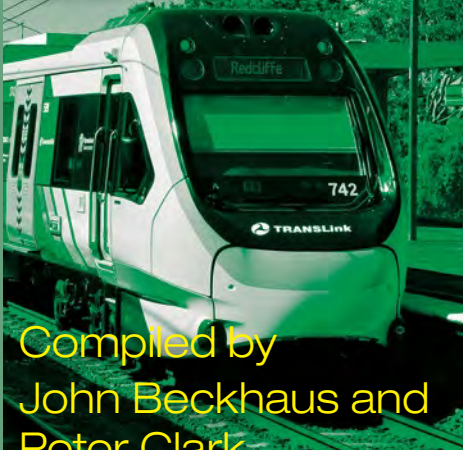


Rolling Stock news & contracts

Issue 186



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The locomotive hauled passenger car fleet

John Beckhaus

Early Railways

The beginning of passenger rail operation saw steam locomotives hauling wagons and passenger cars. However, there were some early examples of human powered railcars and wagons as well as horse haulage.

During the latter half of the Nineteenth Century in Australia the locomotive hauled passenger train reigned supreme. However, during the 1880s in Victoria and South Australia there were five experimental steam railcars as well as an experimental gas railcar in Victoria. The first two decades of the Twentieth Century saw three steam railcars introduced and from 1909 small numbers of petrol-powered railcars entered service with varying degrees of success. The last years of the second decade of the Twentieth Century saw petrol railcars start to appear in reasonable numbers as well as the introduction of electric

trains in Melbourne. The third decade of the Twentieth Century saw electric trains in Sydney and petrol and later diesel railcars on most railways. However, up until 1920 steam locomotive-hauled trains provided most services.

The financial arrangements for Australia's railways resulted in the purchase of modern vehicles requiring parliamentary approval. This frequently resulted in the complete rebuilding of existing vehicles using maintenance funds. This resulted in Australia's railway rollingstock fleets becoming obsolescent as superseded designs continued to be built. In the below tabulations where an existing car, or an existing underframe, was rebuilt to a newer layout it has been counted as a new car. There were also limited second hand sales of passenger cars between railways with these cars counted on both railways.

Above: The QR Diesel Tilt Trains are the only Australian trains with "flat beds", similar to first class airliner seats. This view shows the screens around the seats intended to provide privacy when the seats are reclined to form beds. Here DTFP 7421 is seen at Bowen on 26 June 2016 on a southbound service. Peter Clark
Right: The 30 L type 'Lander cars and the power vans now form the three locomotive hauled trains; *Inlander*, *Spirit of the Outback* and the *Westlander*. Economy second class car LBL 1928 is shown here working south on the former *Queenslander* passing through Stuart on Tuesday 25 May 2006. The PB, then coded QPB power vans were built during 2003 later than the L Type cars with a slightly different profile. At that time the M type Steel cars were still in service. John Beckhaus



The Cars

Australia's railways initially followed Britain using non-corridor compartment cars, but the end platform saloon car was also used especially on railways that had low level platforms.

The hauled passenger car fleet has totalled 10051 cars. As well there have been 1023 vans intended for working on passenger trains. These have included brake, guards and mail and parcel vans. There have also been 49 cars for VIP and Inspection work. Horse Boxes, Carriage Trucks and Motorail wagons have mainly worked on passenger trains but have not necessarily been included as part of the passenger fleet.

There have been 2996 non-corridor compartment cars which entered service between 1854 and 1953. Developed from the non-corridor cars were the 850 Express lavatory type cars built between 1890 and 1922 where each, or most, compartments, had a separate toilet cubicle attached. Isolated use of Express Lavatory cars both sitting and sleeping cars continued in service on Australian railways into the 1970s.

In the early days of railways in Australia there was no separation between rolling stock intended for suburban or longer distances. In the late 1870s in Sydney a separate fleet of cars for suburban service was started with the other cities following later. From the 1920s there was a gradual transition to electric and diesel multiple unit suburban operation with the last new locomotive hauled suburban cars built for Brisbane in 1964. There had been 2164 suburban locomotive hauled cars. Following electrification, many Sydney and Melbourne loco hauled suburban cars were rebuilt for shorter country routes.

While most cars have been sitting cars there have been 815 sleeping cars along with 143 dining and lunch counter cars and 108 lounge cars.

Mixed Train Operation

The construction of branch lines from the 1870s saw the introduction of mixed train operation. When mixed or freight trains with passenger accommodation were operated most freight guards' vans used on these services had one or two Express Lavatory type compartments. However, some mixed trains did include passenger cars but many used freight guards' vans that included a passenger compartment. Approximately 1840 of Australia's 4300 freight guard's vans had passenger compartments. In Australia the operation of mixed trains had ceased by the 1980s.

Fixed Wheel Base

Most of Australia's railways commenced operation with Fixed Wheel Base (FWB) passenger cars using mostly four wheel vehicles but in Victoria the six wheel FWB car became common. There have been 830 compartment FWB cars and 109 end platform saloon FWB cars. By the turn of the twentieth century most of four-wheel FWB cars had been withdrawn from regular service but some continued on employee services in the Newcastle coal fields into the 1960s. In Victoria the six-wheel FWB passenger cars continued in holiday service until the 1920s.

Before the use of continuous braking many FWB Brake Vans had three axles to improve their braking capacity. The introduction of continuous braking saw most Brake Vans become Guards Vans with the removal of the centre axle.

Location	Cars	Location	Cars
Queensland	22	Tasmania	66
New South Wales	441	South Australia	109
Victoria	279	Western Australia	22
		Total	939

Radial

Apart from Victoria most of Australia's railways had some passenger cars with radial underframes. On these cars some axles were able to swivel or move sideways to provide some steering while rounding curves. As well the passenger cars there were also wagons which had six-wheel radial underframes. The New South Wales Railways had 24 eight-wheel radial cars but the six-wheel radial car was more common. The six-wheel radial cars used either the Adams, Clark or Cleminson systems. While some of the Adams radial passenger cars continued to work as radial vehicles throughout their lives most six-wheel radial cars were either rebuilt with bogie underframes or disassembled and rebuilt as four-wheel fixed wheel base cars.

Location	Cars	Location	Cars
Queensland	39	South Australia	48
New South Wales	61	Western Australia	11
Tasmania	16	Total	175

Four-Wheel Bogie Wooden Body

This group of 6563 cars was the largest group of cars operated on Australia's railways. The first cars were in Queensland in 1864 with the other railways commencing construction in the 1870s. Construction of new cars continued through to the 1950s. The early cars were compartment cars with a wooden underframe but American style wooden Truss framed end platform cars also became common. Later both compartment, side corridor or end platform saloon or compartment cars with wooden bodies were mounted on steel underframes but the last group built in the 1940s were wooden truss framed cars. While all were built as non air conditioned cars Commonwealth Railways later fitted air conditioning to 20 cars.

Location	Cars	Location	Cars
Commonwealth	93	Tasmania	130
Queensland	1146	South Australia	506
New South Wales	2345	Western Australia	514
Victoria	1654	Total	6563

Six-Wheel Bogie Wooden Body

There have been 814 Cars in this group although some cars later in their lives were fitted with four-wheel bogies. The eight cars built by Ashbury in Britain Ashbury in 1879 for New South Wales were the first cars of this type. Limited numbers were built in the 1880s and 1890s. The bulk of the six-wheel bogie cars were built from the 1900s to the 1930s although much rebuilding of these cars continued into the 1970s when some cars were fitted with four-wheel bogies. While all were built as non airconditioned cars Victorian Railways later airconditioned 17 cars.

Location	Cars	Location	Cars
New South Wales	383	South Australia	8
Victoria	155	Western Australia	264
Tasmania	4	Total	814

Steel Body

The first steel bodied cars were the unsuccessful McKean railcars with the two Victorian cars, which had their engines removed and became hauled cars. While in North America steel cars were mandated after 1914, in Australia limited numbers of mild steel cars were built from the 1920s into the 1960s. However, Victorian Railways built Cor-ten steel bodied cars from 1937. The Cor-Ten bodied cars suffered less body corrosion which provided lower maintenance costs resulting in long lives. The South Australian Railway's Islington Workshops followed current Pullman-Standard designs and built cars for the SAR and the Joint Stock *Overland* along with the *Bluebird* DMU cars which had Cor-Ten steel bodies fitted with external stainless-steel fluting. Unlike the Victorian cars, the combination of Cor-Ten and stainless steels caused rapid corrosion. In later life when rebuilt as Crew Cars for use on freight trains some had the fluting removed to become smooth sided cars which reduced the corrosion effect. It was not until the 1960s that all passenger cars were of steel or stainless-steel construction. Most of this vehicle group were airconditioned.

Most of the 904 steel cars were built with four-wheel bogies although Commonwealth Railways fitted six-wheel bogies to some standard-gauge cars when they were transferred to narrow gauge in the 1970s for use on the Marree to Alice Springs working of *The Ghan*.

Location	Cars	Location	Cars
Commonwealth	74	Tasmania	49
Queensland	106	South Australia	71
New South Wales	337	Western Australia	86
Victoria	181	Total	904

Aluminium Body

In Australia aluminium bodied passenger cars have mainly been railcars. The only locomotive hauled cars built new partly of this construction were the 12 cars built in the mid-1930s for use behind the dedicated diesel locomotives on the air conditioned *Comet* trains in New South Wales.

All had four-wheel bogies. Similar non-airconditioned railcars of the same style as the *Comet* cars were also built. During the mid-1960s the *Comet* cars as well as the similar railcar trailers which had steel underframes and wooden body framing and roofs, had the lower external panelling replaced by Plywood panelling. Two of the original cars were rebuilt as dining cars during the 1950s, and one railcar trailer was rebuilt as a brake van for the *Comet*. Eight Tulloch built aluminium "Riverina" railcars were used as locomotive hauled cars in the 1980s and 1990s.

Location	Cars
New South Wales	14
Total	14

Stainless Steel Body

Stainless steel was first used for passenger cars in North America during the 1930s with Australia's first use being on some railcars built in the mid-1950s. However, since 1971 all EMU and DMU railcars in Australia have had stainless steel bodies. The construction of Australia's 483 locomotive hauled stainless steel cars commenced during 1960 with cars built by Commonwealth Engineering to Budd patent methods for Sydney-Brisbane services as well as the Brisbane suburban "SX" trains. These were followed by further stainless-steel bodied cars with the latest built for Queensland Railways during 2003. While most of this group were air conditioned, the 112 Brisbane SX cars, 15 of which later worked in Perth, and the ten Wollongong Double Deck cars converted from and to EMU cars, were not air conditioned. However, a few SX cars were finally air conditioned for use in Auckland, New Zealand.

Location	Cars	Location	Cars
Commonwealth	167	New South Wales	142
Queensland	160	Western Australia	14
		Total	483

CURRENT FLEETS

Locomotive hauled passenger trains now operate mainly in the eastern states with a weekly train operating to Darwin and to Perth. These five regular operators now have fleets totalling 457 cars and vans available for their services.

Queensland Rail (1067mm)

Queensland Rail operate 86 cars on three groups of services.

Spirit of Queensland Cars

The *Spirit of Queensland* is a Push-Pull train operating on the North Coast line between Brisbane and Cairns. It uses 21 cars in three seven-car trains.

Code	Type		Cars Numbers
DTFS	Tilt Flat Bed	3	7402,7409,7416.
DTFP	Tilt Flat Bed	3	7407,7414,7421.
DTLS	Tilt Sitting	6	7403,7404,7410,7411,7417,7418.
DTLP	Tilt Sitting	3	7406,7413,7420.
DTCE	Tilt Lounge	3	7405,7412,7419
DTB	Tilt Luggage	3	7401,7408,7415

L type 'Lander Cars

The 30 L type 'Lander Cars are used on three services, the *Inlander* between Townsville and Mount Isa, *Spirit of The Outback* between Brisbane and Longreach and *Westlander* between Brisbane and Charleville. The *Spirit of The Outback* includes sleeping cars along with dining and lounge cars. The power vans were built later by QR and share no features with the Comeng built L cars.

Code	Type	Cars	Numbers
LAR	Sleeping	3	1903,1905,1906.
LAR	Sleeping	2	1901,1902.
LSCL	Lounge/Crew	2	1909,1910.
LDCF	Lounge	1	1935.
LDC	Lounge	1	1934.
LDC	Dining	3	1932,1933,1936.
LAL	Sitting	5	1875-1879.
LBL	Sitting	10	1880-1884,1927-1931.
LSCL	Crew	3	1904,1907,1908.
PB	Power Van	5	1995-1999.

The Cairns – Kuranda tourist trains uses 33 wooden bodied cars. There are 22 altered *Sunshine Express* cars along with four Davidson and seven 1944 CLV cars. The *Davidson* and the CLV cars have been rebuilt to the side aisle style. This arrangement is very suitable for this service as the scenery tends to be on one side of the railway. The Parlour cars have a saloon interior. The terminal cars on these trains are the 1944 CLV with the KCV cars at the Kuranda end of the trains with the CKV cars at the Cairns end.

Sunshine Express Cars

Code	Type	Cars	Numbers
ALR	Parlour	2	6001,6007.
ALW	Parlour PWD	3	5404,5646,6003.
BB	Sitting	4	6002,6004,6005,6006.
BH	Sitting	2	5801,5802.
BL	Sitting	9	4801,5401,5402 5501,5502,5503, 5601,5803,5804.
BLR	Sitting	2	5403,5504.



Originally built for the *Sunshine Express* during 1944, renumbered car ALW 6003 is departing from Cairns on the "Kuranda" train on Saturday 15 April 2023. The first-class or Parlour cars have the lower body in green. When built, the *Sunshine Express* cars had entrances away from the car ends which entered the compartment directly. For the Kuranda service the cars lost the original doors and received a low-level step-down entrance at diagonal ends of the car. The double door is used for wheelchairs where a platform trolley lift is placed alongside the car.

Tony McIlwain



BLH 752 was built during 1913 as a longitudinal seat Davidson car. It was rebuilt during 1936 as a side aisle car. BLH 752 was at Kuranda station on Sunday 30 July 2006. John Beckhaus

CLV 1944 Type Cars

Code	Type	Cars	Numbers
ALR	Parlour	1	2801.
KCV	Sitting Guard	3	3501,5001,5003.
CKV	Sitting Guard	3	5002,5004,5005.

Davidson Cars

Code	Type	Cars	Numbers
BL	Sitting	1	520.
BLH	Sitting Host	3	579, 750, 752.

NSW Train Link (1435mm)

These 59 cars are used on the Push-Pull XPT trains operated on the Sydney-Dubbo service along with the Brisbane-Sydney-Melbourne services. The XPT trains on the north-south services include a sleeping car. At present two sitting cars are being rebuilt to provide a

replacement sleeping car and an additional buffet car.

XPT Cars

Code	Type	Cars	Numbers
XAM	Sleeping	7	2175-78, 2180-82.
XL	First	9	2228-36.
XBR	Buffet	9	2150-58.
XF	Economy	24	2200-23.
XFH	Economy	9	2104-10, 2112-13.

Journey Beyond Rail Expeditions (1435mm)

Journey Beyond Rail Expeditions have 136 cars and wagons with the 110 *Indian Pacific* cars used on the weekly Sydney-Perth *Indian Pacific* and Adelaide-Darwin *The Ghan* trains along with the summer weekly Adelaide-Brisbane *Great Southern*. These trains include sleeping, dining and lounge cars. There are also 16 Motorail wagons used Adelaide-Perth and Adelaide-Darwin.

The New South Wales Trainlink use DMUs on the five Xplorer services and the Push-Pull XPT trains on other services. Buffet-First class car XBR 2151 was working on the Melbourne to Sydney service departing Goulburn on Friday 25 March 2022. John Beckhaus





Journey Beyond Rail Expeditions on its *Indian Pacific* and *The Ghan* trains include premium class sleeping cars with these cars indicated by a black glazing band along the window line. BRG 175G is at East Perth station waiting to depart on the *Indian Pacific* to Sydney on Sunday 17 September 2017. John Beckhaus

Indian Pacific Cars

Code	Type	Cars	Numbers
BRG	Platinum	6	221,267,269,271,917,999.
BRG	Platinum	5	168,171,972,974,975.
SSA	Platinum	1	260.
ARM	Twinette	7	288,947,951-53,987,990.
ARL	Twin PWD	4	921-923,925.
ARL	Twinette	18	246,248-250,289,291,293,308-310,324-326,920,961-963,992.
ARJ	Roomette	8	242,243,272,282,941,945,973.984.
DF	Dining Car	9	231-233,294,304,927,930,934,964.
DF	Dining Car	1	226.
AFC	Dine/Lounge	1	227.
AFC	Dine/Lounge	4	306,936,938,939.
AFC	Lounge Car	3	305,307, 937.
AOB	Lounge Car	1	265.
CDF	Cafeteria Car	1	225.
AFC	Lounge Car	3	213,237,301.
ACC	Lounge Car	1	222.
AEC	Lounge Car	1	223.

Code	Type	Cars	Numbers
ER	Crew	3	207,906.907.
BRJ	Crew	10	268,270,912,302,303,914-916,918,919.
HGM	Power Van	8	296-298,317,900,902-904.
HM	Luggage Van	4	318,957-959.
BRG	(Stored)	2	170,173.
CDF	(Stored)	4	928,924,929,966.
HM Van	(Stored)	5	255,256,311,312,901.

The *Overland* operates twice each week between Adelaide and Melbourne. There are eight *Overland* cars and one *Aurora* power van for this service. There is also one *Overland* car configured in the present style of the *Indian Pacific* lounge cars which has operated on the longer distance trains.

Overland Cars

Code	Type	Cars	Numbers
CCL	Lounge	1	2.
BJ	First	2	4,5.
BJ	Economy	4	6,7,9,10.
RBJ	Buffet Lounge	1	3.
PCO	Power Van	1	4.

Journey Beyond Rail Expeditions on the *Overland* use the South Australian Railway Workshops built Pullman-Standard style Cor-Ten cars. These cars were built with stainless steel fluting on the body sides. BJ 6 is the lead car on the eastbound *Overland* passing the Adelaide suburb of Mitcham on Friday 1 September 2017. John Beckhaus



The V/Line Cor-Ten steel bodied "N" cars are used on both Interurban and Intercity trains in Victoria. Four sets were used on standard gauge Albury line services but at present the N cars are only used on broad gauge. Buffet-Economy car BRN 47 is at Southern Cross Station in Melbourne on Sunday 8 December 2019.
John Beckhaus



Aurora Cars

Code	Type	Cars	Number
PHN	Power Van	1	2369

Motorail Wagons

Code	Type	Cars	Numbers
AMRZ	Wagon	7	240,244,251,255,263,268,296.
AMPZ	Wagon	9	238,271.

V/Line (1600mm)

While V/Line has been introducing VLocity DMUs there remain Intercity and Interurban locomotive hauled services, using 119 cars. Most locomotives and cars for these trains are fitted for head end power from the locomotive but there are also four power vans available. The 40 N type and 20 Z type cars can be used on both types of service. However, the 55 H type cars which were rebuilt from former Harris EMU cars usually only work on interurban services. There were also six longer body Harris EMU trailer cars which are now the Long H Cars.

N Cars

Code	Type	Cars	Numbers
ACN	First	12	9,12,15,18,27,30,33,36,39,42,51,57.
BRN	Buffet	12	29,31,32,35,37,38,40,41,44,47,49,50,56.
BN	Economy	12	4,8,11,13,14,16,17,23,25,26,28,55.
BDN	Economy	4	2,6,21,50.

Z Cars

Code	Type	Cars	Numbers
BTN	Economy	6	251,253,259,264,265,268.
BZN	Economy	14	252,256,258,261,262,265,266,267,271,272,273,274,275,276.

Long H Cars

Code	Type	Cars	Numbers
BCH	Economy	2	132,133.
BH	Economy	2	152,153.
BTH	Economy	2	172,173.



V/Line converted 58 Harris EMU cars to locomotive hauled cars for Interurban services. There were six cars which were longer than the other 430 Harris EMU cars. On one of the short car sets, conductor-economy car BCH 134 was at Southern Cross station on Thursday 5 December 2019. John Beckhaus

Short H Cars

Code	Type	Cars	Numbers
BCH	Economy	13	121-131,134,135.
BH	Economy	9	141-149.
BTH	Economy	13	162-171,174-175.
BIH	Economy	14	181-194.

Vans

Code	Type	Cars	Numbers
PH	Power Van	4	451-454.

Puffing Billy Railway (762mm)

The Victorian narrow-gauge lines originally used compartment or end platform cars, but in 1919 on the Dandenong Ranges line the NBH Excursion longitudinal seating centre entrance cars were introduced. The Puffing Billy railway now has a fleet of 57 cars. There are now 45 Excursion cars with 11 rebuilt from NQR Open wagons. There are also six saloon cars, three compartment cars, one catering car and two guards' vans.

Code	Type	Cars	Numbers
NBH	Excursion	20	1-10,12-20,23.
NBH	Excursion	8	24-31.
NBH	Excursion PWD	2	51-52.
NQR	Excursion	7	135,146,219-223.
NQR	Excur Open	1	21.
NBHC	Excur Grd	1	11.
NBHC	Excur Grd PWD	6	1-4,21,22.
NAL	Saloon	4	1-4.
NAC	Compartment	1	26.
NB	Saloon	1	1.
NB	Compartment	1	24.
NBC	Comp Guard	1	2.
NBD	Saloon Guard	1	2.
NBD	Catering Car	1	5.
NC	Guard's Van	1	2.
NC	Guard's Van	1	5.

Museum and Tourist Railways

These volunteer operated railways mostly operate on weekends and holiday periods mainly on the museum's branch or isolated line. However, there are some organisations which occasionally operate excursion trains on main lines. These railways now have either in operation or stored locomotive hauled cars totalling well over 500 vehicles. Further cars are on static display at many museum locations.

New Contracts

NSW Trainlink and V/line have been working to eliminate locomotive hauled trains and only operate DMU trains on non-electric lines. The new NSW TrainLink vehicles under construction in Spain will be dual mode capable of using the overhead in the electrified areas. The economics of operating long DMU trains versus locomotive hauled trains are often discussed. The operation of locomotive hauled trains with a driving trailer provides some of the advantages of a multiple unit train in terms of a fast turnaround. However, the problem of dividing a locomotive-hauled train enroute can be overcome with a locomotive at each end with two driving trailers in the centre of the train as was originally proposed for the XPT trains. The costs of building, maintaining and operating a larger single engine and transmission system in the locomotive compared with a number of smaller engines and transmissions spread along a DMU train does tend to favour a locomotive hauled train which has six or more cars.

Queensland Rail is developing plans to build new sleeping cars for the *Spirit of The Outback*. The new cars will enable the sleeping cars presently on this train to restore sleeping cars on the *Inlander* and the *Westlander*. At present NSW Trainlink has not announced when the sleeping car on the overnight Melbourne and Brisbane services will be withdrawn.

Acknowledgement is made to the many books and magazine articles that have detailed the rollingstock of the various railways in Australia. The work of Peter Clark, Luke Horniblow, John Hoyle, Tony McIlwain, Arthur Shale, Malcolm Simister and Stuart Turnbull is especially acknowledged along with Journey Beyond Rail Expeditions and V/Line.



The 762mm gauge former Victorian Railways line from Belgrave to Gembrook is now operated as the Puffing Billy Railway. Uniquely among Australian heritage and tourist railways, it provides a year-round daily except Christmas Day service. While the other Victorian Railways narrow gauge lines had compartment cars this Dandenong Hills line had open sided excursion cars, popular on weekends and on holiday trains. Excursion car NBH 16 is at Menzies Creek station on Tuesday 16 March 2010. John Beckhaus