463 at the SteamRanger Depot, Dry Creek - April 1985 *(Chris Drymalik - NRM Collection 275-372-03333-t)*

It was obtained by the museum in 1995.



TC Class Fuel Tank No.8463 at the NRM - May 1997 *(Hugh Williams - NRM Collection 251-338-s30-34)*

TV Class Tank Car No.4872 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Provenance	South Australian Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	1929
Entered the museum	24 October 1989
Capacity	8,100 gallons (36,832 litres)
Length over couplers	38 ft. 10 in. (11.84 metres)

Table 15.17: Details of TV Class Tank Car No.4872 - South Australian Railways - Broad Gauge

USED BY MOBIL Oil (originally Vacuum Oil) for carriage of petroleum products to various depots on the broad gauge rail network.

The TV Class tank cars were designed for the efficient and safe transportation of liquid fuels. TV4872, like its counterparts, was equipped with a cylindrical steel tank mounted on an underframe for use on the broad gauge tracks, principally of the South Australian Railways network. These tank cars played a crucial role in supplying fuel to various depots, supporting both industrial and residential needs in South Australia.



TV Class Tank Car No.4872 at the NRM - 1989 *(NRM Collection 1-1-14013)*

V Class bogie Covered Van (outside frame), No. 260 - Commonwealth Railways - Standard Gauge

Class operators	Commonwealth Railways Australian National
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	Commonwealth Railways & Australian National
Entered service	October 1914
Entered the museum	24 May 1988.
Length (over coupling points)	37 ft. 6 in. (11.43 metres)
Load Weight	35 tons (35.56 tonne)
Tare Weight	17 tons 15 cwt 3 qr (18.08 tonnes)
Withdrawn	1988

Table 15.18: Details of 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 Tran-Australian Railway. A year or so later it was rebuilt as a G Class Open Wagon, and ran as such until 1940



Standard Gauge V Class bogie Covered Van No.260 at the NRM - 6 October 2001 *(Chris Drymalik - NRM Collection 275-373-p1002018)*

when it was again rebuilt; this time to a VZ Class Covered Van (some references exist that suggest it was labelled 'V260' at this time and may have been coded 'VZ' later when fitted with high speed bogies). Some time thereafter the Z was dropped and it ran as V260.

It passed to Australian National ownership in 1975, who later reclassified it as an ABGY class van about 1980. It was donated to the Museum by Australian National; being delivered on 24 May 1988.



Standard Gauge V Class bogie Covered Van No.260 at Stirling North - 20 May 1987 *(Ron Fluck - NRM Collection 124-1338-pd178-37)*

Class operators	South Australian Railways Australian National Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways & Australian National Railways
Entered service	October 1899
Entered the museum	23 September 1988.
Length (over coupling points)	19 ft. 10 in. (6.05 metres)
Load Weight	6 tons (6.10 tonnes)
Number in class	60
Tare Weight	6 tons 13 cwt (6.76 tonne)
Withdrawn	10 October 1979

Table 15.19: Details of V Class Steel 4-wheel Louvred Van No.1990 - South Australian Railways - Narrow Gauge

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 gauge 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'*.

Constructed to five separate orders, nine vans were constructed at Islington Workshops during 1899 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



V class Steel 4-wheel Louvred Van No.1990 - 17 June 2017 *(Chris Drymalik - NRM Collection 275-373-p1151234)*

- 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, V1990 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 V1990.

After being in service nearly 80 years, V1990 was written off on 10 October 1979, after purchase by the Museum. It was transferred to the Museum on 23 September 1988.



V class Steel 4-wheel Louvred Van No.1990 on the rear of a train at the NRM - 16 June 2018 *(Chris Drymalik - NRM Collection 275-373-p1161629)*

WL Class Bogie Well Wagon No.8200 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Entered service	30 June 1931
Entered the museum	22 December 1988
Number in class	2
Length over coupling point	60 ft. 10 in. (18.542 metres)

Table 15.20: Details of 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 ft. 6 in.) gauge lines throughout the colony. There subsequently arose the necessity of transporting narrow-gauge locomotives and rolling stock over the broad-gauge (5 ft. 3 in.) to and from the workshops in Adelaide. Plans were drawn up for an Engine



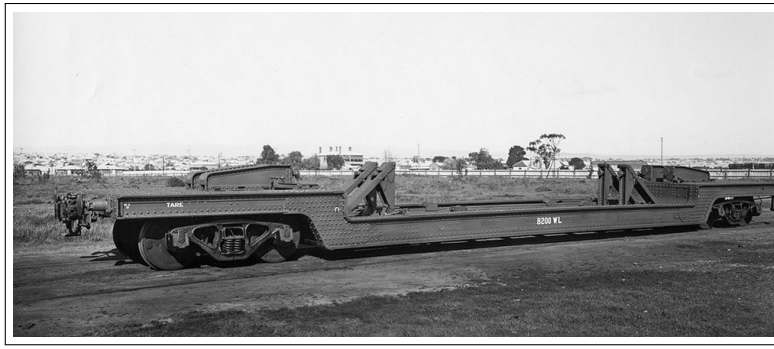
South Australian Railways - WL Class Bogie Well Wagon No.8200 at the Islington Workshops open day with narrow gauge loco T215 on the deck - 1952 *(Lionel Bates - NRM Collection 2-71-c1032)*

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 No.3, however no records have been found to support or disprove this supposition.

When classification letters were allocated to rolling stock 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 out shopped a similar vehicle, this time equipped with conventional bogies, which became WL8200, and No.19 was renumbered No.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.

Well Wagon No.8200 survived complete and was used to transport several locomotives to the Museum before being placed in the collection on 22 December 1988.



South Australian Railways - WL Class Bogie Well Wagon No.8200 at the Islington Workshops - 1931 *(NRM Collection 1-1-15056)*

Y Class 4 wheel steel open wagon No.3582 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways Australian National
Provenance	South Australian Railways & Australian National
Condition	Very good
Ownership	Port Dock Station Railway Trust
Entered service	21 October 1913
Entered the museum	5 June 1987
Number in class	1266
Tare Weight	8 tons 9 cwt (8.58 tonnes)
Load Weight	17 tons (17.27 tonne)
Length (over coupling points)	22 ft. 10 in. (6.96 metres)

Table 15.21: Details of 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, 1266 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. The remainder were largely displaced by the OF Class introduced in the early 1950's.

Open Wagon No.3582 was built by Gray Bros. of Port Adelaide in



Broad Gauge Y Class 4 wheel steel open wagon No.3582 at the Mile End Loco Depot - 30 May 1976 *(Douglas Colquhoun - NRM Collection 2-71-a5879)*



Broad Gauge Y Class 4 wheel steel open wagon No.3582 at the museum - 25 May 2001 *(Chris Drymalik - NRM Collection 275-373-p1000920)*

1913. It was acquired from Australian National by the Mile End Railway Museum on 24 July 1986 and moved to the Port Adelaide site on 5th June 1987.

Y Class 4-wheel Open wagon (drop-sides) No.5017 (restored as CR NGAS373) - Commonwealth Railways - Narrow Gauge

Class operators	Commonwealth Railways South Australian Railways Australian National Railways
Provenance	Commonwealth Railways, South Australian Railways & Australian National
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Entered service	19 November 1912
Withdrawn	15 January 1982
Entered the museum	11 November 1988
Number in class	571
Length (over coupling points)	17 ft. 9 in. (5.41 metres)
Load Weight	12 tons (12.19 tonne)
Tare Weight	5 tons 5 cwt (5.33 tonnes)

Table 15.22: Details of Y Class 4-wheel Open wagon (drop-sides) Nos.5017 (restored as CR NGAS373) - Commonwealth Railways - Narrow Gauge

GENERAL FREIGHT WAS was carried over the narrow-gauge rails of the South Australian Railways in large numbers of small 4-wheel wooden open wagons. Wagon No.5017 belongs to this type and was 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 ft. 6 in. gauge. Built for the Northern System, which was later referred to as the *Peterborough Division*, they were finally isolated on the Gladstone to Wilmington line with the opening of the standard-gauge line between Port Pirie and Broken Hill in January 1970.

Open wagon No.5017 came under Australian National ownership on 1st March 1978 and was obtained by the museum in 1988.

The Commonwealth Railways also had small 4-wheel open wagons similar in design to the Y class. These wagons, built by Perry Engineering Co in 1925, where given the classification ‘NGAS’ and



Narrow Gauge Class 4-wheel Open wagon No.5017 at the museum - 17 May 2000 *(NRM Collection 1-1-20387)*



Narrow Gauge Y Class 4-wheel Open wagon No.5017 (restored as CR NGAS373) at the museum - 19 December 2015 *(Chris Drymalik - NRM Collection 275-373-p1135508)*

liveried in the typical Commonwealth red. SAR wagon No.5017 was out-shopped by the National Railway Museum as Commonwealth Railways open wagon NGAS373 as part of our Federation of the Australian Commonwealth display in 2001.

Y Class 4-wheel Open wagon (drop-sides) No.5019 - South Australian Railways - Narrow Gauge

Class operators	South Australian Railways
Provenance	South Australian Railways & Australian National
Ownership	Port Dock Station Railway Trust
Condition	Excellent
Entered service	19 November 1912
Withdrawn	1986
Condemned	20 January 1983
Entered the museum	24 July 1986
Number in class	571
Length (over coupling points)	17 ft. 9 in. (5.41 metres)
Load Weight	12 tons (12.19 tonne)
Tare Weight	5 tons 5 cwt (5.33 tonnes)

Table 15.23: Details of Y Class 4-wheel Open wagon (drop-sides) No.5019 - South Australian Railways - Narrow Gauge

GENERAL FREIGHT ON THE South Australian Railways narrow gauge was once hauled in large numbers of small, four-wheel wooden open wagons.

Wagon No.5019, built at the Islington Workshops in November 1912, is an example of the final *'Y Class'* design used on the 3 ft 6 in gauge. Originally serving the Northern System (later the Peterborough Division), these wagons became confined to the Gladstone to Wilmington line after the opening of the standard-gauge Port Pirie–Broken Hill route in January 1970.

Open Wagon No.5019 was placed in the Mile End Railway Museum on 24 July 1986, and moved to the Port Adelaide site on 5 June 1987.



Narrow Gauge Class 4-wheel Open wagon No.5019 at the museum - 19 December 2915 *(Chris Drymalik - NRM Collection 275-373-p1135506)*

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, they were later converted for use on narrow gauge. Designed for maximum utility and simplicity, these 4-wheel open wagons were primarily used for transporting bulk and loose goods such as gravel, ore, firewood, scrap metal, bagged produce, and general freight.

Built in substantial numbers across multiple decades, the YY class' wagons simplicity made them ideal for rural sidings and local freight duties, especially where larger bogie wagons were not practical. Their short wheelbase allowed operation on lightly laid track and tight curves, making them a staple in SAR's regional freight operations.

The museum has YY Class 4-wheel Open wagons No.4913, No.4947 and No.4927. They are all on narrow gauge (3 ft. 6 in).

Class operators	South Australian Railways Australian National
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Railways & Australian National
YY4913	Entered service 8 September 1915 as Broad Gauge YY3075 Converted to narrow gauge 4 August 1926 as YY4913
YY4927	Entered service 27 December 1922 as YY4269 Converted to narrow gauge 24 August 1926 as YY4927
YY4947	Entered service 29 November 1913 as YY3644 Converted to narrow gauge 8 September 1926 as YY4947
Withdrawn	1988
Entered the museum	1988

Table 15.24: Details of YY Class 4-wheel Open wagons - South Australian Railways - Narrow Gauge



YY Class 4-wheel Open wagon No.4913 at the NRM - 21 July 1990
(Douglas Colquhoun - NRM Collection 2-194-z-0176)



YY Class 4-wheel Open wagon No.4927 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092315)*

Z Class 4-wheel Steel Hopper Wagon No.3236 - South Australian Railways - Broad Gauge

Class operators	South Australian Railways State Transport Authority of SA
Provenance	South Australian Railways & State Transport Authority of SA
Condition	Very Good
Ownership	History Trust of South Australia
Entered service	15 November 1916
Entered the museum	30 April 1983
Number in class	93
Tare Weight	9 tons 5 cwt (9.40 tonnes)
Load Weight	16 tons (16.25 tonnes)
Length (over coupling points)	24 ft. 4 in. (7.41 metres)

Table 15.25: Details of 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 30 April 1983, and moved to the Port Adelaide site on 5th June 1987.



Z Class 4-wheel Steel Hopper Wagon No.3236 at the museum - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092306)*

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.



Z Class 4-wheel Steel Hopper Wagons No.3209, No.3236 and No.3239 stored in the Penfield Yards sidings - 29th April 1983 *(Ron Fluck - NRM Collection 124-1339-03513)*

CHAPTER 16

GANG VEHICLES AND TRACK MAINTENANCE EQUIPMENT

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Ganger's Trolley - T123 - South Australian Railways - Narrow Gauge 447

Matisa Tamper No.RP73/72 - South Australian Railways - Broad Gauge 449

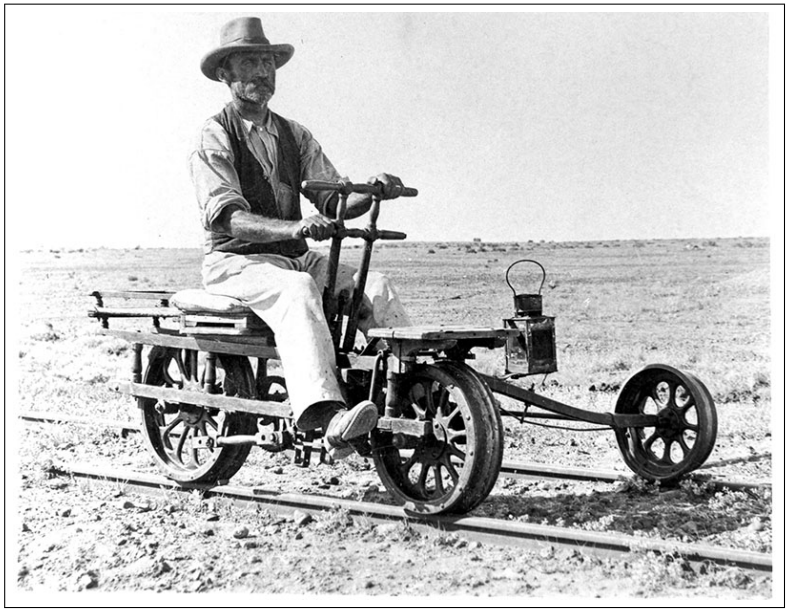
Ganger's Trolley - Wickham Type 18 - Commonwealth Railways - Standard Gauge 451

Ganger's Trolley - Fairbanks-Morse - Commonwealth Railways - Standard Gauge 454

Ganger's Powered Track Jack - TA030 & TA031 - State Transport Authority - Broad Gauge 456

Section Cars and Gang Trikes in Australian Railways

DURING THE EARLY YEARS of Australian railway expansion, railway track maintenance workers got generally referred to by the either the term ‘Ganger’ or ’Navvy’. The work required them to move rapidly from place to place so it was necessary to develop a number of lightweight vehicles that could be used quickly. The museum collection includes a variety of these vehicles, ranging from hand power trikes to diesel motored *Section Cars*.



Hand powered Ganger’s Trike similar to some in the museum collection - c.1900 *(NRM Collection 1-1-11214)*

Without the section cars and gang trikes, it would have been impossible for the track workers to maintain the vast and often remote rail networks that crisscrossed the continent. From the earliest days of colonial railway development through to the mid-20th century, these small but indispensable vehicles were a common sight on the rails.

Origins and Early Development

The use of hand-powered maintenance vehicles in Australia traces back to the 19th century, following the adoption of similar designs from British and American railroads. With rail lines extending into rural and often inaccessible areas, there was a pressing need for lightweight, portable vehicles that could be used by small teams of workers to inspect and maintain the permanent way. Early section cars were

typically simple wooden or steel-framed platforms mounted on flanged wheels, propelled by hand levers or foot-pedals.

In these early days, most railway systems in the Australian colonies developed their own standard designs, often manufactured in railway workshops or contracted out to local engineering firms. Designs varied between states and even between railway districts, depending on the terrain, climate, and specific operational requirements.



Sections Cars help workers and families connect with other settlements on isolated lines, as highlighted by this 'Well Dressed Women and Man' travelling on a railway section car to a nearby town *(Jensen Rhule Collection - NRM Collection 275-1387-039)*

Types and Construction

In Australian railway operations, three types of small maintenance vehicles were commonly used: the section car, the gang trolley, and the gang trike. Each had a specific purpose and reflected the practical needs of railway maintenance across the country's diverse rail networks.

- **Section Cars:** also known as inspection cars or patrol trolleys, were small rail vehicles used primarily for line inspection. They typically carried one to four people, often supervisors or inspectors, and were designed for speed and ease of use rather than heavy-duty work. Early models were powered by hand or foot pedals, while later versions featured small petrol engines. These motorised versions became more common by the

mid-20th century and were often imported from overseas manufacturers, particularly Fairmont in the United States or Wickham in the United Kingdom. Section cars were commonly seen on remote or lightly trafficked lines where quick, independent travel was necessary.

- **Gang Trolleys:** Larger than section cars, gang trolleys were used to transport full track maintenance crews—known as permanent way gangs—along with their tools, jacks, replacement parts, and sometimes even heavy materials. These trolleys featured flat decks and bench seating, and were originally hand-powered before many were upgraded to engine power in the early 1900s. Their robust construction allowed them to handle larger loads, and their use was widespread throughout all state railway systems in Australia. Depending on the line, gang trolleys could be stored at depots or sheds and were lifted off the track when regular train services passed.
- **Gang Trikes:** or three-wheeled trolleys, were smaller still and often operated by a single person or a pair. Some were pedal-driven, while others were powered by small engines. Their three-wheel design made them light and agile, ideal for short inspection runs or light maintenance work. Gang trikes were especially useful on narrow-gauge lines, such as those in Queensland or the Peterborough Division in South Australia, where terrain or lower traffic volumes made smaller, more manoeuvrable vehicles preferable. They could be quickly removed from the track and were easy to store.

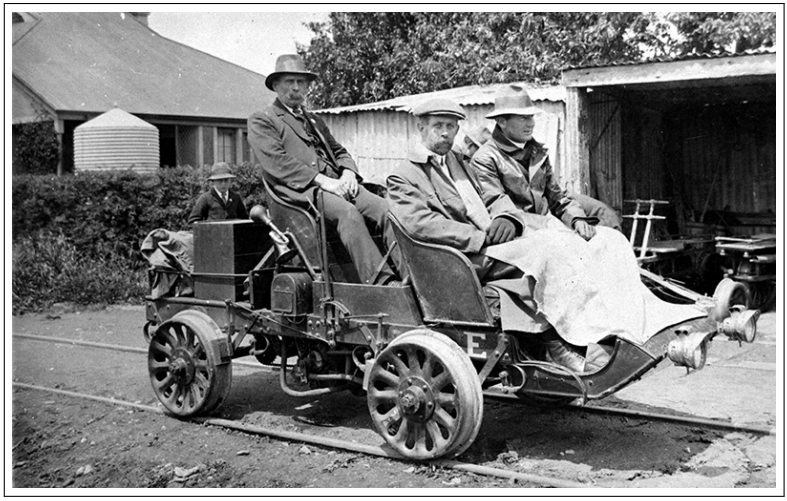
While all three vehicles were part of the broader family of railway maintenance equipment, each played a different role. Section cars were fast and light, used mostly for inspection; gang trolleys were workhorses for carrying teams and tools; and gang trikes filled a niche for quick trips or lighter duties.

Materials used ranged from hardwood timber and steel to lightweight aluminium in later years. The wheels were typically solid steel with a flanged profile to suit the gauge of the track.

Use in the Field

The primary function of these vehicles was to allow track gangs to patrol their assigned sections, which might range from a few kilometres to 20 km or more. Teams used the vehicles to check for:

- Loose fishplates or rail joints
- Warped or misaligned rails
- Cracked sleepers or missing fastenings



South Australian Railways motorised section car alongside a gang shed - c.1920 *(STA Collection - NRM Collection 5-98-h0201)*

- Ballast washouts or subsidence
- Obstructions such as fallen trees or landslides

Because the vehicles had no integrated braking or warning systems, strict safety protocols were followed. A lookout was typically stationed on board, and crews were required to lift the trike off the rails when a scheduled train was due. In remote regions, trike sheds or depots were spaced along the line to serve as bases for the gangs.



Watson Fettler Gang - left to right: Ray + Pat Healy + Wally Carter + Jack Thompson + Charlie Curtis with a gang trolley - 1942 *(Chris Roads Collection - NRM Collection 44-981-e013)*

Motorisation and Modernisation

By the 1930s and 1940s, Australian railway systems began experimenting with motorised section cars. Small petrol engines were mounted on adapted gang trolleys, allowing for greater speed and range. Some of these vehicles had belt-driven transmissions and rudimentary braking systems. South Australian Railways (SAR), Victorian Railways (VR), New South Wales Government Railways (NSWGR), and the other state systems, all had distinct models of motorised inspection vehicles by the mid-20th century.

While many section cars and gang trikes were locally manufactured in railway workshops or by domestic engineering firms, Australia also imported a number of vehicles from overseas suppliers, particularly from the United States, Canada, and the United Kingdom. Companies such as Fairmont Railway Motors (USA) and Sheffield (UK) were known for producing reliable and lightweight motorised inspection cars that were exported worldwide.

Fairmont, in particular, became a prominent name in Australia during the mid-20th century, supplying petrol-powered section cars that were used extensively across state rail systems, especially in New South Wales and South Australia. These imports often provided a base design, which was then modified locally to suit specific gauges and operational needs.

The post-war period also saw increased importation of components such as axles, frames, and engines, which were then assembled domestically. This hybrid approach allowed Australian railways to benefit from international innovation while adapting vehicles to local conditions.

Despite the increased efficiency, the rugged conditions of the Australian outback still made section cars a necessity well into the 1960s in more remote areas. It wasn't until the introduction of modern four-wheel drive vehicles with rail guidance gear (hi-rail vehicles) in the 1970s and 1980s that section cars were finally retired in most areas.

Regional Variations

Each state railway operated under different conditions:

- **New South Wales**: Given its early adoption of standard gauge and extensive rail mileage, NSW made widespread use of both manually and mechanically powered section cars. The state's extensive mountainous regions necessitated lightweight but durable designs.



Advertisement for Fairmont Railway Motor Cars - around 1945 *(NRM Collection)*

- **Victoria**: The broad gauge network and dense rural coverage meant that gang trolleys were heavily used by VR. Special designs included canopy-covered trolleys for weather protection.
- **South Australia**: SAR's, & CR's diverse mix of gauges (narrow, standard, and broad) led to a wide variety of gang trike types, especially for use on the Peterborough Division's narrow gauge lines and the remote Trans-Australian route.
- **Queensland**: With its narrow-gauge system and tropical climate, Queensland Rail used lightweight trikes often tailored for sugar cane regions and long-distance maintenance on sparsely used lines.
- **Tasmania**: Tasmania's steep gradients and frequent curves meant trolleys had to be lightweight for easy lifting off the line. Many had removable or folding handles, and often canvas canopies for weather protection.
- **Western Australia**: Some WA trolleys had extra-large fuel tanks for long runs, and water carrier provision was often built into the frame for crew use.

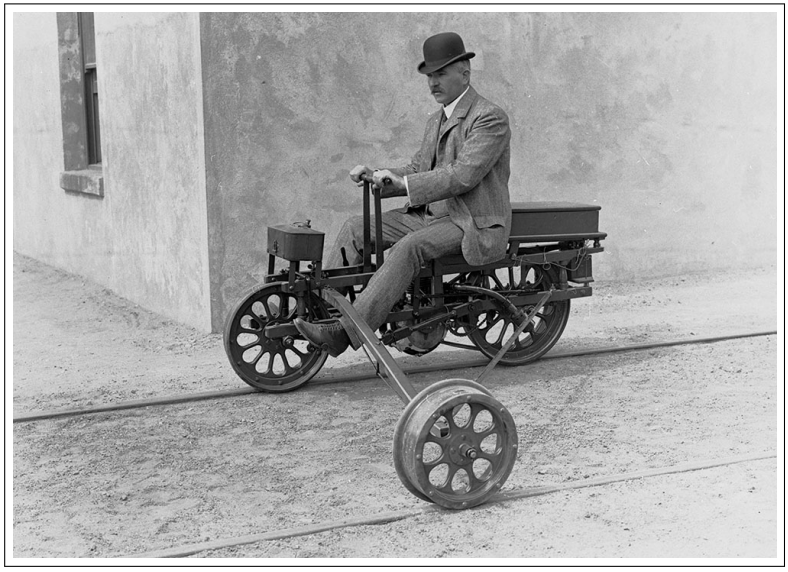
The National Railway Museum houses a varied collection of historic railway maintenance vehicles, including gang trolleys, section cars,

and gang trikes. These vehicles played a crucial role in the upkeep and inspection of Australia's railway lines, particularly on the South Australian Railways and the Commonwealth Railways extensive systems.

Ganger's 3 wheel Pump Trike - South Australian Railways - Broad Gauge

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Entered service	approx 1910

Table 16.1: Details of Ganger 3 wheel Pump Trike - South Australian Railways - Broad Gauge

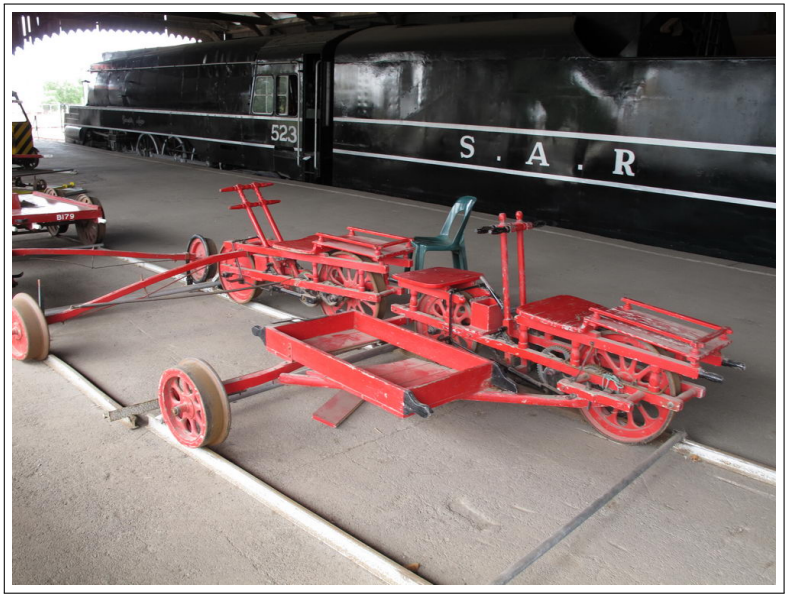


South Australian Railways - Ganger's 3 wheel Pump Trike - 1905 *(NRM Collection 1-1-11215)*

THE GANGER'S 3-WHEEL PUMP TRIKE is a hand-powered railway inspection vehicle used by the South Australian Railways (SAR) for track maintenance and inspection. Believed to have been based on an 1882 design by George Sheffield of Michigan, USA, they are designed to carry two workers. These trikes are operated manually by pumping a handle, allowing track gangs to travel along the rails to



South Australian Railways 3 Wheel Pump Trike at the NRM - 4 April 2000 *(Chris Drymalik - NRM Collection 275-373-p1092280e)*



South Australian Railways 3 Wheel Pump Trikes at the NRM - 4 April 2000 *(Chris Drymalik - NRM Collection 275-373-p1092273e)*

inspect and maintain railway lines. They were commonly used across both the South Australian and Commonwealth Railways networks, and could reach speeds of up to 20 km/h on flat terrain, making them efficient for daily inspections and minor maintenance tasks.

Over time, manual pump trikes were gradually replaced by motorised versions, some of which were fitted with small engines, including those manufactured at the Islington Workshops in Adelaide . This transition allowed for longer inspection runs and reduced physical strain on workers

Ganger's 4-wheel Pump Car - B179 - South Australian Railways - Broad Gauge

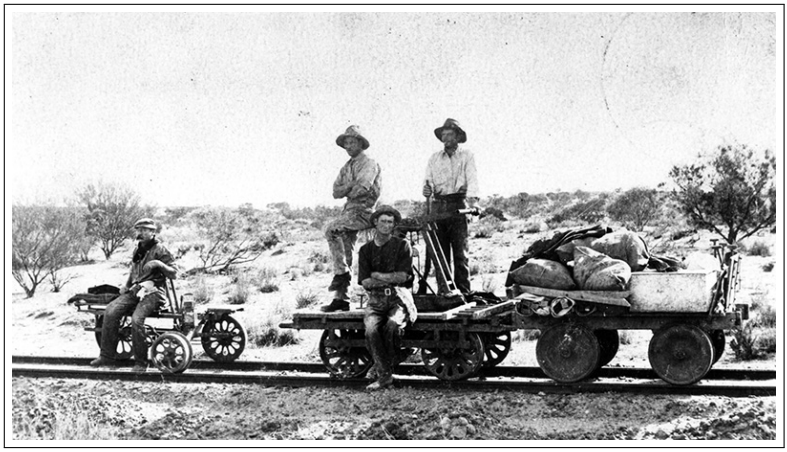
STURDY, SIMPLE, AND ICONIC, Unit B179 is a classic example of the American-built *Buda No. 1 Harvey Handcar* – a manually operated railway pump car used by the South Australian Railways for track maintenance and inspection duties.

Imported from the United States and named after its manufacturing town of Harvey, Illinois, this four-wheeled handcar was designed for durability and daily field use. It was powered entirely by muscle – two workers standing on the deck would operate the long, see-saw-style handle to propel the vehicle along the rails. Its compact design made it ideal for navigating the many branch lines and remote track sections of the SAR network.

Commonly called a 'Kalamazoo'(a particular manufacturer in the USA) or 'pump car', these vehicles became essential tools for gangers and track crews in the era before internal combustion engines. Unit B179 had to be manually lifted clear of the tracks whenever a train approached – a strenuous task often requiring several workers, particularly after long stints under the South Australian sun.

Class operators	South Australian Railways
Condition	Excellent
Entered the museum	1966
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Builder	Buda Foundry & Manufacturing Co., Harvey, Illinois, USA
Model	No. 1 Harvey Handcar
Entered the museum	1966

Table 16.2: Details of Ganger's 4-wheel Pump Car - B179 - South Australian Railways - Broad Gauge



A 4-wheel Pump Car, with the track gang and other vehicles, in use on the Central Australia Railway - 1915 *(Murray Billett Collection - NRM Collection 17-336-mb-b16-171)*



Buda Foundry built SAR 4-Wheel Pump Car B179 - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092279)*

The Buda company, established in 1881 and relocated to Harvey in 1890, was a major international supplier of track maintenance vehicles, and its products were renowned for strength and reliability. The No. 1 model featured pressed-steel wheels and a robust timber-and-metal frame, perfect for Australia's tough railway conditions.

All the hand operated inspection vehicles were gradually phased out by the introduction of motor powered models. Unit B179 was acquired by the museum in 1966.

Ganger's Motor Pump Car - unnumbered - South Australian Railways - Broad Gauge



South Australian Railways Ganger's Motor Pump Car - 16 December 2007 *(Steve Gordon img5028)*

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Builder	South Australian Railways
Ownership	History Trust of South Australia
Motor	Four stroke

Table 16.3: Details of 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, except for a few examples (including this unit) which had motors built by the Islington Workshops of the South Australian Railways. The small side storage trolley was used to hold the tools used by staff repairing the rail line and communications wires.

Key Features:

- **Four-wheel configuration:** Provided better balance and load-bearing capacity compared to three-wheel designs.
- **Motorised drive:** Typically powered by small petrol engines, greatly reducing the physical effort required from track workers.
- **Open frame design:** Simple bench seating for 1 to 2 workers, with a platform or tray for tools and small materials.

In time this type of car was considered hazardous, as a misaligned wheel could easily cause a derailment at speed. Dirt road crossings in remote areas were especially treacherous and led to several serious accidents involving railway gangs.



South Australian Railways Ganger's Motor Pump Car - 16 December 2007 *(Steve Gordon - img5030)*

The Hazards of the Gang Trolley

Railway gang trolleys, while essential for track inspection and maintenance, could be hazardous to operate, especially on remote lines where communication was limited and train movements unpredictable. Misaligned wheels, brake failures, and collisions at road crossings or with trains were all significant risks.

The following examples illustrate notable accidents involving gang trolleys across Australia.

- **Wannamal Railway Tragedy (WA, 1939)** – A motor trolley carrying a track gang collided head-on with a mail train near Mogumber in heavy fog. Three fettlers were killed; the ganger survived but was severely shaken.
- **Kelly Basin Collision (Tasmania, 1905)** – A ganger and four others were riding a trolley when it struck a special train between Pillinger and Linda. The ganger was killed instantly.
- **Kingswood Trolley Overturn (SA, 1950)** – Five gang members were thrown from a trailer trolley being towed by a motor section car near Quorn. One man was run over, sustaining serious head and leg injuries.
- **Nhill Trolley Derailment (Victoria, 1886)** – Children placed timber across the line, derailing a gang trolley and injuring a ganger. A following train narrowly avoided disaster.
- **Stringybark Bridge Brake Failure (Victoria, 1912)** – Sixteen men on a trolley were trapped on a bridge when brake failure on wet rails prevented them from stopping. A train approached from the opposite direction, leading to a near catastrophe.

Ganger's Trolley - F40 - Australian National - Broad Gauge

THE ST2 SERIES of Ganger's Trolleys where built by Fairmont Railway Motors Inc, Fairmont, Minnesota, USA. It was one of the most widely used gang motor cars in railway maintenance fleets around the world, including Australia, from the 1930s into the 1970s. This is an example of a broad gauge 'ST2' class unit. It was used by Australian National.

They were built as a heavy duty vehicle and featured battery ignition, belt drive, hinged top seats for easy access to the motor compartment, and water cooled radiator. 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

Class operators	South Australian Railways Australian National
Condition	Excellent
Provenance	South Australian Railways Australian National
Ownership	Port Dock Station Railway Trust
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST2
Entered service	1957-58

Table 16.4: Details of Ganger's Trolley - F40 - Australian National Railways - Broad Gauge



Ganger's Trolley - F40 - Australian National Railways at the NRM - 4th April 2000 *(Chris Drymalik - NRM Collection 275-373-d2000-04-04-038)*



Ganger's Trolley - F40 - Australian National Railways at the NRM - 4th April 2000 *(Chris Drymalik - NRM Collection 275-373-d2000-04-04-037)*

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 inch insulated steel tyred 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, and windshield for weather proofing.

Fairmont ST2 – Key Specifications

- **Type:** Motorised rail inspection/gang car
- **Engine:** Fairmont 2-stroke, single-cylinder petrol engine
- **Cooling:** Air-cooled
- **Power Output:** Approx. 5–6 hp (varied by engine variant)
- **Transmission:** Mechanical, with belt drive (friction drive or clutch)
- **Drive:** Chain or belt to axle
- **Seating:** Typically 2–4 persons
- **Top Speed:** approximately 30–40 km/h (under ideal conditions)
- **Construction:** Steel frame, often with wood or metal bench seats; open cab
- **Weight:** Light enough for manual removal from rails by crew (approx. 300–400 kg)

Ganger's Trolley - F147 - South Australian Railways - Broad Gauge

THE ST2 SERIES of Ganger's Trolleys where built by Fairmont Railway Motors Inc, Fairmont, Minnesota, USA. This is an example of a broad gauge South Australia Railways 'ST2' class 'H' variant unit that is unmodified. It was donated to the NRM in November 1984. The 'ST2' series were built as a heavy duty vehicle and featured battery ignition, belt drive, hinged top seats for easy

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST263-H
Entered service	1961-62
Entered the museum	24 November 1984

Table 16.5: Details of Ganger's Trolley - F147 - South Australian Railways - Broad Gauge



Ganger's Trolley - F147 - Australian National Railways at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092278e)*



Ganger's Trolley - F147 - Australian National Railways at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092281e)*

access to the motor compartment, and water cooled radiator. 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 **Fairmont ST263-H** is understood to be a heavier-duty variant of Fairmont Railway Motors S-series motor inspection cars. Likely designed for more rugged service conditions, the “H” suffix suggests a reinforced chassis or heavier load capacity, although detailed technical documentation is scarce. This model shares core features with the Fairmont ST and MT lines, specifically the ST2 and MT14.

Design Features:

- Two-speed mechanical gearbox for variable speed operation.
- Rugged steel construction for field durability.
- Larger platform with seating and cargo space for tools and equipment.
- Field-serviceable drivetrain and basic mechanical controls.
- Heavier suspension and braking components suited to branch line or remote-area work.

Fairmont ST263-H – Key Specifications

- **Manufacturer:** Fairmont Railway Motors, Minnesota, USA
- **Model Designation:** ST263-H
- **Engine Type:** Fairmont 2-stroke petrol engine
- **Horsepower:** Estimated 10–20 hp
- **Cooling:** Air-cooled
- **Transmission:** Belt drive with two-speed gearbox
- **Drive System:** Rear axle via mechanical or belt clutch
- **Chassis:** Steel frame, heavy-duty reinforced
- **Braking:** Mechanical or hydraulic
- **Seating:** 4 or more crew members
- **Top Speed:** Approx. 30–40 km/h

Fairmont produced over 70,000 motor inspection cars from 1911 to 1991. Their S-series models filled the heavy-duty niche between the lighter standard ST2 and medium MT14. While the ST263-H is not widely catalogued, it likely appeared in internal fleet designations or later production variants during the 1950s-1970s.

Class operators	South Australian Railways State Transport Authority of SA Australian Railway Historical Society (SteamRanger)
Condition	Excellent
Provenance	South Australian Railways, State Transport Authority of SA & Private Rail Operator
Ownership	Port Dock Station Railway Trust
Builder	Pacific Ace, Queensland (under license from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA)
Model	M19Z63
Entered service	1958-59

Table 16.6: Details of Ganger's Trolley - M59 - South Australian Railways - Broad Gauge

Ganger's Trolley - M59 - South Australian Railways - Broad Gauge

THIS UNIT IS an example of a broad gauge Ganger's trolley without a roof. It was built by Pacific Ace, Queensland, under licence from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA, being a Model M19Z63. It was used to inspect the track and signals by the South Australian Railways, being transferred to the State Transport Authority of South Australia in 1975.

The standard Fairmont M19, on which both this unit and Trolley M183 are based, is one of the most iconic and widely used motorised railway ganger's trolleys (also known as section cars or speeders) produced by the Fairmont Railway Motors Company of Fairmont, Minnesota, USA. It was a standard light maintenance vehicle for railways, and railroads around the world from the 1930's until the 1970's, including extensive use in Australia, Canada, and the United States.

This unit was originally numbered 'F59', and renumbered 'M59' at a later date, eventually being sold to the Australian Railway Historical Society (SteamRanger) who used on the Victor Harbour line for some years. It had a number of modifications, including removal of the front windscreen, before being retired and donated to the National Railway Museum.

On occasions a trailer was used for tools, etc, when the crew were engaged on major repair works. See page 441 for an example of an unpowered trolley.



Ganger's Trolley M59 & F26 on the Turntable at Victor Harbour - 20 June 1987 *(Robert Haebich - NRM Collection 48-987-d079-32)*



Ganger's Trolley M59 at the NRM - 19 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225063.)*

Ganger's Trolley - M183 - 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 licence from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA, being a Model M19Z63 Serial 2053.



Ganger's Trolley M183 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092288.)*

The standard Fairmont M19, on which both this unit and trolley M59

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
Serial number	2053
Entered service	1966-67

Table 16.7: Details of Ganger's Trolley - M183 - South Australian Railways - Broad Gauge



Ganger's Trolley M183 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092289.)*

are based, is one of the most iconic and widely used motorised railway ganger's trolleys (also known as section cars or speeders) produced by the Fairmont Railway Motors Company of Fairmont, Minnesota, USA. It was a standard light maintenance vehicle for railways, and railroads around the world from the 1930's until the 1970's, including extensive use in Australia, Canada, and the United States.

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, and on occasions a trailer was used for tools, etc, when the crew were engaged on major repair works. See page 441 for an example of an unpowered trolley. Originally number 'F183' but later changed to 'M183'.

Ganger's Trolley - S50 - South Australian Railways - Broad Gauge

THIS IS AN example of a broad gauge South Australia Railways 'S' class unit. It is a local design, built at the Railways' Islington

Class operators	South Australian Railways
Condition	Fair
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Builder	South Australian Railways Islington Workshops

Table 16.8: Details of Ganger's Trolley - S50 - South Australian Railways - Broad Gauge



South Australian Railways Ganger's Trolley S50 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092292e)*

Workshops. Although it is believed to have been significantly influenced by commercial ganger's trolley manufactures, it does not appear to be a direct copy of any identifiable model. Local differences include it being fitted with a boxer horizontal 2 cylinder engine.

These trolleys were essential for track maintenance crews, providing them with a means to transport tools and personnel along railway lines for inspections and repairs.



South Australian Railways Ganger's Trolley S50 & SD101 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092294)*

Ganger's Trolley - SD101 - South Australian Railways - Broad Gauge



South Australian Railways Ganger's Trolley S101 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092291e)*

THIS IS AN example of a broad gauge 'SD' class unit. It entered service on the South Australian Railways in 1958 and was officially known as an 'Enfield Diesel Motor', though it actually appears to be a locally constructed version based on a 'Fairbanks-Morse Car'.

Ganger's trolleys like the SD101 were essential for track maintenance crews, providing them with a means to transport tools and personnel

Class operators	South Australian Railways Australian National
Condition	Excellent
Provenance	South Australian Railways Australian National
Ownership	Port Dock Station Railway Trust
Entered service	1958
Entered the museum	November 1988

Table 16.9: Details of Ganger's Trolley - SD101 - South Australian Railways - Broad Gauge

along railway lines for inspections and repairs. It was purchased by the South Australian Railway in August 1958 at a cost of £702.

The NRM obtained the Trolley from Australian National in November 1988. Its condition is excellent and it is complete.

Ganger's Motor Quadricycle - unnumbered - South Australian Railways - Broad Gauge



South Australian Railways Ganger's Quadricycle at the NRM - 19 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225065)*

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Built by	South Australian Railway Islington Workshops
Motor	4HP Chain Drive

Table 16.10: Details of Ganger's Quadricycle - unnumbered - South Australian Railways - Broad Gauge

THIS MOTOR QUADRICYCLE was designed for use on broad gauge track. Essentially, it is an adaptation of a gang tricycle, modified with an additional wheel and a motorised drive system. Built by the Islington Workshops of the South Australian Railways, it is equipped with a 4-horsepower chain-driven motor. These vehicles were typically used by railway staff for track repairs and maintenance of communication lines.

Key Features:

- **Four-wheel configuration:** Offered greater stability and improved load-bearing capacity over traditional three-wheel designs.
- **Motorised drive:** Powered by a small petrol engine, significantly reducing the physical strain on maintenance crews.
- **Open frame design:** Featured simple bench seating for one or two workers, facilitating easy mounting and dismounting.

Despite their utility, these vehicles were often regarded as hazardous. Incorrect wheel alignment could easily lead to derailments, especially when operating at higher speeds.



South Australian Railways Ganger's Quadricycle at the NRM - 19 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225064)*

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 JAP petrol engine.

Class operators	South Australian Railways
Condition	Poor
Provenance	South Australian Railways
Ownership	History Trust of South Australia
Builder	D. Wickham & Co. Ltd, Ware, Hertfordshire, England
Model	Type 4
Builders works No.	7328
Motor	JAP serial 933209
Entered service	1956-57

Table 16.11: Details of Ganger's Trolley - Wickham Type 4 - South Australian Railways - Broad Gauge



South Australian Railways Ganger's Trolley Wickham Type 4 at the NRM - 15 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225035)*

The Wickham Type 4 gang trolley, produced by D. Wickham & Co. Ltd. of Ware, Hertfordshire, was an early model of motorised rail maintenance vehicle introduced in the mid-20th century. These trolleys were designed to transport railway maintenance crews and their equipment along the tracks for inspection and repair tasks.

These trolleys were typically powered by small petrol engines, such as the JAP 600 Mk III Vertical engine.

Ganger's Trolley - Unpowered - South Australian Railways - Broad Gauge



Unpowered gang trolley loaded with some of the gang's tools and track jacks - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092319e)*

AMONG THE NRM'S collection are several unpowered broad gauge trolleys, once used as trailers behind powered maintenance vehicles.

Unpowered gang trolleys designed to be towed behind a powered unit were an important evolution in railway maintenance logistics. Rather

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust

Table 16.12: Details of Ganger's Trolley - Unpowered - South Australian Railways - Broad Gauge

than being manually pushed, these trolleys served as trailers to carry tools, equipment, materials—or even extra crew—when coupled to a motorised ganger's trolley or inspection car.

These trolleys were routinely seen coupled to powered units such as Fairmont, Wickham, or custom-built motor gang trolleys. They offered extra load-carrying capacity, particularly on longer runs or for heavier maintenance tasks.

Key Features:

- **Towable configuration:** Equipped with draw bars or towing hooks for secure coupling to powered gang trolleys.
- **Sturdy construction:** Built from timber or steel, with a flat-deck or open box design suitable for a range of loads.
- **Four-wheel chassis:** Provided good stability and compatibility with both narrow and broad gauge networks.



Gang Trolley with an Unpowered trolley behind, and an unpowered trolley loaded with a portable compressor being used during construction of the Christies Down line, South Australia - 1970's *(Arnold Lockyer - NRM Collection 7-1074-a008-05)*

Ganger's Trolley - CC165 - Australian National Railways - Narrow Gauge

BUILT BY PACIFIC ACE, Queensland, under license from Fairmont Railway Motors Inc. of Fairmont, Minnesota, this trolley is a Model M15B242. Originally constructed as a narrow gauge M15, it was later converted to a 'CC' class as part of Australian National's system-wide relabelling of maintenance vehicles.



Australian National Railways Ganger's Trolley CC165 at the NRM - 19 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225055)*

Class operators	Commonwealth Railways Australian National Railways
Condition	Good
Provenance	Commonwealth Railways Australian National
Ownership	Port Dock Station Railway Trust
Builder	Pacific Ace, Queensland (under licence from Fairmont Railway Motors Inc, Fairmont, Minnesota, USA)
Model	M15B242
Entered the museum	June 1988

Table 16.13: Details of Ganger's Trolley - CC165 - Australian National Railways - Narrow Gauge



Australian National Railways Ganger's Trolley CC165 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092268e)*

It is believed this unit was originally designated 'N165' under the earlier Commonwealth Railways identification system. Fitted with a distinctive 'birdcage' cabin, it was home-based at Marree, South Australia, during its operational life.

Used primarily for the inspection and maintenance of track and signalling equipment, the trolley remained in active service until June 1988, when it was acquired by the Museum.

Ganger's Trolley - F171 - South Australian Railways - Narrow Gauge

THIS IS AN example of a narrow gauge Fairmont 'ST2' class ganger's trolley. It was originally operated by the South Australian Railways on the isolated Port Lincoln Division, where it was used for inspection and maintenance duties along the Eyre Peninsula network. Following the transfer of South Australian Railways assets to the Commonwealth in 1978, the vehicle came under the ownership of Australian National Railways and was renumbered as 'ANR CC-14'. It remained in service until 1988, when it was replaced by modern road/rail vehicles and subsequently donated to the National Railway Museum.

The ST2 series was built by Fairmont Railway Motors Inc. of Fairmont, Minnesota, USA. Designed as a heavy-duty track maintenance vehicle, the ST2 was a rugged and dependable machine. Key features included battery ignition, belt-driven transmission, a water-cooled radiator, and hinged top seats that provided convenient access to the engine compartment for servicing. The design made the ST2 popular in Australia, where it was used extensively by various state and federal railway authorities.

Class operators	South Australian Railways Australian National
Condition	Excellent
Provenance	South Australian Railways & Australian National
Ownership	Port Dock Station Railway Trust
Builder	Fairmont Railway Motors Inc, Fairmont, Minnesota, USA
Model	ST2
Entered service	1964-65
Entered the Museum	June 1988

Table 16.14: Details of Ganger's Trolley - F171 - South Australian Railways - Narrow Gauge



Ganger's Trolley F171 at the NRM - 28 November 2010 *(Chris Drymalik - NRM Collection 275-373-p1088834)*



Ganger's Trolley F171 inside the Fitch Pavilion at the NRM - 28 November 2010 *(Chris Drymalik - NRM Collection 275-373-p1088821)*

The ST2's engine powers the wheels through a belt drive system and can operate in both forward and reverse directions. Directional control is managed by adjusting the engine timing via a dedicated control lever. Starting the engine requires the use of a slide crank lever, which is inserted into the side of the flywheel to turn the engine over manually - an operation that requires a steady hand and good technique.

Standard specifications included 16-inch insulated steel-tyred wheels with roller bearings, and a hand-operated brake lever which allowed for quick stops when required. A range of optional accessories was available, including a steel cab roof, canvas side curtains, and a front windshield - features that greatly improved weather protection for the crew during long days in the field.

Ganger's Trolley - T123 - 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 referred to this style of vehicle locally as a 'SH Casey Jones Section Car'. It is basically a locally (possibly Victorian Railways) built version of an American design.

T123 exemplifies the evolution from manual, hand-powered trolleys to motorised units. For larger repair tasks, they were often paired with trailers carrying tools and materials when the crew were engaged on major repair works.

Class operators	South Australian Railways
Condition	Excellent
Entered the museum	15 February 1971
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Withdrawn	1971
Entered museum	9 February 1971

Table 16.15: Details of Ganger's Trolley - T123 - South Australian Railways - Narrow Gauge



South Australian Railways Ganger's Trolley T123 at the NRM - 28 November 2010 *(Chris Drymalik - NRM Collection 275-373-p1092269e)*



South Australian Railways Ganger's Trolley T123 at the NRM - 28 November 2010 *(Chris Drymalik - NRM Collection 275-373-p1092270e)*

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.

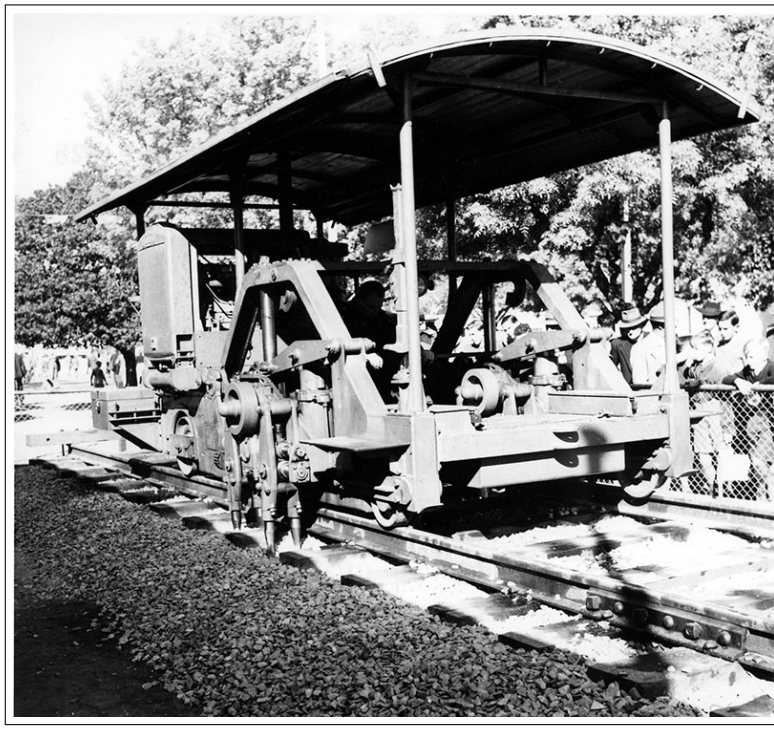
In mid 1949 an order was placed upon the Matisa Equipment Co., London, (agents for Materiel Industriel SA, Lausanne, Switzerland) for a broad gauge tamper which was constructed in England and placed in service in September 1950. Compared with the manual methods then in use for compacting ballast, considerable savings in labour 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 Tamper No.2 (No.RP797) and Gang Tamper No.3 (No.RP798). No.RP797 was later converted to 3 ft. 6 in. gauge and used on the Port Lincoln Division.

After nearly 20 years of service, mainly on main lines north and south

Class operators	South Australian Railways
Condition	Excellent
Provenance	South Australian Railways
Ownership	Port Dock Station Railway Trust
Built by	Matisa Equipment Co., London
Number in class	3
Entered service	September 1950
Withdrawn	March 1976.
Entered the museum	23rd September 1976
Length (over coupling points)	15 ft. 0 in. (4.572 meters)

Table 16.16: Details of Matisa Tamper No.RP73/72 - South Australian Railways - Broad Gauge



Matisa Tamper No.RP796 on public display at the Royal Adelaide Show - 1st September 1950 *(SAR - NRM Collection 1-1-05974)*



South Australian Railways Matisa Tamper No.RP73/72 at the NRM - 31 May 2003 *(Chris Drymalik - NRM Collection 275-373-p1007423)*



Matisa Tamper No.RP73/72 at the NRM - 7 June 2003 *(Chris Drymalik - NRM Collection 275-373-p1007468)*

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.

Ganger's Trolley - Wickham Type 18 - Commonwealth Railways - Standard Gauge

THE WICKHAM TYPE 18/A Mk.VI gang trolley was a more advanced and robust successor in the line of motorised maintenance vehicles produced by D. Wickham & Co. Ltd, a renowned British manufacturer of railway inspection cars. This particular model, the Type 18/A Mk.VI, was widely exported and adopted by overseas railway systems - including in Australia, where it saw use on various government and industrial railways from the 1960s onward.

Design and Features:

- **Cab:** Fully enclosed steel body with side curtains and windows
- **Seating:** Capacity for 6 (driver plus 5 passengers) with bench-style seating
- **Ventilation:** Side curtains

Class operators	Commonwealth Railways
Condition	Poor
Provenance	Commonwealth Railways
Ownership	Port Dock Station Railway Trust
Builder	D. Wickham & Co. Ltd, Ware, Hertfordshire, England
Model	Type 18 Mk.VI/D
Builders works No.	9645
Order No.	26931
Number in class	3
Original Engine	Perkins 4.203 No. 2613628
Shipped	29 January 1965
Delivered to	Marine & Industrial Power Co. (Pty) for Commonwealth Railways
Entered the museum	June 2013

Table 16.17: Details of Ganger's Trolley - Wickham Type 18 - Commonwealth Railways - Standard Gauge



Commonwealth Railways Ganger's Trolley - Wickham Type 18 at the NRM - 29 July 2013 *(Chris Drymalik - NRM Collection 275-373-p1109272)*

- **Braking:** Mechanical braking system, hand-operated
- **Suspension:** Leaf springs for minimal shock absorption
- **Drive system:** Mechanical transmission
- It was described as **Heavy Section Car** due to it not being able to be removed from the track manually by a crew of two

This unit was used by the Commonwealth Railways for routine track maintenance and inspection across vast and remote sections of the Trans-Australian Railway.



A Commonwealth Railways - Wickham Type 18 Ganger's Trolley at Port Augusta - 1967 *(J & V Burgess - NRM Collection 283-1343-lf00286)*

These cars were issued to fettlers' gangs responsible for patrolling and maintaining allocated track sections. Typically based out of remote gang camps or trackside huts, Wickham cars allowed crews to transport tools and personnel efficiently over long distances.

The NRM's Wickham Type 18 was donated to the museum by the 'City of Port Augusta' in 2013. It had previously been an exhibit at the Homestead Park in Port Augusta.

Ganger's Trolley - Fairbanks-Morse - Commonwealth Railways - Standard Gauge

THE FAIRBANKS-MORSE-BUILT GANG trolleys used by the Commonwealth Railways were a lesser-known but important part of Australia's railway maintenance history. These small motorised railcars, built by the American engineering and manufacturing firm Fairbanks, Morse & Co., were primarily employed for light track inspection and minor maintenance duties across the Commonwealth Railways network.

Fairbanks-Morse began as a manufacturer of weighing equipment, such as scales, and later expanded into industrial engines and diesel-electric locomotives. Dating from around the 1930s, this unit is believed to be the only known surviving standard-gauge Fairbanks-Morse ganger's trolley in Australia. It is powered by a two-cylinder engine that intriguingly uses the rear axle as a crankshaft.

These vehicles earned the nickname "Chase Me Charlie" due to their unique and somewhat hazardous starting method. To start the engine, the fuel bowl is filled and the fuel supply is turned off. The car is then pushed by hand until the motor fires - at which point the operator must quickly turn the fuel supply back on. There are numerous stories of these trolleys running away from their operators during this process.

Photographs of Fairbanks-Morse trolleys in service are rare. However, there is confirmed evidence of their use by BHP at Whyalla,



Commonwealth Railways Fairbanks-Morse Ganger's Trolley at the NRM - 15 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225034)*

Class operators	Commonwealth Railways
Condition	Poor
Provenance	Commonwealth Railways
Ownership	Port Dock Station Railway Trust
Builder	Fairbanks, Morse & Co. (USA)
Entered service	c.1930s
Entered the museum	June 2013

Table 16.18: Details of Ganger's Trolley - Fairbanks-Morse - Commonwealth Railways - Standard Gauge



Commonwealth Railways Fairbanks-Morse Ganger's Trolley at the NRM - 15 June 2025 *(Chris Drymalik - NRM Collection 275-373-p1225031)*

particularly on the tramway between Iron Knob, Iron Baron, and Whyalla. Similarly, the Commonwealth Railways used them on both narrow and standard gauge lines, and there is anecdotal evidence that Victorian Railways may have operated a small number on their broad-gauge network.

The NRM's Fairbanks-Morse was donated to the museum by the 'City of Port Augusta' in 2013. It had previously been an exhibit at the Homestead Park in Port Augusta.

Ganger's Powered Track Jack - TA030 & TA031 - State Transport Authority - Broad Gauge

Class operators	State Transport Authority Trans-Adelaide
Condition	Excellent
Provenance	State Transport Authority & Trans-Adelaide
Ownership	Port Dock Station Railway Trust
Builder	Comeng, Cavan Road, Dry Creek, South Australia
Entered service	c.1980
Entered the Museum	2014

Table 16.19: Details of Ganger's Powered Jack - TA030 & TA031 - State Transport Authority - Broad Gauge

POWERED RAILWAY TRACK jacks—also known as hydraulic or motorised jacks—are essential tools for safely and efficiently lifting and aligning heavy rail and sleepers. They are most commonly used during track maintenance activities such as tamping, points (turnout) replacement, or re-railing, where precise control and lifting capacity are critical.

These jacks are typically driven or positioned on rail and then activated—either manually via a hydraulic pump or by an external power source—to raise the rail from the sleeper. This allows maintenance crews to remove base plates, extract damaged or worn sleepers, and replace them with new ones, all while significantly reducing the need for manual lifting and improving workplace safety.

The Museum holds two identical powered track jacks, both donated by Trans-Adelaide in 2014. These jacks were formerly used by the Adelaide suburban rail maintenance teams and are representative of the types of lifting equipment used by railway gangs for track realignment and component replacement. They remain excellent examples of practical field equipment designed to handle the heavy demands of permanent way work.



Ganger's Powered Jack TA030 at the NRM - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225614)*



Ganger's Powered Jack TA030 at the NRM - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225618)*

CHAPTER 17

MISCELLANEOUS VEHICLES

Locomotive Wheels - South Australian Railways - Broad Gauge 461

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SIVES

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 *Fitch* 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' *(Andrew Peters)*

The wheels belong to one of the first three locomotives built for the

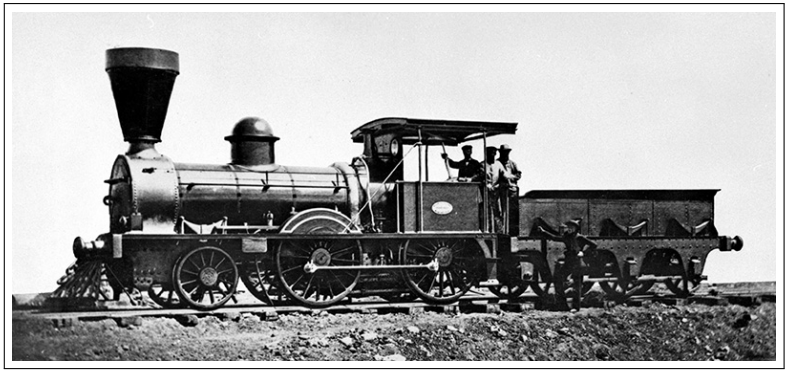
Class operators	South Australian Railways
Ownership	Port Dock Station Railway Trust
Condition	Excellent
Built by	William Fairbairn & Company, Manchester, England
Entered service	1856
Withdrawn	2 May 1977
Entered the museum	1977

Table 17.1: Details of Locomotive Wheels - South Australian Railways - Broad Gauge

Adelaide and Port Adelaide 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.

Locomotive *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 Morphett 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 ft. 6 in.) gauge lines throughout the colony. There subsequently arose the necessity of transporting narrow-gauge locomotives and rolling stock 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 out-shopped 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.



South Australian Railways - 2-4-0 Tank Locomotive Adelaide - Loco No. 1 after conversion from tank to tender loco - circa 1869 *(STA Collection - NRM Collection 5-98-h0794)*

When classification letters were allocated to rolling stock 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 out-shopped a similar vehicle, this time equipped with conventional bogies, which became WL8200, 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

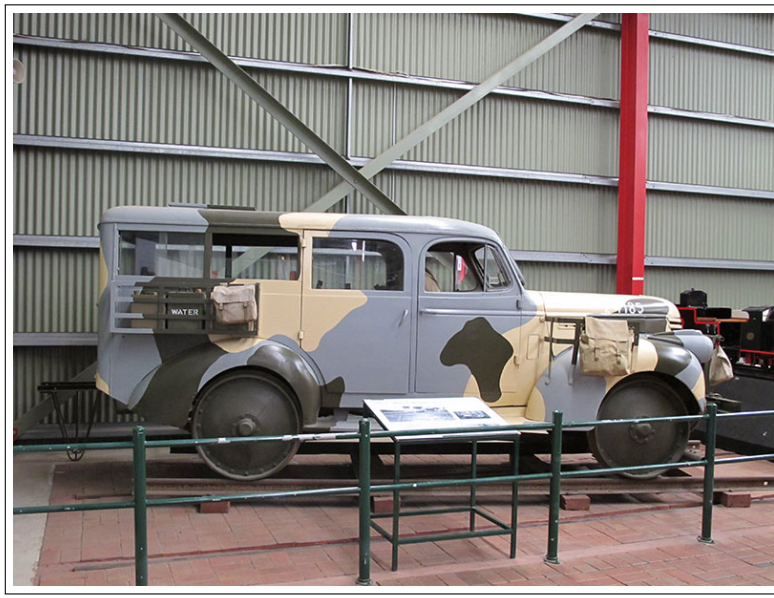
BASICALLY A 1941 Maple Leaf Chevrolet, MIC No.4 was used as a Commonwealth Railways standard gauge inspection and pay car. It was original built specifically by the South Australian Railways during WWII for the Commonwealth Land Transport Board (CLTB), who made it available to the Australian Army to patrol the standard gauge Trans-Australian Railway line between Port Augusta and Cook checking on Prisoner of War (POW) camps.

Towards the end of WWII, in 1944, the vehicle was transferred to the Commonwealth Railways who used it as a Motorised Inspection Car (MIC)

Fitted with steel railway wheels it ran initially on the lines from Port Augusta to Woomera and Cook and was equipped with a hydraulic

Class operators	Commonwealth Land Transport Board Commonwealth Railways
Condition	Excellent
Provenance	Commonwealth Railways, Commonwealth Land Transport Board & South Australian Railways
Ownership	Port Dock Station Railway Trust
Entered service	1941
Built by	Chevrolet
Withdrawn	1978
Entered the museum	1980

Table 17.2: Details of Motorised Inspection Car No.4 - Commonwealth Railways - Standard Gauge



Commonwealth Railways Motorised Inspection Car No.4 at the NRM - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1222032)*



Commonwealth Railways Motorised Inspection Car No.4 at the NRM - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222032)*

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.

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 - NRM Collection 275-373-p0111211)*

ALONG THE SOUTH AUSTRALIAN coastline, many jetties were constructed at ports to enable ketches and other small craft to

Class operator	South Australian Harbors Board
Condition	Excellent
Ownership	Port Dock Station Railway Trust
Provenance	South Australian Harbors Board
Entered the museum	18th December 1971

Table 17.3: Details of Jetty Truck No.146 - South Australian Harbors Board - Narrow Gauge



South Australian Harbors Board - Jetty Trucks at Ceduna loaded with bails - 5 August 1964 *(Arnold Lockyer - NRM Collection 7-1001-039-213)*

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, which could be powered by tractor, horse or man. It entered the Museum on 18th December 1971.

South Australian Department of Chemistry - 2 ft. gauge Explosives Van - 2 Foot Gauge

Class operators	South Australian Department of Chemistry
Provenance	South Australian Department of Chemistry
Ownership	Port Dock Station Railway Trust
Condition	Excellent
Entered service	1906
Withdrawn	14 December 1964
Entered the museum	1975

Table 17.4: Details of South Australian Department of Chemistry - 2 ft. gauge Explosives Van - South Australian Railways - 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 to and from Broad Creek jetty. This was on the south-eastern



South Australian Department of Chemistry - 2 ft. gauge Explosives Van at the museum - 31 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222582)*

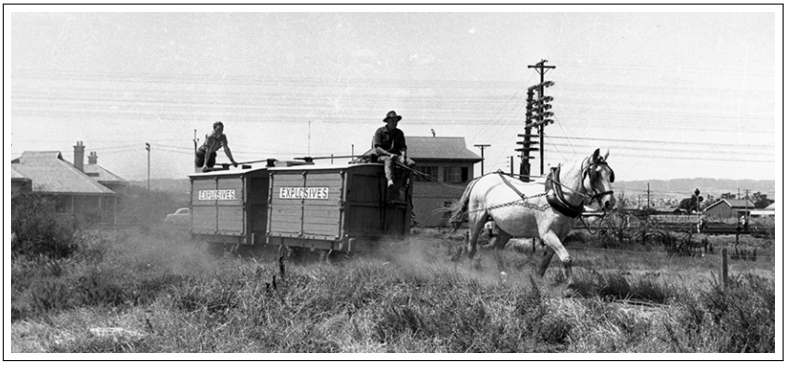


South Australian Department of Chemistry - 2 ft. gauge Explosives Van at Dry Creek Station - c.1964 *(NRM Collection 1-1-00464)*

corner of Barker Inlet, east of Torrens Island, and was used for loading and unloading ketches. However, the construction of a 2 foot (609 mm) Tramway in January 1906 brought this to an end.

The tramway was constructed to mitigate the risks associated with transporting explosives through populated areas. It connected the depot's magazines to a jetty at Broad Creek and to the Dry Creek railway station. The tramway spanned approximately 2 kilometres to the jetty and 800 metres to the railway station. Horse-drawn wagons, were used to move the explosives along the tracks.

Initially, explosives were delivered by sea to the Broad Creek jetty and then transported via the tramway to the depot. However, by the mid-1940s, the delivery method shifted to rail transport directly to the Dry Creek railway station, reducing reliance on the jetty. The tramway remained in operation until 1964, when it was closed due to safety concerns arising from industrial encroachment in the area. Operation of the Dry Creek site ceased in October 1995.



South Australian Department of Chemistry Explosives Vans being hauled by horses at Dry Creek *(Ron Hann - NRM Collection 17-336-mb-b26-90)*

This vehicle is one of a number that were pulled by horses on the Tramway from Dry Creek to the Broad Creek jetty.

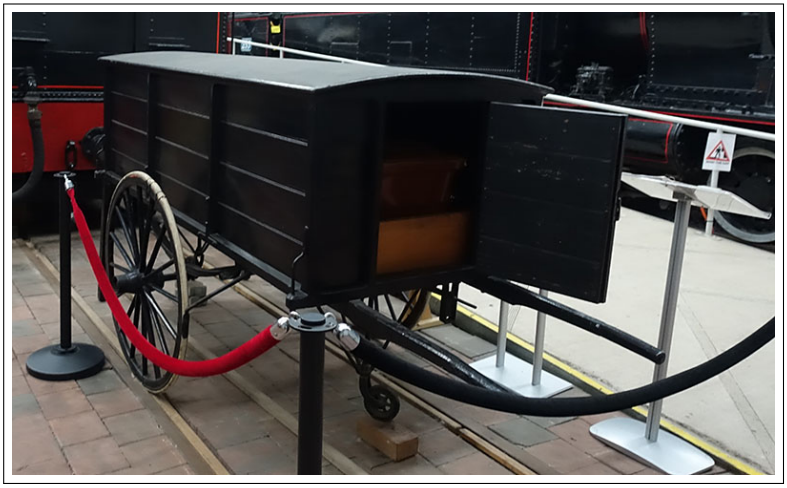
Coffin Trolley - Adelaide Station - South Australian Railways

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.

The early use of this cart is unknown, though it was reportedly used to transport deceased persons to the West Terrace Cemetery for burial.

Class operators	South Australian Railways State Transport Authority of South Australia
Ownership	History Trust of South Australia
Provenance	South Australian Railways, State Transport Authority of South Australia
Condition	Very Good
Entered service	c.1880s
Withdrawn	1982
Entered the museum	1982

Table 17.5: Coffin Trolley - Adelaide Station - South Australian Railways



The old Adelaide railway station coffin trolley - 8 February 2003 *(Chris Drymalik - NRM Collection 275-373-p1225546)*

In the 20th century the coffin cart was housed at the Adelaide Railway Station beneath the stairs leading to North Terrace, and was used to transfer coffins on and off trains. While there it was covered in a white silk cover with a tassel fringe.

Until the establishment of the interstate terminal at Keswick all interstate and country trains came into Adelaide. The cart was reportedly last used for a serviceman killed in Vietnam whose body was brought from Melbourne to Adelaide. Railway employee Ilio Fontana wheeled the cart carrying the coffin, which bore the Union Jack and the soldier's hat, from *The Overland* to the guards van of the Gladstone train. From there it is believed that the serviceman was buried at the Jamestown or Wirrabara Cemetery.

It continued to be used at the Adelaide Station until withdrawn in 1982, when it was relocated to the National Railway Museum.

CHAPTER

18

DISPLAYS

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Telephone Exchange
LOOK
AND ADMIRE
BUT PLEASE

'The Long Journey' - Women in Railways



'The Long Journey' - Workshop and WWII Industrial - 5 July 2025
(Chris Drymalik - NRM Collection 275-373-p1225537)

RAILWAYS CHANGED THE FABRIC OF AUSTRALIAN LIFE, and the impact on women was significant. The *'The Long Journey' - Women in Railways* display tells the compelling story of how women shaped, supported, and were shaped by the railway industry - from the domestic sphere to the workforce and beyond.

Through evocative photographs, storyboards, and period artefacts, this exhibit highlights the daily lives of women who accompanied their husbands to isolated railway construction camps. These women played a critical, though often overlooked, role in keeping families safe and healthy in remote and unforgiving environments. They created homes in tents and huts, took responsibility for their children's schooling, managed health and nutrition, and built supportive communities under harsh conditions.

The railway also opened new doors for many women. With the expansion of passenger services, women gained unprecedented access to travel and recreation, enjoying independence and

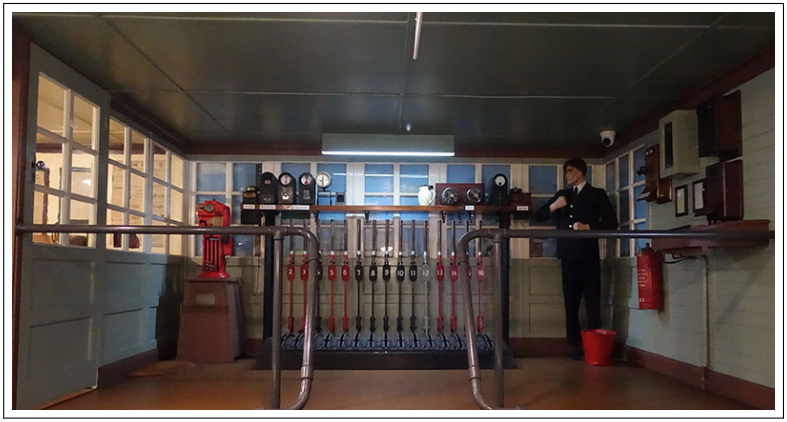
mobility that had not been readily available before. Rail travel connected them to new opportunities, places, and people, fostering a greater sense of personal freedom.

During World War II, the role of women in railways expanded significantly. As men enlisted and left for overseas service, women stepped in to fill the gap - taking on roles in operations, maintenance, and administration. For many, this marked their first experience of formal employment, offering not only a vital income but a new sense of independence and social equality.



'The Long Journey' - Office and Clerical - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225535)*

Railway Signalling and Safeworking



Railway Signalling and Safeworking Display - Signal Cabin - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225540)*



Railway Signalling and Safeworking Display - Stationmaster's office - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225541)*

RAILWAY SIGNALLING AND SAFEWORKING are essential for running trains safely. They help prevent collisions by making sure only one train is in a section of track at a time, and they guide train drivers using visual signals and written or electronic instructions. 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.



Railway Signalling and Safeworking Display - Various types of Signalling Equipment - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225544)*



Railway Signalling and Safeworking Display - Train Control Centre - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225545)*

Divided into four main sections - Signal Cabin, Station Office, Signalling Equipment and Train Control Centre - storyboards, photographs, written information and actual railway artefacts and

equipment help unravel the puzzle of Safeworking. On display are block instruments, electric staff machines, semaphore signals, lamps and much more.

Australia's railway systems borrowed many ideas from Britain, but had to adapt to local conditions - especially the long distances, remote areas, and low traffic volumes. This led to a mix of simple and advanced systems, depending on the line, and the incorporation of equipment developed in the United States of America and locally.

The Overland

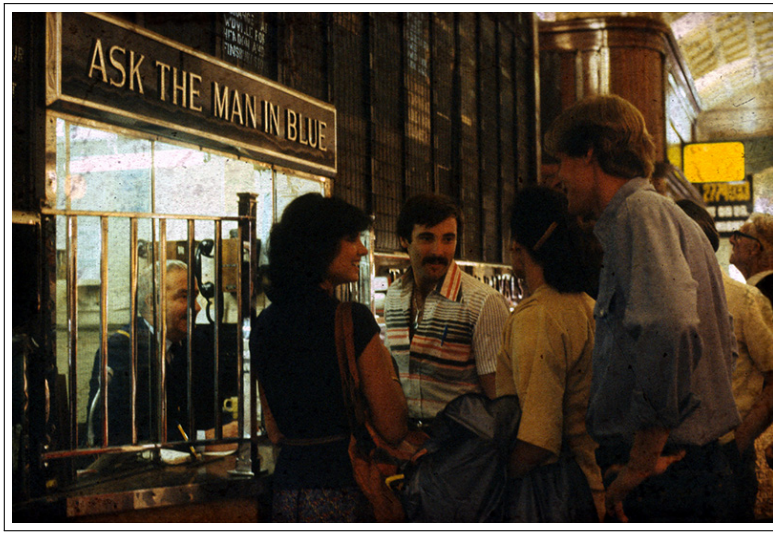
THE *Intercolonial Express*, *Melbourne Express*, or *The Overland*. Whatever you call it, it is one of Australia's iconic rail journeys. With more than 100 years of history, the story of the Victorian & South Australian Railways flagship comes to life through images and text as story boards describe *The Overland* route, locomotives, carriages, stations and misadventure. The display includes beautifully made models of the carriages and 900 class locomotive *Lady Norrie* which hauled the *The Overland*.

Fully immerse yourself in the experience by exploring *The Overland* rolling stock housed in the museum, 500 class locomotive 504, Rx class locomotive Rx93, 900 class locomotive 900 *Lady Norrie*, 930 class locomotive 930, Dining Car *Adelaide*, Sleeping car *Onkaparinga*, Sitting car BE42, and Sleeping car *Allambi*. The Train Departures Board recalls the scheduled time when *The Overland* left from the Adelaide Station.



The Overland - Models of The Overland cars used to advertise the train in Adelaide Station - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225556)*

Train Departures Board and the *Man in Blue* Replica



The Adelaide Station Train Departures Board with the *Man in Blue* Information Stall - c.1970s *(NRM Collection 1-3-s04213)*

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 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 this 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.

In 1983-84 the board was removed and replaced with a new display system using computer technology.



Train Departures Board replica at the NRM - 15 September 2019
(Chris Drymalik - NRM Collection 275-373-p1175481)

The Tea and Sugar Train

THE MUSEUM HAS the sole remaining carriages from the legendary Tea and Sugar train[1] 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 357).
- Butcher's Van - carried beef, pork, mutton, fresh milk and icecream and more (see page 355).
- Provisions Van - sold groceries, clothing, general household goods, records, cassettes and small furniture (see page 360).
- 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 329).

[1] See page 72 for additional information



Tea and Sugar Display in the *Ron Fitch* Pavilion - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092255)*



Port Dock Station Historical Marker at the entrance to the *Ron Fitch* Pavilion *(Douglas Colquhoun - NRM Collection 2-194-z-0185)*

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



Name and number plates from various locomotives hang from the *Ron Fitch* Pavilion walls - 31 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222579)*

LOCOMOTIVE NUMBER PLATES were essential for identifying locomotives, often indicating the engine's class and sequence within that class. The Museum's collection includes a variety of these plates, showcasing the evolution of locomotive identification across different railway operators and time periods. Visitors can observe the diversity in design, materials, and typography, reflecting the technological and aesthetic standards of their respective eras.

Name plates added a personal touch to locomotives, often honouring notable individuals, places, or events. For instance, the Museum houses the name plate from *'Locomotive 900 – Lady Norrie'*, a diesel-electric engine named after the wife of South Australia's Governor in 1951.

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.

Railway Memorabilia and Artefacts

LOCATED ALONG THE Western side of the *Ron Fitch* Pavilion are a number of display cabinets housing rare and interesting railway memorabilia and artefacts such as cutlery from the Trans-Australian passenger train, railway uniforms, and commemorative clips and spikes.



An example of the railway memorabilia on display - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225549)*

Signs

FROM the late 1800s to the mid-20th century, advertising signs became a vibrant feature of Australian railway stations. These signs promoted travel, tourism, and everyday goods, capturing the spirit of an era when trains were the lifeblood of movement and commerce.

Some significant sign types included:

1. **Promoting Travel and Tourism**

   Railways used posters, boards and enamel signs to advertise:

   - Excursion trains and cheap fares
   - Popular destinations like coastal resorts and mountain retreats
   - Agricultural shows and industrial exhibitions

   Travellers were tempted by signs urging them to “See the Blue Mountains” or “Visit Adelaide for the Royal Show.”



Griffiths Brothers Tea signs were once common sights along railway lines and stations - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222038)*



Crompton's signs adorned most country rail stations - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222037)*

2. **Everyday Products on Display**

   Station platforms became hotspots for commercial branding. Advertised goods included:

   - *Bushells Tea*
   - *Arnott's Biscuits*
   - *Craven A* and *Capstan cigarettes*
   - *Coca-Cola*

   These signs were often bold and colourful, mounted on fences, awnings or dedicated hoardings.

The most iconic signs were made from *vitreous enamel* - a glassy coating fused to metal at high temperatures. This made them extremely durable and weather-resistant, with many surviving into the 21st century.

As station advertising declined in the 1970s and 1980s, many signs were lost. Others were saved and are now part of museum and private collections. The museum has a collection of original and reproduction signs on display around the site.

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 2¼ in. x 1 3/16 in. (57 mm x 30 mm) 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 United Kingdom 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.

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 in. x 1⅛ in. (39 mm x 29 mm) 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



The National Railway Museums Edmondson Ticket Printing Press display - 19 May 2002 *(Chris Drymalik - NRM Collection 275-373-p1003872)*

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 has been used by the Museum to print tickets for special events.

Theatrette

TAKE A BREAK in the Fitch Pavilion and enjoy a selection of short films in the Museum's Theatrette, covering a variety of railway topics.

This space also features the exhibit 'Growth and Consolidation of Railways in South Australia' - an interactive display that uses a large map and LED lighting to bring the state's railway history to life.

Follow the timeline as railways spread out from Adelaide, connecting once-isolated regional lines to form a growing network. Watch as early lines built to serve local ports were joined and converted to common gauges, helping to unify South Australia's transport system. Continue through the decades to see how road competition and economic reforms led to the closure of many lines. The display concludes with the modern era, showing how key interstate routes were standardised, forming the national rail network we know today.



Museum Theatrette - 5 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225565)*

Next Train Clock



Next Train Clock in the *Ron Fitch* Pavilion - 8 February 2003 *(Chris Drymalik - NRM Collection 275-373-p1006805)*

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.

Bob the Railway Dog

'Bob the Railway Dog' is one of South Australia's most beloved railway legends, and his story is celebrated in a dedicated display. Born around 1878 in Macclesfield, Bob was a scruffy, intelligent mongrel -



Bob the Railway Dog Display - 7 October 2025 *(Chris Drymalik - NRM Collection 275-373-p1222010)*

believed to be a Koolie or Smithfield cross - who developed a passion for trains from a young age. He became a well-known figure across the South Australian Railways, often riding on the tender of steam locomotives, particularly favouring the early ‘Yankee’ types with their large whistles and smoky stacks.

Over the years, Bob travelled thousands of kilometres, journeying to remote sidings, regional towns, and even interstate. His friendly yet determined nature made him a favourite with railway staff and passengers alike.

The Museum’s display features Bob’s original brass collar, inscribed with the famous words:



Bob the Railway Dog - c.1892 *(NRM Collection 1-1-19202)*

“Stop me not, but let me jog, for I am Bob, the driver’s dog.”

This treasured artifact is accompanied by photographs, interpretive panels, and memorabilia that tell the story of Bob’s extraordinary life on the rails. The display highlights his adventures, the affection he inspired, and the folklore that surrounds him to this day.

The Folklore of Bob the Railway Dog

They say a scruffy pup came north in 1884, riding in a cart with a pack of stray dogs bound for the rabbit-plagued plains. He didn’t look like much - part Smithfield, part ‘who knows what’ - but railway guard William Ferry saw something in him. He took the dog home to Petersburg and named him Bob.

Bob wasn’t meant for ordinary life. One ride on a wheat train, and the rails claimed him. From that day on, he rode the steam engines like they were made for him - perched proudly atop the tender, ears in the wind, watching the countryside roll by. He knew no master, but every stationmaster knew him. Bob travelled wherever the trains would take him: Terowie, Quorn, Gladstone, even Melbourne it’s claimed.

The railway men, proud of their four-legged wanderer, gave him a brass collar that read:

STOP ME NOT BUT LET ME JOG
FOR I AM BOB THE DRIVER’S DOG

That collar was his ticket to roam, and roam he did - through soot, wind, and miles of red dust. He may have been matted and grimy, but his spirit was bright, and his loyalty ran deep.

Bob died in 1895 on a cold night outside the Royal Hotel in Adelaide. His collar, passed from the Mayor of Adelaide to the locomotive union, now rests at the National Railway Museum, where the legend of Bob the Railway Dog still rides on.

Adelaide Railway Station Concourse Clock

Adelaide Railway Station’s concourse clock is an enduring emblem of the stations grand 1920s neoclassical design. Mounted on a tall timber case at the centre of the Stations main hall, it faced multiple directions and was topped by an ornate lamp, making it a prominent focal point



Adelaide Railway Station Concourse Clock in the Fitch Pavilion at the NRM - 7 October 2025 *(Chris Drymalik - NRM Collection 275-373-p1222011)*

as passengers pass beneath the vaulted ceiling of the waiting room known as Marble Hall, which is now incorporated into the Adelaide Casino.

This clock was donated to the Museum by the SA Government's Department of Planning, Transport and Infrastructure in November 2013.

Train Simulator & DL Class Diesel Locomotive Cab Mock-up

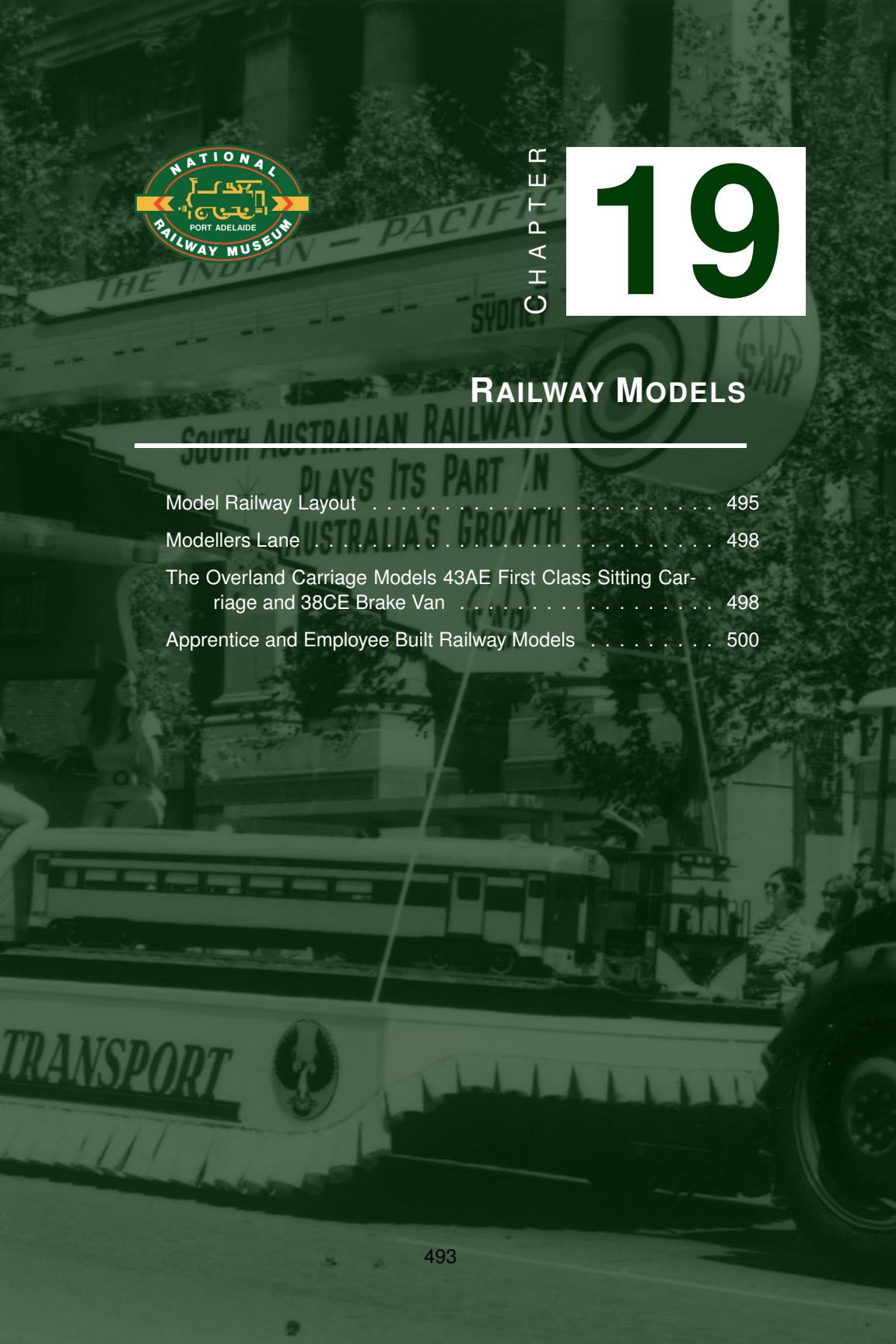
The simulator is a hands-on, immersive experience that lets you drive a virtual train using realistic controls, braking systems, and throttle, all based on historical locomotives in the collection. It is housed in the *DL Class Locomotive Cab Mock-up* in the Fitch Pavilion.



DL Class Diesel Locomotive Cab Mock-up in the Fitch Pavilion at the NRM - 15 October 2025 *(Chris Drymalik - NRM Collection 275-373-p1222121)*



Train Simulator in the Fitch Pavilion at the NRM - 15 October 2025
(Chris Drymalik - NRM Collection 275-373-p1222123)



CHAPTER

19

RAILWAY MODELS

Model Railway Layout 495

Modellers Lane 498

The Overland Carriage Models 43AE First Class Sitting Carriage and 38CE Brake Van 498

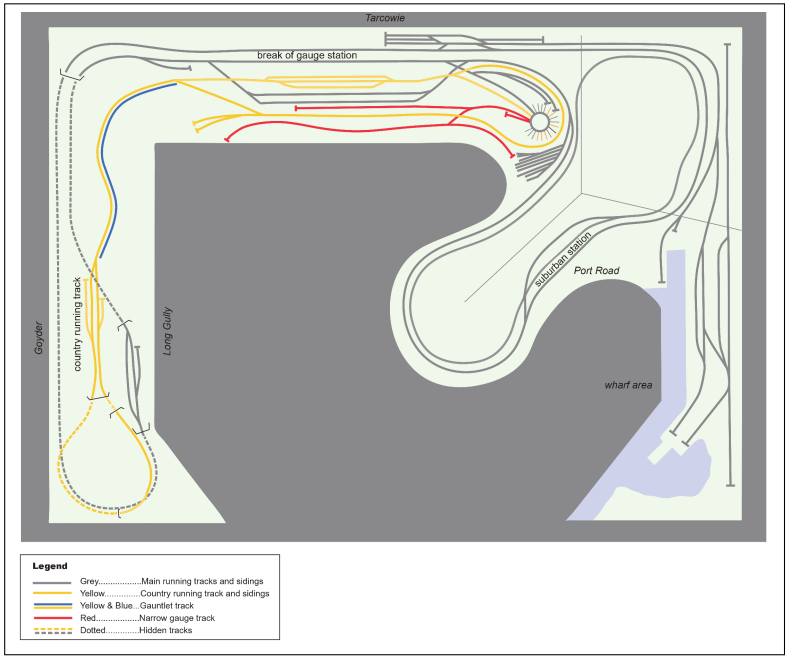
Apprentice and Employee Built Railway Models 500


THE INDIAN – PACIFIC
SYDNEY
SAR
SOUTH AUSTRALIAN RAILWAYS
PLAYS ITS PART IN
AUSTRALIA'S GROWTH
TRANSPORT

Model Railway Layout

ONE OF THE POPULAR highlights of the National Railway Museum at Port Adelaide is the impressive Model Railway Layout, located midway along the first aisle of the Fitch Pavilion. Built to HO scale (1:87), the layout is of freelance design, combining authentic elements with creative interpretations to showcase the diversity of South Australia's railway heritage.

Originally constructed for the Museum's grand opening in 1988, the model railway has remained largely unchanged over the years, standing as a nostalgic and educational representation of South Australia's rail and landscape history. The layout is divided into three distinct regions, each designed to reflect key geographical and historical aspects of the state:



Map of the NRM Model Railway Layout

Coastal / Metropolitan Area

Upon entering the Model Railway exhibit, visitors are immediately drawn to the right-hand side, where a simulated thunderstorm rolls over a coastal wharf area. This section is inspired by Port Adelaide, with many of the miniature structures, such as the wharf sheds, grain

silos, and portside industries closely modelled on real buildings that once stood in the area.



National Railway Museum Model Railway Layout - 14 July 2001 *(Chris Drymalik - NRM Collection 275-373-p1001240)*

Historically, Port Adelaide was a bustling hub where goods were exchanged between ships and trains, and the model reflects this busy interface. Industries in this section include fuel and petrol storage, grain silos, and a grain milling facility - all essential to the economic activity of the Port.

As the storm clears, the scene transitions into a metropolitan landscape, a blend of recognisable elements from greater Adelaide and creative additions. This area captures the rhythm of everyday urban life, with residential homes, commercial buildings, roadways, and trains weaving through a cityscape alive with activity.

Outer Metropolitan Area / Country Township

Moving toward the centre of the layout, the scenery begins to change. Flat terrain gives way to undulating countryside, and the vegetation becomes sparser, reflecting the transition from outer suburbs to the rural heartland.

The country township is depicted as a vital regional centre - especially important to the railway network. Here, you'll find a large railway station, freight yards, a roundhouse and locomotive depot, grain storage facilities, and of course, a classic country pub. This section

highlights the critical role such townships played in the development of South Australia's agricultural and rail infrastructure.



National Railway Museum Model Railway Layout - 24 March 2002
(Chris Drymalik - NRM Collection 275-373-p1003168)

Flinders Ranges / Mount Lofty Ranges

At the far left of the layout, the landscape shifts again, this time to the rugged hills of the Flinders and Mount Lofty Ranges. The lower portion represents the Mount Lofty Ranges, featuring a small rural station nestled in a scenic cutting between two tunnels.

Above it, the scene transitions to the Flinders Ranges, specifically the iconic Pichi Richi Pass. Visitors will see realistic renderings of rock formations, railway bridges, and steep embankments, replicating the dramatic terrain traversed by trains in the state's far north. The small, spartan station depicted here reflects the minimalist infrastructure common in more remote northern areas, functional and utilitarian in contrast to the larger facilities of the south.

Modellers Lane



Modeller Lane at the NRM - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222025)*

RUNNING THROUGH THE central aisle of the Fitch Pavilion is *Modellers Lane*. An engaging display showcasing the evolution and diversity of model railroading in Australia.

This collection highlights a broad spectrum of model trains from the Museum's extensive archives, tracing the development of railway modelling from the early tinplate clockwork trains to modern plastic electric models, and even large-scale ride-on locomotives.

The Overland Carriage Models 43AE First Class Sitting Carriage and 38CE Brake Van

The 43AE first class sitting carriage and the 38CE brake van are two detailed scale models built by Mr. Bob Brown. The inspiration and foundation for these models came in 1993 at the SteamRanger depot in Dry Creek, where Bob discovered a rare find: the underframe of an AE class carriage with six-wheel bogies and no body. This gave him an exceptional opportunity to study and document parts of the carriage that are usually hidden or hard to access.

Armed with pen, pencil, tape measure, camera, and paper, Bob



Model of 43AE first class sitting carriage - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222023)*



Model of 38CE brake van - 15 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222111)*

carefully recorded the structure—angles, channels, wheels, axle boxes, and more. After 21 years of dedication, this detailed research resulted in the creation of these two impressive models.

The original carriages were part of the famous *The Overland* train. Very few of these historic carriages survive today, some of them over 100 years old. The National Railway Museum holds two similar examples: the 42BE second class sitting car and the *Onkaparinga* sleeper.

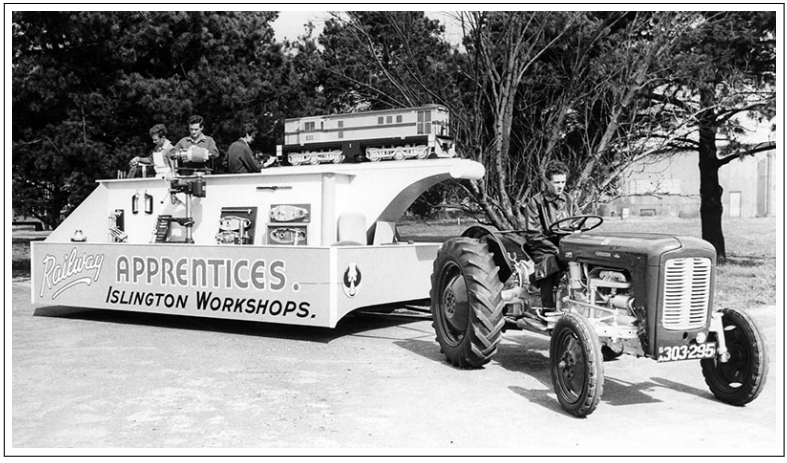
Built at 1/12th scale, Bob Brown's models are exceptionally detailed. They feature working sliding doors, interior fittings such as mirrors, luggage racks, and even framed pictures. The models also include functional lighting, and every piece was handmade specifically for this project.

Apprentice and Employee Built Railway Models

In addition to its full-size locomotives and carriages, the National Railway Museum houses a fascinating and historically significant collection of scale models, many of which were expertly crafted by railway employees and apprentices. These models were originally created for public exhibitions, trade shows, and internal railway displays, serving both as promotional tools and as showcases of technical skill and pride in craftsmanship.



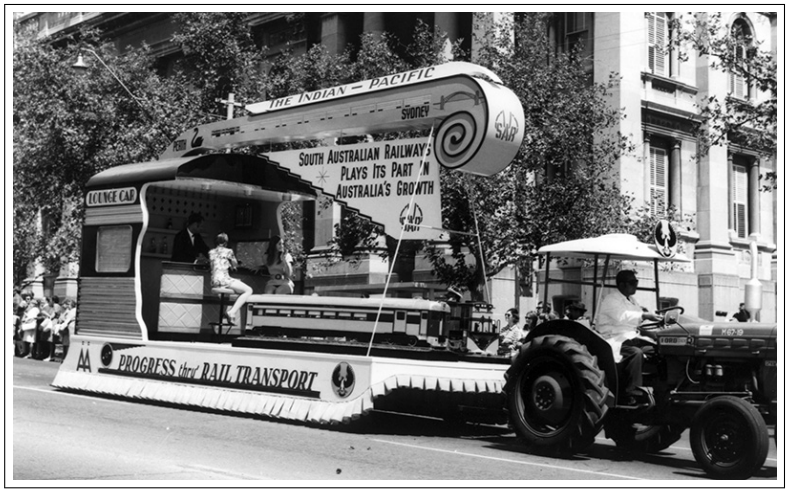
South Australian Railway Employee Built Model of a Bluebird Railcar at the NRM - 19 May 2002 *(Chris Drymalik - NRM Collection 275-373-p1003869)*



South Australian Railway Employee Built Model of 830 class locomotive on Labour Day March float - c.1960 *(South Australian Railway - NRM Collection 1-1.08378)*

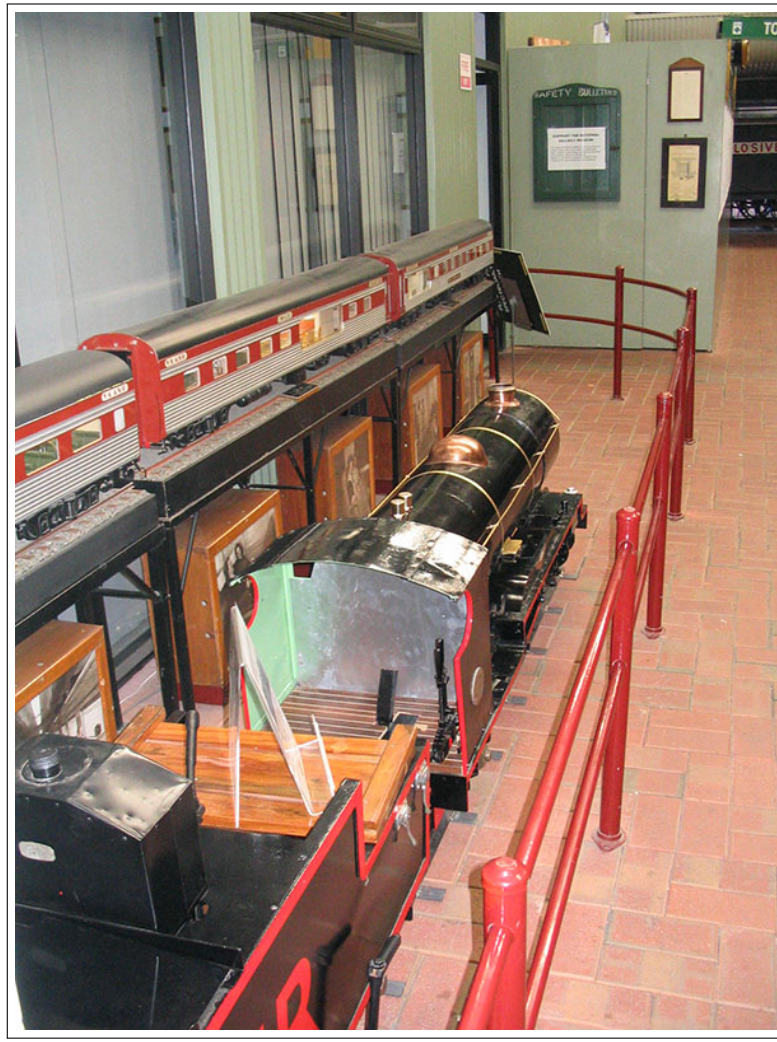
Dotted throughout the museum, these models represent a wide range of rolling stock, including diesel locomotives, passenger carriages, freight wagons, and railcars. Each model reflects the design and engineering standards of its time and is often remarkably

detailed—some even include moving parts, intricate interiors, and working lights.



South Australian Railway Employee Built street float featuring models of an Overland lounge car, a Bluebird railcar, an 830-class locomotive, and the Indian Pacific logo *(South Australian Railway - NRM Collection 5-102-1194)*

These models offer visitors a closer look at the precision and care that railway workers, especially apprentices, brought to their craft. They also provide valuable insight into the development of railway technology and design across different eras of Australian rail history. Whether viewed as works of art or historical replicas, these models are a testament to the skill, innovation, and dedication of the people who built and maintained Australia's railways.



A display of various Employee Built and Private Built Railway Models at the NRM - 5 June 2004 *(Chris Drymalik - NRM Collection 275-373-p1013967)*

CHAPTER 20

MULTI-GAUGE TRACK

National Railway Museum Track Gauges 505
Australia's Rail Gauge Problem 506
National Railway Museum Yard Layout 507



National Railway Museum Track Gauges

The National Railway Museum showcases Australia's rich railway heritage by featuring exhibits across multiple rail gauges that have been integral to the nation's rail history. The museum operates exhibits with the following rail track gauges in its collection:

Broad Gauge (5 ft. 3 in. / 1600 mm) Introduced in 1856, broad gauge was the original track gauge for the South Australian Railways, connecting Adelaide to Port Adelaide and subsequently expanding to rural and mining regions. The museum houses several broad gauge locomotives and rolling stock, reflecting this foundational period in South Australia's railway development. This gauge was also the main main initial and most predominant operating gauge for the state of Victoria.



An 18 in. gauge & 3 ft. 6 in. gauge diamond crossover at the NRM. The track on the left is the 3 ft. 6 in. (narrow gauge) *Wilson Yard*, and the right hand line is the 18 in. gauge museum railway - 14 June 1995 *(Douglas Colquhoun - NRM Collection 2-194-r-4106)*

Standard Gauge (4 ft. 8½ in. / 1435 mm) This was the original gauge of the state of New South Wales. It was later adopted to unify Australia's rail network. Standard Gauge became prominent in the 20th century, facilitating interstate travel and freight movement. The museum's exhibits include an extensive collection of Commonwealth Railways standard gauge equipment, illustrating the efforts toward national rail standardisation.

Narrow Gauge (3 ft. 6 in. / 1067 mm) Narrow gauge lines were prevalent in South Australia's mid-north and other regions. The states of Western Australia, Queensland, and Tasmania also operated extensive narrow gauge systems as it offered a cost-effective solution for challenging terrains. The museum features narrow gauge locomotives and rolling stock.

Miniature Gauge (18 in. / 457 mm) For educational and recreational purposes, the museum operates an 18-inch gauge miniature railway, providing visitors with interactive experiences and a glimpse into the engineering of smaller-scale rail systems.

The museum's collection also features vehicles from other gauges, however, none are currently operationally functional.

Australia's Rail Gauge Problem

AUSTRALIA'S RAIL GAUGE PROBLEM, often called the *"gauge muddle"*, is one of the country's most significant historical transport challenges. It refers to the incompatible rail track widths chosen by different, and at the time, independent Australian colonies in the 19th century, which resulted in a fragmented and inefficient rail network.

The rail gauge problem and the moves to address it, including gauge standardisation, are discussed in detail on page 31.



Multi-Gauge Track at Gladstone, South Australia - 27 September 1987
(Chris Roads - NRM Collection 44-981-d275)

What is Rail Gauge?

Rail gauge is the distance between the inner edges of the two rails. The three main gauges used in Australia were:

- **Broad gauge** — 5 ft. 3 in. (1600 mm), mainly in Victoria and parts of South Australia
- **Standard gauge** — 4 ft. 8½ in. (1435 mm), what became the international standard, used mainly in New South Wales, the Trans-Australian Railway and interstate lines
- **Narrow gauge** — 3 ft. 6 in. (1067 mm), common in Queensland, Western Australia, Tasmania, Northern Territory and some South Australian lines

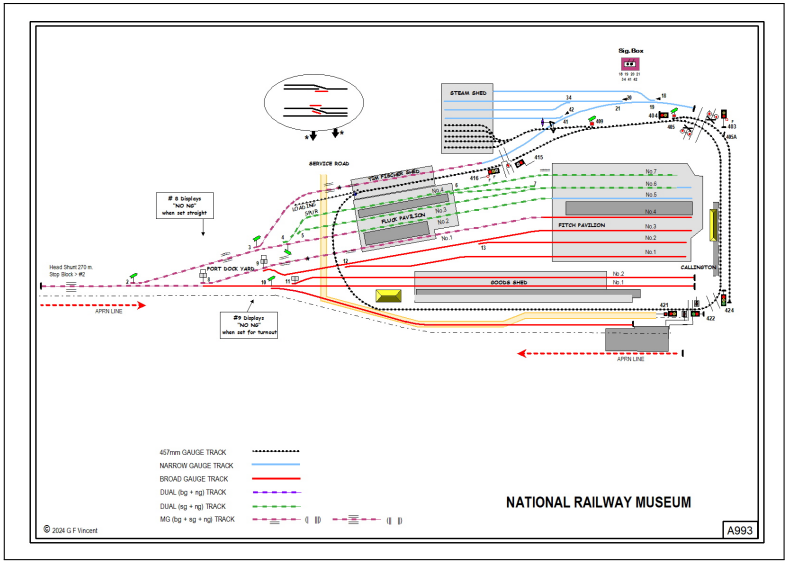
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Standard Gauge & Narrow Gauge Track interleaved at Port Augusta, South Australia - 27 August 1952 *(Ron Stewien - NRM Collection 215-1237-s0083)*

National Railway Museum Yard Layout

The National Railway Museum features one of the most complex track arrangements of any heritage railway site in Australia. The track work



National Railway Museum Yard Layout - August 2024. Note: due to rail operational safety not all the NRM rail yard is accessible to visitors

accommodates multiple rail gauges - a reflection of the diverse railway systems that once operated across South Australia and the nation.



Rail track switch No.7 - full dual standard narrow gauge - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225587)*

Dual and triple-gauge track, along with intricate switches and crossings, allow the system to function seamlessly and showcase Australia's diverse railway heritage. Significant track components are detailed in the following table:

Item	Gauge	Details
Switch No.2	Narrow, Standard, Broad	Full triple gauge - 3 gauges in, all switched.Parts from Gladstone, South Australia
Switch No.3	Narrow, Standard, Broad	Full triple gauge - 3 gauges in, all switched. Fabricated by NRM
Switch No. 4	Narrow, Standard, Broad	Switches only Narrow and Standard. Broad only on single leg. Fabricated by NRM from parts
Switch No.5	Narrow, Standard	Type D Dual Gauge. Ex Peterborough, South Australia
Switch No.6	Narrow, Standard	Type D Dual Gauge. Ex Peterborough, South Australia
Switch No.7	Narrow, Standard	Type A Dual Gauge. Fabricated by NRM
Switch No.8	Narrow, Standard, Broad	Switches only Narrow and Standard. Broad only on single leg. Fabricated by NRM
Switch No.9	Narrow, Standard, Broad	Switches only Narrow and Standard. Broad only on single leg. Fabricated by NRM
Switch No.10	Broad	Single Gauge turn-out. Fabricated by NRM
Switch No.11	Broad	Single Gauge turn-out. Fabricated by NRM
Switch No.12	Broad	Single Gauge turn-out. Fabricated by NRM
Switch No.13	Broad	Single Gauge turn-out. Fabricated by NRM
Switch No.18	Narrow	Single Gauge turn-out. Fabricated by NRM
Switch No.20	Narrow	Single Gauge turn-out. Fabricated by NRM
Switch No.34	Narrow	Single Gauge turn-out. Fabricated by NRM
Switch No.42	Narrow	Single Gauge turn-out. Fabricated by NRM
Gauge Separator (two items)	Narrow, Standard, Broad	Changes common rail. Parts ex Peterborough, but reconfigured by NRM
Diamond Crossover	Narrow & 18 in. gauge	Purpose built to allow 18 in. gauge to access work shop. Fabricated by NRM

Item	Gauge	Details
Switch 405	18 in. gauge	Single Gauge turn-out. Fabricated by NRM
Switch 409	18 in. gauge	Single Gauge turn-out. Fabricated by NRM

Table 20.1: Details of significant National Railway Museum Track Components



Rail track switch No.3 - switches full triple gauge broad standard narrow - in distance No.4 switch which is broad standard narrow in switching narrow standard only + switch No.5 standard narrow - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225604)*

The NRM also displays a wide variety of rail weights and profiles. (The weights following are abbreviations of "pounds per foot"). The main running line uses rails weighing 90lb, 92lb, 94lb, 100lb and 107lb. Around the museum, visitors can also spot lighter and more unusual rails, including 15lb, 22lb, 60A, 61lb, 63lb, 80lb (CofA), and 80A.

Different types of sleepers and rail fastenings are also featured throughout the site, offering a glimpse into the many ways railway track has been built and maintained over time.



Rail track switch No.2 - full triple gauge broad standard narrow - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225607)*



Rail track switch No.12 broad gauge with 18in gauge flyer in foreground - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225593)*



Rail track gauge separator broad standard narrow - switches common rail for gauntleted track - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225595)*

CHAPTER 21

TRACKSIDE INFRASTRUCTURE

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Fixed Signalling 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 Signals

Some station yards had disc signals. The museum has a variety of this type of signal on display.



A disc signal at the museum - 25 April 2011 *(Chris Drymalik - NRM Collection 275-373-p1093978e)*

Dwarf signals

Dwarf signals were an alternative to disc signals in some yards. They are located at or near track level, usually less than 1 metre high. They give low-speed movement authorities, primarily for shunting, yard operations, and entry/exit from sidings or platforms.

These signals are not used to authorise high-speed or long-distance train movements but rather to manage movements in controlled or

congested areas where short movements are frequent and full signal infrastructure is impractical.



A dwarf lower quadrant signal with lamp at Mount Gambier *(Wayne Morris - NRM Collection 17-336-mb-b15-r05)*

Train Order Signals

The 'South Australian Railways (SAR) Train Order Signal' was a key element in the safeworking system used on lightly trafficked branch lines and country stations. It indicated to approaching train crews whether or not they were required to stop and collect written authority (called a 'train order') to proceed safely along the line. It was located outside a station building or office.



The museum's train order signal dwarf's engine *Bub* and the train sitting at Callington Station - 19 July 2008 *(Chris Drymalik - NRM Collection 275-373-p1051997)*

SAR used a variety of safeworking systems, but on single-line tracks where there was no complex signalling infrastructure, 'train orders' governed the movement of trains. These were written instructions, often issued by a Train Control Officer and passed on at staffed stations.

The signal was generally mounted on a post adjacent the station building. If the arm was up (vertical) the train did not need to stop, if it was down (horizontal) it would need to stop and pick up a new order.

Coloured Light signals

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.



A Dwarf Coloured Light Signal in use at Edwardstown, South Australia - August 1979 *(Ron Stewien Collection - NRM Collection 215-1237-bs028)*



This coloured light signal is used to indicate to a Museum train that the warning lights on the pedestrian crossing ahead are working - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1093982e)*

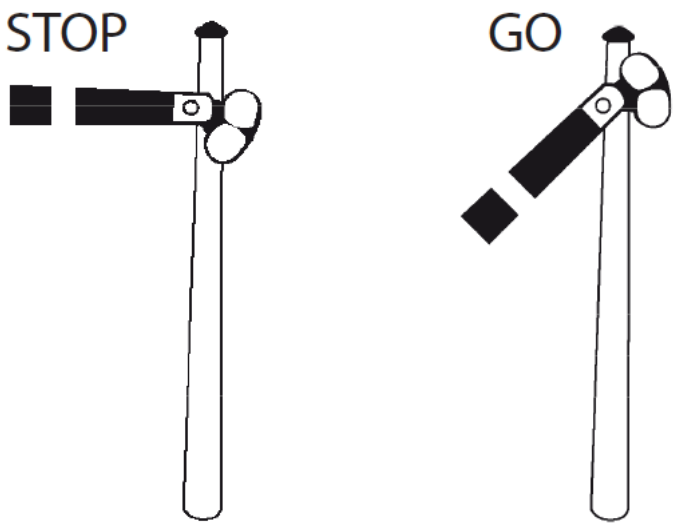
Glenelg Line Signal - Holdfast Bay Railway Company - South Australia

Class operators	Holdfast Bay Railway Company South Australian Railways
Condition	Good
Ownership	Port Dock Station Railway Trust
Provenance	Holdfast Bay Railway Company, South Australian Railways

Table 21.1: Glenelg Line Signal - Holdfast Bay Railway Company - South Australia

THIS WOODEN SIGNAL was originally set up at Thebarton, South Australia, 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.



Railway signalling is a system used to direct railway traffic and keep trains clear of each other at all times. Railway semaphore signals are



The Glenelg line signal on display in the Fitch Pavilion at the NRM - 25 April 2011 *(Chris Drymalik - NRM Collection 275-373-p1094012e)*

one of the earliest forms of fixed railway signals. This semaphore system involves signals that display their different indications to train drivers by changing the angle of inclination of a pivoted ‘arm’. Semaphore signals were patented in the early 1840s by Joseph James Stevens, and soon became the most widely used form of mechanical signal. Signals were operated by hand and later from the signal box. Signal boxes in South Australia have now been closed, and most rail traffic is coordinated through centralised traffic control (CTC) systems.

Red was quickly chosen as the best colour for semaphore arms as it was clearly visible against most backgrounds. To enhance the visibility of the arm, a marking of contrasting colour, such as a white stripe, was usually applied. At night the signal arm indications are converted to illuminated lights by use of a kerosene lit lamp shining through glasses/lenses eg, red or yellow or green.

Switching Equipment

Cheese Knob Switch Lever

The ‘Cheese Knob Switch Lever’ is a type of manually operated railway point lever that was once commonly used across Australian railway networks, especially on rural and industrial lines. It is named for the large, circular handle at the top of the lever - which resembles a wheel of cheese.

Unlike tall signal levers found in signal cabins, cheese knob levers are mounted at ground level and designed to throw a set of points from one line to another. They were often used by train crews themselves, especially shunters or guards, rather than signalmen. On grain sidings or industrial spurs, they allowed local control over routing wagons into specific tracks.

Switch Stands

Railway switch stands are mechanical devices used to operate railway ‘points’ (or turnouts) manually - the movable rails that allow a train to change from one track to another. These stands are most commonly found in yards, sidings, and branch lines, especially in areas without remote or powered signalling.

A ‘switch stand’ (also called a ground throw or point lever) is a ground-level lever connected to the point blades (the rails that guide a train from one track to another). When operated, the lever physically moves the point rails, aligning them with either the mainline or diverging track. Switch stands allow rail workers or train crews to manually route trains in locations where automatic or centralised control is not required.



A Cheese Knob Switch Lever at the Museum - 22 April 2017 *(Chris Drymalik - NRM Collection 275-373-p1150041)*

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.

Switch locks can be either mechanical or keyed:

- **Mechanical locks** physically hold the points in place using a locking bar.
- **Keyed locks** require a specially issued railway key to release the mechanism, ensuring only authorised staff can operate the switch.

In some areas, the switch key is integrated into a train staff or token system, meaning it can only be accessed when no trains are permitted to move on the section, further enhancing safety.



A switch stand at the Museum - 12 February 2011 *(Chris Drymalik - NRM Collection 275-373-p1092323e)*



Outlying Switch Lock alongside Dwarf Swtich Stand with Lamp
(Wayne Morris Collection - NRM Collection 17-336-mb-b15-c07)

Switch locks are still commonly found on lightly trafficked lines, sidings, and heritage railways, particularly where full interlocking systems are not practical.

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’.

Derails are most commonly found:

- At the end of sidings to prevent wagons rolling onto main lines.
- Near workshops, freight terminals, and maintenance areas.
- In yards to protect workers or equipment on adjacent tracks.

Several types are used across Australia:

- **Hinged Derails**: These fold onto the rail and lift the wheel flange, causing the vehicle to drop off the track.
- **Portable Derails**: Temporarily clamped onto the rail, often used during track work.



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 - 25 April 2011 *(Chris Drymalik - NRM Collection 275-373-p1094000)*

- **Catch Points**: A built-in trackwork feature that directs runaway vehicles onto a separate dead-end track or ballast.

On some older Australian systems, such as with the South Australian Railways or Victorian Railways, manual derails were locked with 'Annett locks' or staff keys, ensuring only authorised railway workers could operate them. Modern derails may be integrated into signalling systems and remotely monitored.

Though relatively small and simple, derail devices are a critical part of keeping Australia's railways safe, especially in locations where unattended wagons or unauthorised movements could pose a danger.

Water Columns

WATER COLUMNS were once a common sight at stations, yards, and stopping places across the railway network. They supplied essential water for steam locomotives, which required large quantities for their boilers.

The Museum has two historical water columns on display:



The Commonwealth Railway water column sits sandwiched between engines in front of the Fluck Pavilion - 27 July 2008 *(Chris Drymalik - NRM Collection 275-373-p1052092)*



The former Eurelia water column - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222061)*

- The original *Eurelia* water column, manufactured by Ransomes & Rapier. This unit is located between the Book Shop and the Fitch Pavilion. It remains operational and has been used to fill the tanks of the narrow gauge steam locomotive *Peronne* during special events.

- A Commonwealth Railways water column, which can be seen outside the *Ron Fluck Pavilion*.

These columns are examples of the practical infrastructure that kept steam railways runningn.

Concrete Sleepers - Tarcoola to Alice Springs Line

THE CONSTRUCTION OF the standard gauge railway from Tarcoola to Alice Springs was a major engineering project in the late 20th century. Begun in June 1978 and completed in 1980, this line replaced the ageing narrow gauge Central Australia Railway, offering improved reliability and year-round access to central Australia.



Australian National Railways Locomotive AN GM9 on unballasted concrete sleepers North of Impadna on the Tarcoola to Alice Springs line during the Northern Territory 'Institute of Engineers' Special Tour Tarcoola to Alice Springs Line construction- 20 April 1980 *(Barry Lewis - NRM Collection 10-122-oc25)*

One of the key innovations used during construction was the introduction of **pre-stressed concrete sleepers**. These provided greater strength, durability, and stability than traditional timber sleepers, especially in the harsh desert environment where extreme temperatures and white ant (termite) damage made timber unsuitable.

Displayed in the Museum yard between the Fitch Pavilion and the Ron Fluck Pavilion are two significant artefacts from this massive infrastructure effort:

- The **first pre-stressed concrete sleeper** produced for the line.
- The **500,000th sleeper**, marking a key milestone in the manufacturing process.

Both sleepers, along with many others, were manufactured by the *Readymix Costain Joint Venture*, the consortium responsible for supplying materials for this ambitious project. The use of pre-stressed concrete sleepers helped set a new standard for heavy-duty railway construction in Australia and remains a key element in modern rail infrastructure.

Warning Boards

Whistle Board

Whistle boards have long been an essential part of railway safety across Australia. These simple signs instruct locomotive drivers to sound the whistle or horn, warning anyone nearby of an approaching train.

Used extensively from the steam era onward, whistle boards are typically placed:

- Ahead of level crossings that don't have active warning systems
- Near pedestrian walkways or unfenced sections of track
- Approaching station platforms or yard entrances
- In areas with limited visibility, such as curves or cuttings

Whistle boards come in various designs depending on the state and the era, but many follow a common style: a white sign bearing a bold black letter 'W', mounted on a post beside the track. In some states, older boards were rectangular, while modern replacements may be reflective or include additional signage.

When passing a whistle board, drivers are required to give a designated whistle or horn signal—usually a long blast—to alert anyone near the tracks. This was particularly important before the widespread use of flashing lights, bells, or boom gates at crossings.

While technology has improved railway safety, whistle boards remain in use on rural, low-traffic, or heritage lines across Australia.



A yard limit board and whistle sign at the museum - 25 April 2011
(Chris Drymalik - NRM Collection 275-373-p1093990)

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.

Outside the yard, trains operated under different safeworking systems, such as Train Orders or Staff and Ticket. If a train wants to proceed past a Yard Limit Board, onto the main line, it must have the appropriate train movement authority before passing the board.

The museum displays South Australian Railways yard limit boards, which were usually mounted on a white post and featured a black rectangular sign with the words **‘YARD LIMIT’** in bold white lettering.

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 centre of a round target that is swung from side to side as a mechanical gong is sounded. Their distinctive motion and flashing lights made them highly visible and effective, especially before the widespread use of boom gates and modern electronics.

The typical wig-wag consisted of:

- A red warning disc or lamp mounted on a pivot arm
- An electric motor that caused the disc to swing from side to side
- A flashing red light and often a warning bell
- A sign reading **'STOP ON RED SIGNAL'** or similar wording

When a train was detected approaching the crossing, the wig-wag would activate, swinging its disc like a mechanical flagman while the light flashed and bell rang. The combination of motion, light, and sound helped to grab attention in a way that static signs could not.

Wig-wags were used in several parts of Australia, particularly in Victoria, New South Wales, and South Australia, although they were more common in North America. In Australia, they were often found at rural crossings or in townships where visibility was limited.

By the 1960s and 70s, wig-wags began to be phased out in favour of modern flashing light systems and boom gates, which offered greater reliability and easier maintenance. However, a few preserved examples still exist on heritage railways.

Flashing Crossing Lights

A level crossing (also called a railway crossing, railroad crossing, train crossing or grade crossing) is where a railway line intersects a road or path at the same level. These points of intersection have always carried a degree of risk, as pedestrians or vehicles may inadvertently enter the path of an oncoming train.

To reduce the likelihood of collisions, railways have developed a variety of warning and protection systems over time. These range from simple signs to human-operated gates and fully automated systems.



A ‘Wig Wag’ warning devices protects a crossing gate at the museum - 31 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222594)*



Flashing Crossing Lights protect the pedestrian walkway between the museum Book Shop and the Fitch Pavilion - 25 April 2011 *(Chris Drymalik - NRM Collection 275-373-p1093972)*

One of the best-known and widely used protective devices is the **flashing light warning system**, which consists of:

- A pole-mounted unit with two red lights that flash alternately when a train approaches
- A loud gong or bell to provide an audible warning
- A sign marked **'RAILWAY CROSSING'** and, in most cases, a notice of the number of tracks

When a train is detected approaching the crossing, usually via track circuits or axle counters, the lights begin to flash alternately, and the bell or gong sounds a loud, rhythmic tone. This dual-sensory warning is designed to catch the attention of drivers and pedestrians, even in poor visibility or noisy conditions.

Gongs are typically mounted above or between the lights and emit a classic metallic 'clang-clang' sound. The use of sound was especially important before air-conditioned cars and modern distractions, helping to ensure that all road users were alerted in time.

Many crossings in rural and suburban Australia still use flashing lights with gongs, either alone or combined with boom gates. While modern systems may now include LED lighting, traffic lights, and electronic tones, the principle remains the same: to provide clear, active warnings whenever a train is coming.

The Museum main entry pathway features an example of the traditional crossing signals with flashing lights and gongs, activating whenever a train approaches, preserving this iconic and enduring feature of Australia's railway landscape.

Crossing Keeper's Hut

BEFORE THE INTRODUCTION of automated level crossing signals, railway safety relied on the vigilance of dedicated crossing keepers. These workers were stationed at level crossings to operate gates or signals manually, ensuring road users were kept safely away from oncoming trains.

Crossing keeper's huts were small, functional shelters positioned beside the railway line, often just metres from the crossing. Their design was simple and practical, usually including:

- A single enclosed room for shelter and observation
- A window with a clear view of the track



Crossing Keeper's Hut at the NRM - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222034)*

- A fireplace or stove for warmth
- Basic furnishings such as a chair and table

Constructed from timber, corrugated iron, or brick, the huts were designed to withstand long hours in all weather conditions. In remote or cold regions, huts were sturdier and sometimes doubled as overnight shelters during extended shifts.

Crossing keepers were often local residents, and in many rural communities, women (particularly railway widows or wives) were employed in the role. Responsibilities included:

- Monitoring train movements

- Manually opening and closing level crossing gates
- Communicating with nearby stations or signal boxes
- Maintaining a visible presence to deter unsafe crossing

Some huts were equipped with bells or signal repeaters linked to the nearest station, providing alerts of approaching trains.

With the rise of automation in the mid-20th century, manual gatekeeping became increasingly obsolete. Flashing light signals, warning gongs, and boom gates gradually replaced human-operated systems.

Most crossing keeper's huts were removed or abandoned, but a few survive as heritage artefacts. The museum hut is based on one that stood until the late 1950s at Leader Street, Goodwood, South Australia..

Blyth Crane and Wilson Shed

YARD CRANES were once a familiar feature at railway stations across rural Australia. These manually operated cranes were essential for loading and unloading heavy goods such as farm machinery, wool bales, and equipment from railway wagons.



Blyth Crane and Wilson Shed at the NRM - 7 October 2024 *(Chris Drymalik - NRM Collection 275-373-p1222052)*

The crane on display originates from the town of 'Blyth', a former station located 149.42 km from Adelaide. Blyth opened on 1st March

1876 as part of the narrow gauge network serving South Australia's Mid North region. In **1927**, the line was converted to broad gauge, aligning with broader efforts to standardise railway operations.

By the mid-20th century, the Blyth station precinct included:

- A stone station building
- A galvanised iron goods shed
- A five-hand yard crane, like the one now preserved

These cranes were operated by turning a hand crank, allowing railway staff to safely lift and lower goods without powered equipment.

The railway through Blyth closed in 1991, ending more than a century of rail service to the town. The Blyth crane now stands as a reminder of the era when rural stations relied on simple yet effective manual equipment to serve the freight needs of local communities.

The *Wilson Shed*, located beside the crane, is a reproduction of the type of railway building commonly found on smaller South Australian Railways goods platforms. It is named after the now-defunct siding of *Wilson*, once located in the Flinders Ranges of South Australia between Quorn and Hawker.

Buffer Stop - State Transport Authority - Broad Gauge

BUFFER STOPS ARE safety devices installed at the end of a railway track to prevent rolling stock from running off the end of the line. They are a crucial element in terminal stations, sidings, depots, and maintenance yards - especially in urban or high-traffic areas where overrun could pose serious risks.

Early buffer stops in Australia were often built using rail offcuts and timber beams arranged in an A-frame or crossbar configuration. Over

Class operators	State Transport Authority Trans-Adelaide
Condition	Excellent
Provenance	State Transport Authority & Trans-Adelaide
Ownership	Port Dock Station Railway Trust
Builder	Citydel Engineering (Adelaide)
Serial Number	851
Entered the Museum	2024

Table 21.2: Details of Buffer Stop - State Transport Authority - Broad Gauge

time, these evolved into more engineered solutions that reflect both the increasing size of trains and growing safety expectations. The Museum features several examples of buffer stops, ranging from the traditional steel-and-timber types to the more modern design produced by Citydel Engineering (Adelaide).

This steel buffer stop is designed for use on broad gauge track and is typically installed at the end of a siding to prevent rolling stock from overrunning. Bolted directly to the rails, it provides a physical barrier to protect infrastructure and ensure safety in low-speed areas. Formerly located near the triangle at Gawler, it now serves as a display piece at the end of the siding beside Jackett's Platform.



The Citydel Buffer Stop installed at the end of Jacketts Siding at the NRM - 12 July 2025 *(Chris Drymalik - NRM Collection 275-373-p1225626)*

Pedestrian and Perambulator Turnstiles

PEDESTRIAN AND PERAMBULATOR TURNSTILES were once a common feature at railway stations across rural South Australia. These turnstiles allowed one person at a time to pass through, removing the need for opening large gates while effectively preventing livestock and other animals from straying into railway corridors.

The *perambulator turnstile* is a modified version that includes a lift-up bar, allowing a pram or perambulator to pass beneath. The Museum's turnstiles, now installed at the rear of the Fitch Pavilion, are typical examples once used by the South Australian Railways, and were



Pedestrian and Perambulator Turnstiles at the NRM - 29 November 2003 *(Chris Drymalik - NRM Collection 275-373-p1009032)*

originally located at the southern end of the Port Dock Yard, adjacent to Edith Street.

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