

TROLLEY WIRE

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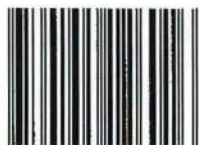


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TROLLEY WIRE

AUSTRALIA'S TRAMWAY MUSEUM
MAGAZINE

AUGUST 2020

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Front Cover:

The Sydney Tramway Museum's San Francisco double-ended PCC car 1014 pauses for a photo during a trial run on the Royal National Park line on 4 July 2020.

William Parkinson

THE NORTHERN TRAMWAY COMPANY

Duncan MacAuslan

Whilst researching the early days of the Melbourne & Metropolitan Tramways Board my attention was drawn to the Northern Tramway Company (NTC), a horse-drawn service running north along Sydney Road from Brunswick terminus of the Melbourne Tramway and Omnibus Company's (MTOC) cable line at Moreland Road to Gaffney Street, Coburg.

The line was the subject of several paragraphs in Bob Prentice's history of the Melbourne, Brunswick and Coburg Tramways Trust. Research on the National Library of Australia's Trove resource soon suggested that this tramway was a product of the speculative land boom that overran Melbourne in the late 1880s, and almost all its promoters are mentioned in Michael Cannon's book *The Land Boomers*, which described in great detail the unscrupulous behaviour of many financial institutions and their directors in this fascinating period of Melbourne's history.

Conception

The first mention of the Northern Tramway Company is in March 1886 when 'a number of gentlemen interested in land in the northern suburbs are prepared to form a company to be called the Northern Tramway Company'. This was in response to the MTOC's refusal to extend its cable line, then being constructed, beyond Moreland Road.

Formation of the NTC was formally proposed on 25 May 1886 at a public meeting in the Coburg Shire Hall. The interim committee comprised George Skinner, a Mr Brown, Thomas Fischer and a W Kelly as secretary. Their proposal to Coburg Shire Council on 8 June 1886 was for a horse tramway from Moreland Road along Sydney Road to O'Hea Street opposite Pentridge Prison.

Another meeting, held in June 1886, formed the company with an authorised capital of £250,000 in £1 shares. The first issue of 50,000 shares to be paid for at one shilling (1s) on application, 1s on allotment with future calls of no more than 1s a month.

The promoters envisaged patronage of 350 passengers a day at a 2d fare, which would pay the line's expenses. If 500 were carried, it would enable a dividend of 6% to be paid to shareholders. Mr George Duncan, engineer of the MTOC, advised that construction would cost around £10,000 and six cars would add another £2,500. By 22 June, the company was still not legally constituted, and from later events it appears that only 5000 shares were sold.

On 21 June 1886 Coburg Shire Council proposed delegating its tramway construction powers to 'a company of gentlemen known as the Northern Tramway Company Limited'. On legal advice the proposed lease for 99 years was reduced to 30 years. The Governor in Council granted the Coburg Council authority to build the tramway in two sections: first, Moreland Road to O'Hea Street and second, from there to Gaffney Street. After much debate, the Council delegated these powers to the NTC on 3 October 1887 which was confirmed on 25 October. The Company finally agreed to the terms of delegation in February 1888.

Meanwhile the Melbourne Tramway and Omnibus Company's Brunswick cable line opened 1 October 1887.

Even though construction had not commenced, the line appeared in land sales advertisements in March 1888 for the Maybank Estate in Shaftesbury Street, Coburg. Advertisements promoting the estate suggested the planned operation of four trams an hour would 'be an important feature to the travelling public'.

The NTC issued a new prospectus was issued on 19 May 1888 which offered 75,000 £1 shares to the public. The company's directors now included a number of land boomers, namely:

- Frank Stuart, chairman¹, also a director of the Essendon Land and Tramway Company which paid £200,000 of shareholders funds to James Mirams of the Premier Building Association, who in turn, when bankrupted in March 1890, paid his creditors only 2d in the £1.
- James Munro, MP, vice-chairman became Premier of Victoria in 1890 and had debts of £309,000 when bankrupted in February 1893. He repaid none of this money and absconded to London after appointing himself Victoria's Agent General there.
- Thomas Fischer, bankrupted in November 1892.
- J. T. Vincent, JP, accountant, bankrupted in 1893.
- P. Benson.

The issue's brokers were Messrs Munro and Baillieu, better known as auctioneers and real estate agents, who were described in *The Land Boomers* as 'partners in audacity'. Donald Munro, son of James, became bankrupt in July 1892 and in his 'secret composition'

¹ The Land Boomers p150

agreed to pay 6d in the £1 to his creditors on his £50,000 debt. WL Baillieu owed around £225,500 when bankrupted in June 1892, and his creditors were prepared to accept 6d in the £1.

The company's bankers were the Commercial Bank of Australia Limited and The Federal Bank of Australia Limited. The latter, founded by James Munro in 1881, suspended payment and closed its doors in January 1893.

George Duncan, the Melbourne Tramways Trust's engineer had been persuaded to supervise construction and was said to have 'expressed a most favourable opinion of the financial results of this undertaking'.

Of the company's 100,000 shares, 5000 were issued to existing shareholders in June 1886. Another 20,000 shares, deemed paid up to 5s, were also allotted to them from the new issue. In addition, they were to benefit from £5,000 in cash 'for a share in their goodwill in the undertaking of the company'. This was a classic land boomer tactic in that it involved quoting a company's subscribed capital as one figure, taking cash from the from the public's subscribed amount, and leaving the subscribing shareholders liable to subsequent calls. The 75,000 subscriber shares would raise £18,750 if paid to the expected 5s maximum leaving only £12,750 as cash for the NTC's construction which was close to Duncan's earlier estimate. The completion date for construction of the tramway under the Order-in-Council was set as 17 January 1889. In late May, Munro and Baillieu reported that the second float had been successful and subscribed very many times over. By 29 June the shares were being quoted for sale on the market at only 4s each, with their market value falling to 3s by the end of July.

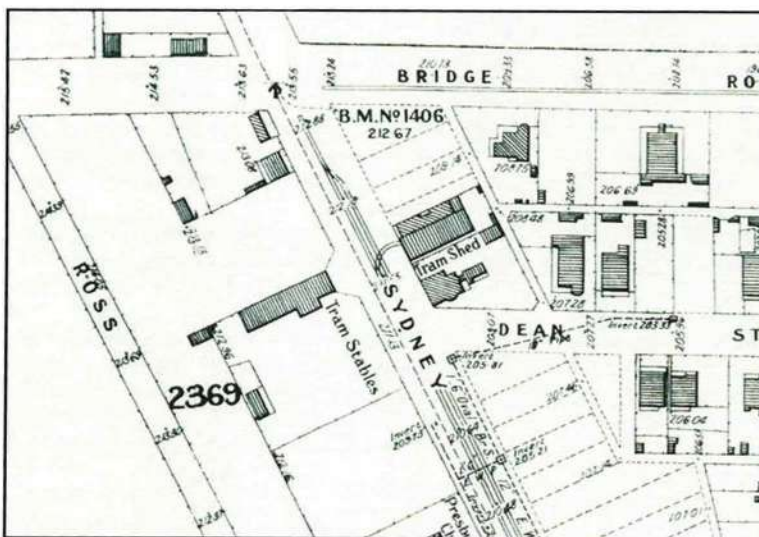
Construction and opening

Land boomers were primarily interested in speculating on the price of land; not building a tramway. It was not until mid-September that tenders for construction, closing on 4 October, were called for the line and car house. Fifty 'pick and shovel men' were advertised for on 30 November, and a tender for the supply of horses for haulage closed on 10 January 1889. Tenders for erection of a stable for the NTC at Gaffney Street closed on 4 February 1889 at Munro and Baillieu's office at 7 Victoria Buildings, Swanston Street, Melbourne.

A test trip was operated on Saturday, 9 February 1889 and it was reported that the cars would run from 14 February. The service was running by 1 March with trips every 15 minutes from 7am until midnight.

A suggestion for duplicating the line was discussed at a general meeting on 20 May 1889. Frank Stuart chaired and remarked that the 'shareholders had a first-class property which was improving every week'. He held 11,000 shares and had not sold one. A motion to confirm the company's new regulations was moved by William John Malpas, a partner in the dubious Melbourne Joint Stock Bank which was wound up in October 1893 and its books destroyed.

A proposal to power the line electrically was made on 22 July 1889 by NTC's secretary Salis Fischer and was supported by Coburg Council. Salis, then aged 41, who was also manager of the Melbourne Trust Finance Company and an associate of the notorious Theodore Fink, committed suicide in 1896 citing financial troubles.

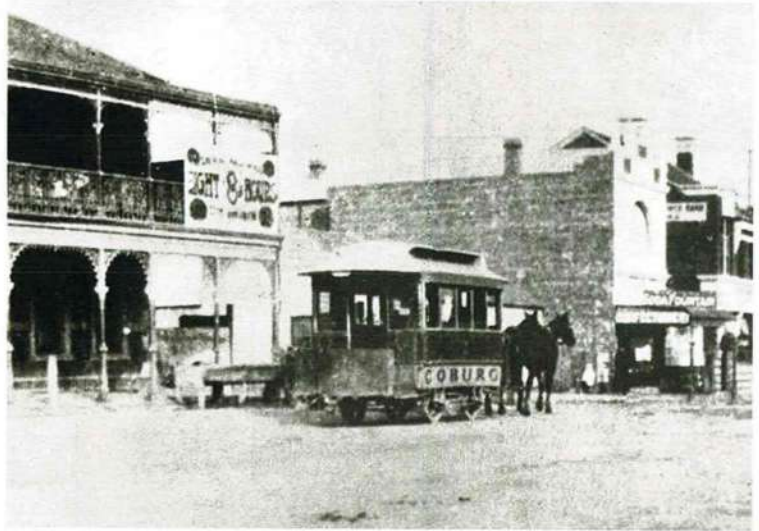


Section of Melbourne & Metropolitan Board of Works map 110 showing location of stables and offices.

State Library of Victoria

NTC car on Sydney road looking south at Warren's corner.

Coburg Historical Society



The tram tracks proved a benefit for drays carrying stone blocks from the quarries to the north of Coburg by providing them a smooth surface. In September 1889 William W Macready (or McCredy), a dray driver, was convicted of obstructing the progress of a tramcar and assaulting NTC's driver Burgess with a whip. He was fined 10s and 20s respectively.

In October 1889 the Company met the Council and stated that the horse tramway system had not worked well. Duplication and electrification were suggested and a new agreement allowing duplication was drafted.

Electrification was discussed on 15 January 1890 at Coburg Council's public works committee meeting. The meeting was addressed by Mr Booth (a well-known electrician from Booth, Ellison and Co) who outlined the overhead, storage and underground systems of current collection. He discounted the underground conduit system as being both expensive and difficult, and whilst the storage system was considered the safest and neatest it was also the most expensive. The Julien battery car had been demonstrated in Melbourne in September 1888. He suggested 400V DC with centre poles 18 feet in height. Booth was asked to prepare a report to Council which was delivered on 3 February. However, nothing came of the proposal.

At the half-yearly shareholders meeting Stuart reported the NTC had recorded a six-month loss of £46 7s 6d resulting from expenses of £194 10s 3d to repair the road from damages caused by brick and stone carters. The estimated cost of duplication was £10,000 which the Union Bank had promised to advance provided the NTC's principal shareholders

did not sell their shares for five years. An alternative was a call on shareholders for 2s 6d.

In October 1890 the company objected to paying rates to Coburg Council on the tram line on the grounds that it had no letting value, and that no rates are claimable under the original agreement. The following March the NTC appealed regarding the rates it was being charged for the tram track, stables and sheds. They were being valued at £250 but the appeal agreed that the tram tracks had no rateable value and consequently the NTC's rates were reduced from £16 to 6s 3d.

The contract for duplication was completed by Woolacott and Co in June 1891 at a cost of £20,000 and was opened on Monday 3 August 1891. The opening was formally celebrated on 13 August 1891 with a catered lunch at the tram sheds that was attended by the company's directors and Coburg's councillors. The total construction costs were reported as £35,000 and running costs £2000 a year. Two second-hand MTOC five-window cars were purchased for the duplication.

Insolvency

Despite the bonhomie of the duplication celebration, the employees were not happy. In September 1891 they drew up a petition asking for daily hours to be reduced from 12½ to 9 hours. Two men were dismissed, one being Mr S O'Keefe, recently employed as a driver and road blocker. He was also secretary of the Progressive Political League and was trying to form a branch of the League in Coburg. Another employee who had signed the petition, a Mr Dunstone, was asked to accept a wage reduction from £2 5s to £2. On refusing, he too was dismissed.

*Outside St Paul's Church at
O'Hea Street.*

Coburg Historical Society



A strike was then threatened.

The NTC's perspective, in a letter from William Ewins, was that passenger levels and revenue were both falling. Dunstone's pay had been raised to £2 5s only a few weeks earlier and this was a request unrelated to the petition. Dunstone, a night groom (who had only recently joined the NTC from the Clifton Hill – Northcote cable line) was offered a few days grace but decided to leave anyway. O'Keeffe, who was accused of authoring the petition, is alleged to have asked another employee, R Burgess, to claim authorship.

When NTC director Thomas Fischer filed for insolvency in November 1892, owing a staggering £185,218 18s 11d, his largest unsecured creditor was the Northern Tramway Company at £8,272 12s 4d; he held 10,785 shares in the NTC.

The following month the NTC proposed that Coburg Shire Council purchase the company. The estimated cost of the line's construction and its equipment was reduced to £27,000. The company had not been in 'a very flourishing condition' and unless some action was taken the cars would cease running. The Council would have had to raise a loan to undertake the purchase and because there was no consensus on the subject, the matter it was deferred.

The tramway struggled on through 1892 and 1893 with Council unable to decide on the line's purchase. However, in May 1894 it decided to acquire the NTC for £12,500, but there was public opposition to the proposal, with a petition being sent to the Minister of Public Works asking him not to support the transfer.

The NTC deemed the situation too difficult and went into liquidation. On 26 May the company's liquidator, Salis Fischer, offered the NTC's manager, William Ewins (already aged 69), the use of the company's plant. The liquidator took responsibility for all debts to date whilst Ewins was to cover expenses from revenue. After consulting with the employees, a co-operative arrangement was agreed. Two drivers were made redundant, and fares were reduced from 3d to 2d, or packs of four for 6d. The new arrangement started on 4 June.

Struggling on

By February 1897 the tramway was in trouble again. The liquidator, now Mr J Butler, suggested that if the Council did not want to take over the asset, the company would remove the rails. Council did nothing until May when the liquidator set 24 May as a deadline when the trams would stop. Council's feeling was that the NTC could not lift the rails and applied to have the NTC's delegated rights forfeited.

In September 1897, Ewins wrote to Coburg Council to advise that a meeting of property owners and influential ratepayers had met and proposed that a new company be formed to take over the NTC. Council appeared to favour the proposal. On 13 September another letter was received from J Drysdale, John Caton and Alfred Buck also wrote suggesting a new company be formed to maintain the service, with the Council maintaining the road surface.

Ewins proposed to electrify the line in October 1901 with overhead using either centre poles, as in Sydney, or side poles, poles to be 20 feet high, and powered

Horse car and shunting cable cars at Moreland Road.
Coburg Historical Society



by an 80hp to 100hp steam plant located mid-way along the line. Speed was to be 15mph with a possible maximum of 25mph. To enable electrification, Council would have to appeal to the Governor in Council for an order under the Tramways Act 1890, and then delegate the authority to Ewins. The Coburg Council's engineer supported central posts, but they would need lit all night which would require the existing 24 gas lamps to be replaced, a move that would increase land values. Council agreed to share costs with Ewins. Again, nothing became of the proposal.

Ewins is reported in April 1904 as offering the NTC to A C Morgans of Perth, who was at the time proposing electric tramways in Essendon having failed to do so in Perth.

The Coburg Council was often dissatisfied with the condition of Sydney Road. In April 1904 it suggested top-sheeting with tar was preferred to the existing method of relaying small numbers of the woodblocks

in sand. In an attempt to improve the road surface, it instructed its solicitor to enforce the NTC's contract in relation to road maintenance. Ewins' response highlighted the ongoing issue with tramway legislation which required the tramway operator to maintain 18 inches on either side of the track which was then used by the horse-hauled traffic. Many tramway operators saw this as means of reducing the Council's costs at the operator's expense since the rest of the road needed less maintenance. Ewin's wrote 'All the clay used in the potteries in Brunswick passes over the road daily in strings of twenty carts each carrying two tons or more. Also, there is the heavy spawl and pitcher² carting from the Newland quarries and the general traffic, heavy and light'. Council periodically complained about Sydney Road's surface for the rest of the tramway's life.

² Spawl - fragments of stone with one thin edge,
Pitcher - granite setts for paving.

NTC car at the corner of Bell Street.
Coburg Historical Society



In reply, Coburg's President, Arthur Voice, claimed that Ewins had done little maintenance and that in some places the rails were two inches above the road, thereby preventing traffic from using the tramway right of way. A few weeks later some ratepayers petitioned, defending Ewins 'as during the 15 years of his management he had done the best that circumstances permitted'.

Ewins suffered a heavy loss in April 1904, when one of his horses, valued at £20, died. His tram driver, Michael Roberts, had just reached Moreland Grove at 10.30pm when the horse dropped dead.

The only recorded fatality on the line occurred on 18 December 1904 when ten-year old Albert Pearce jumped off a moving tram and fell under the wheels. The Coroner observed that schoolboys frequently jumped on at the front whilst the driver was collecting fares at the back. The inquest returned a finding of accidental death.

In June 1907 Ewins went before the Coburg court to reclaim £1 12s from a patron for use of eight months of tickets. The defendant did not appear and Ewins was awarded the amount plus 18s costs.

The Coburg Leader lauded the introduction in August 1907 of a Sunday service using a 'handsome drag' from Bell Street to the Coburg Cemetery half-hourly between 2pm and 5pm. A daily 'commodious waggonette' provided a service from the terminus to the New General Cemetery and Campbellfield at 9am, 2pm and 6.15pm, with return departures 45 minutes later. The tram service operated every ten minutes using five twenty-two seat cars. Twenty-four horses work three to four-hour shifts with ten drivers. Fares were 1d per section, Bell Street being the section point, but 1½d two-section tickets were available from drivers in packs of 4 for 6d. A monthly ticket was

available for 4s, and 2s6d for children and apprentices. The monthly oat bill was around £20 and all shoeing and blacksmithing takes place in Coburg.

Electrification again

The NTC again proposed electrification to Council in July 1907 and it was accepted subject to a £250 deposit and an agreement on terms within three months. A member of the Coburg Progress Association (CPA), Mr Shaw, said an American journal noted that the tram service was 'the slowest means of locomotion on the face of the earth'.

A few days later the CPA had received a proposal from a 'motor car operator' offering a five-minute bus service from O'Hea Street to Moreland Road using three or four 15-seat buses. The CPA would pay licence fees which would be refunded if the service was successful.

In September 1907 the CPA suggested the Coburg Council should hold a public meeting to discuss acquiring and electrifying the tramway. Ewins wrote to council in October 'desirous of improving and extending the tramway system, and if possible, of providing for its electrification'. The debate on electrification and road maintenance continued during 1908.

The CPA's plans developed, by January 1908, into a proposed company to provide power to Coburg, part of Brunswick as well as the tramway. The cost was estimated at £25,000 and revenue expected to be around £6000 a year. Coburg Council was unable to assist with funds, but if work was completed within three years it would then grant a 25-year lease.



NTC car at Bell Street looking south, with Kingdon's Hotel on the left.

Coburg Historical Society

Whose Lease?

In November 1908 William Ewins' son, Harold, acting for his aging father, invited the Coburg Council to purchase the tramway at valuation. He was invited to attend the Finance Committee's next meeting. Nothing came of this offer and it was offered for sale again in June 1909 when William Ewins admitted he was unable to keep the track in repair.

Harold Ewins informed Council he had sold the NTC to Mr. Hubert Junker on 16 July 1909 however the transfer of the lease was delayed by Council. Junker, whilst contemplating electrification, objected to Clause 1 of the NTL's agreement which required the lessee to maintain the track and imposed a £5 daily penalty for neglect. On 1 September, Junker was given 21 days to make up his mind or else council would refuse the transfer and proceed against Mr Ewins.

Council engaged King's Counsel Mr Mitchell for an opinion on who it should pursue for the cost of road works. In his opinion, given in March 1910, it was William Ewins and Herbert Junker. He also suggested that it would be relatively easy for Council to obtain an Act to enable them to acquire the tramway.

Fair wages for the NTL employees was raised again in October 1909 when one of the employees said he worked from 4.30am until 6.30pm with two hours for meals seven days a week for 25s. Council agreed to add a fair wages clause to the lease.

Junker transferred ownership of the NTL to his son in law, Archibald Peers, in March 1910. Peers also refused to accept Clause 1 but proposed to pay council £175 and then £75 a year towards Council keeping the track and road in order. Council agreed to this but still declined to transfer the lease to him.

Hubert Junker committed suicide by taking strychnine on 22 June 1910. He had also been licensee of Fairfield's Grand View Hotel and had previously threatened to take his own life.

To further complicate matters, William Ewins died on 14 August 1910 at the age of 85. This meant that, as incumbent operator but without a signed lease, Peers was the only person Council could deal with.

Complaints about the tram service continued regarding infrequent and slow service; it was said to be quicker to walk. In January 1911, Council served a writ on Peers to prevent him using the tramway as a trespasser without a lease.

Council operation

Council finally resolved the impasse by purchasing the NTC from Peers in August 1911 for £2,100. At the same time, they agreed to cease the expensive litigation against him and Ewins' estate. Purchase was funded by a loan from the AMP Society at 4.5% interest. In addition, the Council agreed to pay the employees higher wages.

W F Skinner was appointed tramway manager and by February 1912 the service had improved considerably with returns improving. Tickets were introduced in May 1912 despite a lack of enthusiasm by local businesses to advertise on them.

During 1912 Brunswick and Coburg councils started discussions which led to the formation of the Melbourne, Brunswick and Coburg Tramways Trust. The Trust's first meeting was on 28 February 1914 and on the 22 March the Coburg horse tramway was transferred to the Trust's control. A year later the Trust paid the Council £2646 for the system including buildings and rolling stock. The Trust finally rectified the road surface problem by laying asphalt on the tramway.

Unwept

The trams ceased running beyond Bell Street on 2 December as track removal began. The last tram left Moreland Road at 11.05pm on Sunday 5 December 1915. This enabled the Melbourne, Brunswick and Coburg Tramways Trust to complete removing the old track in preparation for laying the new electric tramway. The Trust's Chairman, Mr T O'L Reynolds, Mayor of Coburg. Cr A T Hackett, JP, and Cr A G Campbell boarded the tram and a small crowd gathered to witness its departure. Driver Frank Keane was in charge and later on, Mr Harry Bates, who drove the first NTC horse trams took the reins and drove in the last time. The track was roped off and the former passengers of what was variously described as the 'penny struggle' and hearse tram were catered for by 'drags'.

A poem read:

It is hard to recall old Noah of old,
With his ponderous, cumbersome Ark,
But really, I think, if the truth must be told,
To the Coburg horse tram, it's a lark.
I've heard of camels and even of mules,
As transport, sometimes e'en worse;
But the lot of them certainly rank as mere fools
To the tramways known as 'the hearse'.



Coburg horse tram rails being removed south of Bell Street in late 1915.

Coburg Historical Society

On Thursday 11 May 1916 the horses and property were auctioned. The harnesses brought a 'fair price'. Mr Dwerryhouse, of Fawcner, purchased three of the cars at £6, £5/10/- and £4/10/-. Mr Reg Crosbie Bentwick purchased one at £7/10/-. The four roomed caretaker's cottage, with car shed and offices, standing on 50 feet of land, only realised £400, while the 20ft x 130ft galvanised iron and wooden stables sold for £75.

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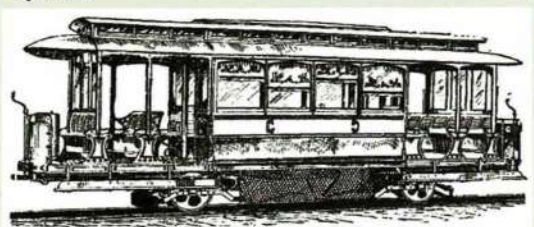
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Published in the *Daily Telegraph*, Saturday 25 March 1899, page 6:

NEW TRAM CARS

The Railway Commissioners are having three classes of tramcars built for use on the George-street electric line, for the North Shore lines, and for the lines that are to be converted from the steam system. One is the style of enclosed car now in use on the Glebe and other steam operated tracks. Passengers and others who have travelled by it will not have been particularly struck probably by its smooth running. Almost necessarily, however, it is a type of car not suited to steam traction, being too light for the rough traffic. Under the electric system it is expected that the inconveniences will disappear. There are two other kinds of car on the combination principle now on the stocks. That is to say, a car in which part will be enclosed and part quite open, and available to smokers, and those who prefer to travel in the open air, and cut the breezes as the vehicles rush madly along. One sort of car

will be open at both ends, and have the saloon or enclosed compartment in the middle. Along the cars a platform will run affording a side entrance to the seats. The third type will have the saloon covering one end, while the other end will be devoted to open seats. The largest of the cars will carry about 40 passengers. Contracts are now in hand, and are to be completed in time for the opening of the electric system.



BACKTRACKING TO GENERAL ELECTRIC'S FIRST-EVER AUSTRALIAN PROJECT

Natalie Filatoff

In 1896, just four years after GE was incorporated as The General Electric Company, it sent one of its most experienced electrical engineers, 45-year-old Joseph Stillman Badger, from its Schenectady rail facility in the United States, to oversee the electrification of the Australian city of Brisbane's horse-drawn tram network.

Badger's journey from Schenectady to Brisbane was a lengthy one. Following a cross-country train ride, he sailed from San Francisco, stopping in Honolulu and Auckland, reaching Sydney almost a month later. For the final leg to Brisbane, Badger again travelled by sea on the coastal steamer, SS Wodonga.

When Badger arrived in Brisbane to manage GE's first such contract in the South Pacific, the city had 20 miles of track and 51 horse-drawn trams. He began his campaign to engage the populace with GE, in an interview in Brisbane's Courier newspaper.

He said, "Brisbane is a model city for electric tramways and, in fact, any city as widely scattered as Brisbane is well suited for such a system... Our company, so far as we're concerned, intend to make this Brisbane system an exhibition one for Australia, to be able to point to as an example of what our machinery can do."

Hundreds of men contributed to building the Brisbane Tramways Company (BTC) premises and an adjacent powerhouse—since the city had no electric plant capable of powering a tram network. They installed three Robey steam engines, each of which drove a 300kW, 550-volt DC generator, via a huge flywheel, almost six metres in diameter. Four Babcock and Wilcox boilers, heated by coal-fired furnaces, raised the steam that powered the engines.

In one of the first Australian instances of a private generator returning power to the 'grid', the powerhouse would later supply its excess generation to surrounding homes, businesses and facilities such as the Mater Hospital, the Children's Hospital operating theatre, the jail and many of Brisbane's railway stations, as well as meatworks and coal wharf operations.

Meanwhile, Badger continued to champion the incoming GE technology, while working to a tight deadline of delivering an electrified tramway by June 1897. In another interview with the Courier, he said,

"The motors to be supplied in the cars here are the latest and most perfect in pattern, being our GE800 motors, capable of driving any ordinary 30ft car, fully loaded, at from ten to fifteen miles per hour, the speed, of course, depending upon the nature of the ground—that is, whether running on the level or up an incline."

There are plenty of hills in Brisbane, but the biggest challenge that emerged to BTC's ambitious plan to electrify the trams within a year was local manufacturing's inability to absorb the cost of constant design changes to the tram cars. The resourceful Badger instead met his deadline with a cobbled-together carriage, adapted from a horse-drawn prototype.

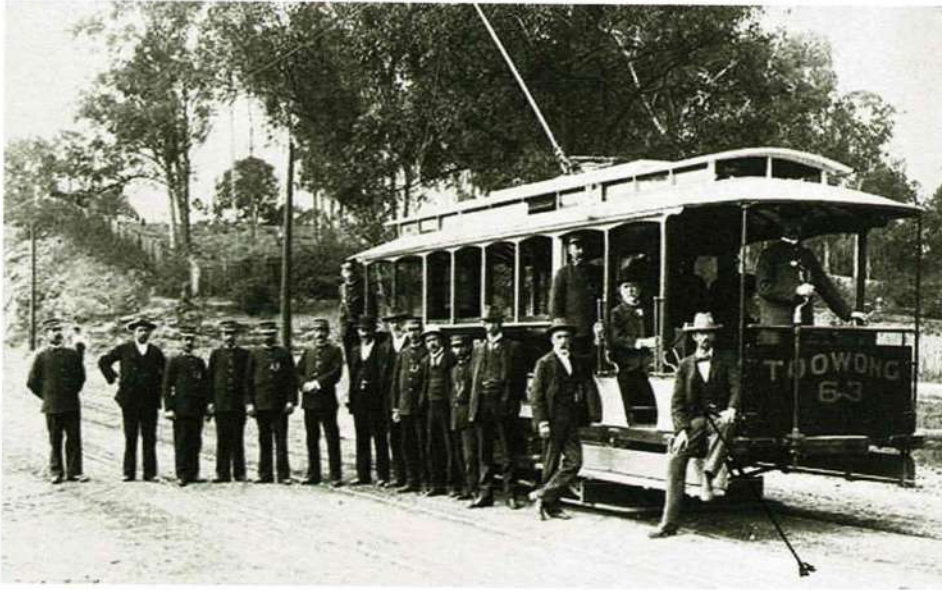
A band played on June 21, as Badger drove the first electric tram, on schedule, past South Brisbane Municipal Council Chambers and across Victoria Bridge. The Courier reported that, "Those who travelled on the new car expressed themselves fully convinced of its immense superiority to the horse cars."

Soon 20 California cars were running on 15 miles of track. "At Countess Street, a new car building program was underway and, in the suburbs, new rails were



Joseph Stillman Badger.

Royal Historical Society of Queensland



Above and Below:

J.S. Badger, indicated by a hand-drawn arrow, beside what is believed to be the first tram to run to Toowong in 1903.

Brisbane Tramway Museum

sunk into the streets with new wires knitted into the sky,” writes historian David Burke in his book, *One American Too Many: Boss Badger and the Brisbane Trams*, published in 2012 by Queensland Museum.

By the end of 1897, Badger had left GE to become general manager of BTC in addition to his chief engineering duties.

The former electrical engineer from GE expanded the tram network until the proposed government buy-out of the company complicated further investment. When the sale was finally completed in 1923, it was noted that in the past year, the tramway “had run more than 5 million miles and carried 71.5 million passengers,” writes Burke.

Badger left Australia for retirement on an orange grove in California. He died in 1934 at the age of 83.

Families and tram aficionados can still appreciate the turn-of-the-century technology that Badger brought to Brisbane at the Brisbane Tramway Museum in Ferny Grove. Here, dedicated enthusiasts, some of whom were among the electrical technicians who maintained the trams until they were replaced by buses in 1969, run six trams and continue restoration work on others.

Says Peter Hyde, vice president of the Museum, “A couple of our trams still have GE controllers and motors, and we’ve never had any problems in all the years we’ve been working with them.”



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FARES, PLEASE!

TRAM CONDUCTORS AND THEIR WORK.
HOW THE SYSTEM IS MANAGED.
SOME INTERESTING FACTS.
142,000,000 PENNIES ANNUALLY COLLECTED.
OVER £5000 IN 'SHORTAGES.

When the tram conductor calls 'Fares, please,' has it ever set you thinking of the methods pursued by the authorities in the conduct of that particular branch of the service? Probably it has, for is not curiosity one of the most striking characteristics of human nature? Any mortal minus a vein of curiosity would certainly be entitled to a special position in the museum.

An 'Evening News' representative was deputed to ascertain how the conductors in Sydney are controlled, the system adopted in supplying them with tickets and change, the manner of paying in the takings, and other matters of general interest.

There are eight depots — or revenue offices, as they are officially termed — and several of the most important were visited. These depots are situated as follows, and practically serve as the local headquarters for the lines mentioned: —

- Fort Macquarie Depot: Railway, Zetland, and Crown-street.
- Dowling-street Depot: Botany, Alexandria, Henderson-road, Coogee, and Botany Extension.
- Waverley Depot: Bondi, Bondi Junction, Waverley, Bellevue Hill, Waverley Extension, Long Bay, and La Perouse.
- Rushcutter's Bay Depot: Ocean-street, Dover-road, and Watson's Bay.
- Newtown Depot: Dulwich Hill, Enmore, Addison-road, St. Peters, and Cook's River.
- North Sydney Depot: Ridge-street, Mosman, Willoughby, and The Spit.
- Ultimo Depot: Pyrmont, Glebe Point, and Cleveland-street.
- Rozelle Depot: Balmain, Abbotsford, Drummoyne, Leichhardt, Annandale, Lilyfield, Ryde, Haberfield, and Elliott-street.

The ticket supplies

Supposing you had just joined the service and had signed on at any one of these depots for your first shift. The clerk would hand you one pound in change, with about three shillings of the amount in coppers. This sum is retained by the conductor until leaving

the service, or until he has been absent for three consecutive days, when it must be returned. The 'takings' are handed in at the end of each shift, but the conductor before paying in first deducts one pound in small change, in readiness to start operations on the following day. On beginning each shift the conductor is given his 'case,' which includes blocks of tickets (250 in each) of various values, according to his run. On the Railway trams, for instance, the conductor would receive five blocks of 'pinks' (one penny); on the Watson's Bay they would range from one penny to fourpence; and so on. He also receives a section sheet — so that the takings on any particular section of a run may be checked — and a daily journal. On the latter the starting number of each block is inserted, and the finishing number must be written in when the conductor is going off duty. The total number of tickets supplied is left to the discrimination of the conductor, who is supposed to be able to gauge his requirements; but should he misjudge and run out additional ones are supplied.

Paying in the takings

When paying in, the conductor is not allowed to balance his cash with his journal. Anyone offending against this regulation is severely dealt with. The men themselves say, if caught, they are liable to dismissal. The conductor wraps up the coins in packets, according to their value, and then, together with his journal, hands the money to the receiving clerk, who checks it, and initials the journal. Should there be any shortage, the amount is deducted on pay-day, once a fortnight. The conductor is not permitted to pay it in to right matters. Shortage sheets are posted up in prominent positions at each depot. On these appear the names of all the conductors, and beside them their respective shortages.

These shortages have a wide range. At one of the depots visited the sum of 9s 5d was entered for deduction — rather a large amount to come from a man, even though he be earning the maximum of 8s; but several conductors who were examining the sheet at the time explained that the sum quoted was not by any means a record.

Should a conductor have the misfortune to lose a block of tickets, no excuse is taken, and he is charged for it. Should he tear off an extra ticket by mistake, or accident, he is supposed to have it signed by an official and submit a report, but as this entails a considerable waste of time the men prefer to let it go as a shortage. Once a wrong ticket is torn off for a passenger, it is against the regulations to sell it to another, and if it should exceed in value the ticket really required by the passenger the conductor is expected to pay the difference.

On the matter of shortages the men complain bitterly. The receiving clerk counts the cash in their presence (in the steam tram days when tickets were used they were weighed up), but nevertheless they maintain that, not infrequently the clerks make blunders, and they have to pay the piper. There would appear to be some foundation for this complaint. While the reporter was scanning a shortage sheet, a conductor pointed out his name, with the sum of one penny debited against it, and then produced a slip he had just received informing him that his shortage was 3s 8d. "And I'll have to pay it, too," he added, "just because a clerk likes to make a bloomer."

Should the men pay in a surplus, they say, nothing more is heard of it—"they have to whistle for it." The shortages are a result generally of the conductors in the hurry of busy trips giving passengers more change than they are entitled to.

In the Waverley club room (next the depot), and also at Fort Macquarie different batches of the men were asked what they considered would be a fair average shortage, per week, for each man in the service. Strangely enough at both places it was assessed at exactly the same amount—one shilling. As there are close on 2000 men concerned, this average would represent an annual total of £5200

Earnings of the various depots

There is a considerable difference in the earnings of the various depots. Waverley, which takes in the races and cricket ground sports, comes first. On a race day, when the fares are eighteenpence (which also admits to the course), a conductor on a 'special' frequently takes £22 or £23 for two and three trips!

Next come Newtown and Rozelle, about equal, followed by Dowling-street, Rushcutter's Bay, and North Sydney, with Ultimo and Fort Macquarie a bad last. The railway run is attached to the last-mentioned depot, but the small takings there are accounted for by the fact that the fares are, of course, all pennies. It is the busiest run in the service—a conductor could collect the same amount on any other line without half the work. A man who collects five pounds on this line



Tram guard signing on.

during his shift certainly has a very strenuous time, for he is hampered in his operations by overcrowding, and to reach that total he must collect from, and give change to, 1200 people.

Percentages of the coins

It is estimated that the coppers taken throughout the service amount to fully 50 per cent of the total takings. Threepences and sixpences absorb another 30 per cent., and coins above that value the remaining 20 per cent. Naturally the conductors, in order to avoid their weight, endeavour to keep as few coppers as are likely to be necessary, but any passenger, on receiving change, can refuse to take more than four pennies or four halfpennies. Should a conductor find he is getting overloaded, he changes the coppers for bigger money at a shop.

A guide as to the standing of any particular locality may be gained from the amounts tendered by passengers. On the Rose Bay line, the coins are generally large, and the conductors have difficulty in supplying change. On the services running through poor localities the coins are invariably small, and the conductor is only too happy to oblige any passenger who desires change of half-a-sovereign or a pound.

On every line on Saturdays and Sundays the coins are large, as the majority of passengers are 'flush' with their week's salary. Sunday is always the most troublesome day in the week for conductors in regard to change.

The banking methods

The whole of the takings are deposited with the head office of the Bank of New South Wales, Government business. The deposits from each revenue office are banked separately. The money is conveyed in a chest (measuring about 2ft 6in square) by two uniformed conductors, who are always accompanied by a man in plain clothes. The latter is the escort, and in his hip pocket he carries a six-chambered revolver, in readiness for any emergency.

The reporter visited the bank when the various depots were paying in. The half-pence were in 2s 6d packets, the pennies in 5s, the threepences in 10s, and sixpences and over in pounds. As a couple of Newtown men straightened themselves up, after having deposited their load on the floor at the counter one of them remarked: 'Thank goodness that's over. It nearly broke my back.'



Taking money to the bank.



Conductors paying in their day's takings at the depot.

It was certainly a substantial load, for it was within fourpence of one thousand pounds, the coppers alone being valued at over nine pounds. The takings covered a Saturday and Sunday.

A strong leather bag— about the size of an ordinary Gladstone— sufficed for the Fort Macquarie depot contribution to the revenue. Most of the money paid into the bank is in large coins — the greatest number probably being two shilling pieces and half-crowns. The coppers, apparently, are kept in outside circulation. Whenever the tramway authorities are running short of the useful 'brown,' they notify the bank, which supplies them fresh from the Mint in lots of five pounds.

Some interesting statistics

The total takings on the trams last year amounted to £1,185,568. On the basis that half of this was collected in pence, it would represent a total of 142,268,160 for the twelve months, or 389,775 daily. Sydney Mint officials give the legal weight of a penny as one-third of an ounce, and its diameter 1.2 inches. This would mean a total weight in copper for the twelve months of 1326 tons, and were it banked annually, its removal would require a train of 132 trucks, each containing 10 tons — a heavy average load.

Were the pennies placed end to end, they would reach 2694 miles — or roughly from Sydney to Auckland (N.Z.), and back to Sydney!

Complaints of the conductors

In conclusion, a few words may be said with reference to the complaints of the conductors. It must be conceded that where so many men have to be controlled strictness must be observed by the authorities. The men themselves realise this, but contend that many of the regulations are both arbitrary and unjust. They complain that were they not so shorthanded, the losses which they sustain through shortages would be considerably lessened. As it is, on the busy trips, they must scramble to collect fares, for should a ticket examiner board a tram and find a passenger who has not paid, or one who has gone beyond the section for which the fare has been paid, the conductor, as already stated, loses portion of his good conduct holidays, or is fined.

The men, it may be stated, annually receive one day off for each public holiday, and six days in addition for good conduct. One man confessed he had already lost the whole of his good conduct holidays, and had also been fined one shilling for each of three alleged offences.

‘There’s luck,’ he remarked, gloomily.

‘Never mind,’ commented a companion; ‘we’re all in the same fix. A man who could get through without losing most of his holidays would be a marvel. I’ve never met him.’

What are known as ‘the casuals’ apparently fare badly. These men do duty when a ‘regular’ is having a day off, or happens to sleep in. They must report themselves at the depot to which they are attached at 5 o’clock every afternoon to see the notice board, which informs them when they must report for duty. It was stated that not infrequently different arrangements are made after the notice board has been exhibited. A casual, for instance, may have first been booked to sign on at 5 o’clock the following morning. On arrival at the depot in readiness to do so, he might find to his disappointment that since seeing the notice sheet the previous day it had been altered, perhaps, from 9 a.m. to 5 p.m. As a consequence he loses his day’s work, and as he must attend again in the afternoon to read the notice for the following day, he has little chance of getting an odd job elsewhere to fill in. These men are paid only for the days on which they are employed.

The balance of the complaints are of a comparatively trivial character, but apparently are sufficient to cause dissatisfaction.

Published in the *Sydney Morning Herald*, Saturday 19 June 1948, page 4.

Leap From Car To Stop Driverless Tram

A tram conductor jumped from a police patrol car on to a moving driverless tram yesterday morning and stopped it.

This is the second case in six weeks of a driverless tram being found travelling through the streets.

The tram, which had been stolen from Waverley depot, was seen speeding along Anzac Parade.

Police chased it in a patrol car, passed it and alighted, but were unable to jump aboard.

They then picked up Conductor Elersley, of Dowling Street depot, and resumed the chase.

When the two vehicles were travelling side by side, Elersley jumped from one to the other.

The tram was first seen with a driver at the controls about 2:50 a.m. racing along Green’s Road, Paddington, towards Moore Park. Later it was seen near Robertson Road, travelling southwards.

Daceyville police sighted the tram, then without a driver, shortly after 3 a.m. near Boyce Road, Maroubra.

Detective Baldwin, of Waverley, is investigating.

The Minister for Transport, Mr. O’sullivan, said, apparently a man who had a key to unlock the tram removed it during the absence of the watchman.

This article was first published in *One Hundred Years of Engineering* in October, 1934

METROPOLITAN AND PROVINCIAL TRAMWAYS

By T. P. Strickland, B.E., M.Sc., M.L.E.Aust., Chief Engineer;
and Lewis E. Russell, Melbourne and Metropolitan Tramways Board.

While Melbourne has a history of almost 100 years, and early pioneers have long since passed to their rest, it is nevertheless true that many people still living remember the beginnings of organised transport. To Cobb and Company belongs the credit. Who the "Co." were is not known, but Cobb was a citizen of the United States who imported coaches and drivers alike from the land of his origin in 1852. Like all pioneers he had his imitators. His prestige was such that apparently anybody who started a coach service called it "Cobb's Coaches," or some similar variant. So that "Cobb & Co.'s coaches" were running even in New Zealand. George John Watson, for instance, who became starter for the Victorian Racing Club, owned a coach or two in his early days.

As in all modern cities, the development of Melbourne has been greatly influenced by the means of transport. A rapid increase in population has followed each development in the transport art. First there were coaches plying between the city and such suburbs as St. Kilda, Prahran, Carlton, North Carlton, and Hawthorn, and then the first railways to Port Melbourne (1854), St. Kilda, and Brighton. The presence of the railway explains why some of the oldest houses in the Metropolitan area are to be found within the Brighton municipality, and partly explains the early development of the city to the south instead of to the north. People followed where transport led. Naturally, development was slow while land was being cleared and swamps were being drained, but, as roads were constructed, more and more coaches appeared; soon it became obvious that some organised effort would have to be made to give coherence to go-as-you-please methods.

In 1869, the Melbourne Omnibus Company was formed. Three years later it was wound up voluntarily to make way for the Melbourne Tramway and Omnibus Company, the intention of the latter concern being, as the name suggests, to include the construction of tramways within the city and suburbs amongst its activities. The latter proposal took 13 years to fructify. Several years were spent in discussing what new form transport should take. More years passed before Parliament enacted the legislation necessary giving the company power to lay down tramways with the consent of the municipalities interested. That point having been reached, and thirteen municipalities

having expressed their agreement to the laying down of tramways, a Tramways Trust was formed, the members of which were appointed by those municipalities. The Trust members numbered 18. Of that number seven were appointed by the Melbourne City Council.

Having decided to adopt an underground cable system, the Trust in the exercise of its powers had to raise the funds necessary to pay for the construction of the tracks and engine-houses. Under the provisions of the Act incorporating the Trust, the latter was under the obligation to complete the proposed work of installation by the end of 1883. As a matter of fact, the work was carried out with two years to spare. When the tramways tracks were completed, the Trust gave the company a lease for 32 years as from the 1st July, 1884, when the liability for the interest on the loans raised for the construction of the tramways was commenced. In return, the company, as its share of the bargain, had to find the capital for the necessary rolling stock, and for the equipment of the lines and engine houses. Annually the company had to pay to the Trust the interest upon the loans, together with a sum sufficient for a sinking or redemption fund to redeem all the Trust's debentures at maturity. Finally, it undertook, on the expiration of the lease in July, 1916, to hand over the tramways in good working order to the Trust or its successors. The arrangement worked to the satisfaction of all. The company realised handsome dividends for its shareholders, the municipalities concerned got the trams they desired, and the people, were supplied with the transport they required.

On the 11th November, 1885, the first cable tramway – that to Richmond – commenced running, and an interesting fact in this connection is that the cable car which inaugurated the service, No. 1, has completed more than 1,000,000 miles in operation and can still be seen on a Saturday afternoon proudly conveying its load to a football match. The various lines were opened to traffic in the following order:

Richmond	November 11, 1885
Fitzroy	October 2, 1886
Victoria Street	November 22, 1886
Clifton Hill	August 10, 1887
Nicholson Street	August 22, 1887

Brunswick	October 1, 1887
Carlton	December 21, 1887
Brighton Road	October 11, 1888
Prahran	October 24, 1888
North Melbourne	March 3, 1890
West Melbourne	April 1890
South Melbourne	June 17, 1890
Port Melbourne	June 17, 1890
Windsor	October 27, 1891

At the end of 1891 there were 41 miles of cable line in operation. The total length of the ropes in motion under the various roads was about 95 miles.

The design of the cable system as a whole, and in its detail parts, reflects the greatest credit upon its designer, the late Mr. George Duncan. That the method of construction was sound is shown by the fact that, except where converted to electric traction, the original tracks, engine houses, cars, and depots are still in use. All equipment, including engines and boilers, was designed and built in Melbourne.

The system differed from most of the previous cable systems in that the rope was placed to one side of the tunnel instead of being directly below the centre line of the track. Lines entering the city from the north had the rope on the right side, while those entering the city from the south had the rope on the left. Consequently, while it was possible to route through from north to south, through routing in any other directions was restricted. As a rule, most of the engine houses operated three ropes, the length of which varied from 16,000 to 33,000 feet. Each route had its own set of cars, distinguished by a coloured dome on the dummy and coloured lights on the trailer, the route numbers being painted on the dash, so that interchange of rolling stock, except in emergencies, was not the practice. The speed for which the system was designed was 9 miles an hour, but it was ultimately raised to 11 and 12, and on some lines 13 miles an hour. As the cars ran at frequent intervals, the citizens of Melbourne enjoyed an excellent transport service. The annual tram mileage, which was 4,000,000 in 1886, had reached 15,000,000 when conversion was started.

Space is not available for a detailed description of the grip, or the many devices for dealing with the ropes, curves, and intersections. Those interested in the design, however, are always welcome at the power house at the corner of Gertrude and Nicholson Streets, where they can be taken beneath the track and see the grip in action below the road.

The cable tramways were received with enthusiasm. At first they were looked upon as a wonderful novelty; it was many years before they were regarded with

hilarity by the visitor from overseas. It was not long, however, before suburban municipalities to the south of the river began to realise that their expansion would depend to a large extent upon the provision of a fast, modern transport system. Malvern Town Council was the first to move, and that it did so was due largely to one man, Mr. Alexander Cameron, who subsequently became the first Chairman of the Melbourne and Metropolitan Tramways Board at its inception in 1919, a position that he still holds. He saw how settlement was encouraged and increased by the presence of a tramway, and he had read, also, that in other parts of the world the cable system was looked upon as out of date, and that the overhead electric system was better in all respects. In season and, his opponents said, out of season as well, he advanced his ideas. The Victorian Railways electric tram from St. Kilda on the 7th May, 1906, and the North Melbourne/Essendon Electric Light and Tramway Company on the 11th October of the same year, prevented him realising his ambition, that Malvern should be the first with electric traction. The North Melbourne/Essendon line operated under a delegation order from the then Councils of Essendon, Flemington and Kensington. Five years later, the Prahran and Malvern Tramways Trust, formed by the Councils of Prahran and Malvern, joined a year later by St. Kilda and Caulfield, and latterly by Hawthorn and Kew, opened its first lines on the 30th May, 1910, with Mr. Cameron as Chairman. That was the beginning of the excellent system which, conducted with courage and imagination, resulted in such a remarkable growth in the municipalities south of the Yarra in less than a quarter of a century. Naturally the older towns, Prahran and St. Kilda, had not the scope for development possessed by Caulfield and Malvern; but what the tramways meant to the latter places will be evident when it is pointed out that in 1910 Caulfield had a population of 11,000 and Malvern 13,000. Today Caulfield has a population of 76,000 and Malvern 47,000, and the revenue of the municipality of Caulfield is now exceeded only by that of the cities of Melbourne and Prahran.

In April, 1916, the Melbourne, Brunswick and Coburg Tramways Trust commenced operations. The Fitzroy, Northcote, and Preston Tramways Trust, and the Footscray Tramways Trust, were formed later, but never operated independently, the construction of the lines being completed by the Melbourne and Metropolitan Tramways Board in 1920 and 1921, respectively.

Upon expiry of the lease of the cable tracks to the company in 1916, the Cable Tramways Board under the chairmanship of Mr. Colin Templeton came into existence. That was but a temporary expedient designed to fill in the gap between the end of the lease and the formation of a Tramways Board for the Metropolis as a whole. That Board, under Mr. Alexander Cameron,

was constituted in 1919, and on the 1st November the cable tramways passed into its possession, the electric tramways following on the 2nd February, 1920. Parliament gave the Board authority to convert the cable tramways to electric traction, and charged it with the duty of preparing a general scheme of tramway development, realising that a complete and unified system was more likely to result from expert investigation than from an agglomeration of schemes independently devised to meet merely local conditions.

A Royal Commission, appointed in November, 1910, had reported in favour of the conversion of the cable system to an electric system with overhead wires. In a report made after full investigation of the subject in the course of preparing the general scheme, the Board set forth the reasons leading it to propose the conversion of the cable system.

Although the Standing Committee on Railways approved the general scheme, considerable opposition in other quarters was displayed, and therefore, it was not until 1924, that conversion operations commenced. In the interval, one large workshop for the building, repair and maintenance of the rolling stock, instead of the existing small, scattered shops, was being constructed at Preston; extensive track renewals had to be put in hand; the small, single-truck type of car, suitable for the suburbs, but not for routing through the city, had to give place to large, modern trams; and gradually the power distribution system was improved so that it is now given through automatic sub-stations controlled from one centre, the supply being obtained from the State Electricity Commission of Victoria.

The dates upon which the electric lines were opened to traffic are as follows :

Victorian Railways, St. Kilda	May 7, 1906
North Melbourne & Essendon	October 11, 1906
Prahran and Malvern	May 30, 1910
Melbourne, Brunswick and Coburg	April 27, 1916
Fitzroy, Northcote & Preston	April 1, 1920
Footscray	September 6, 1921
West Brunswick	July 19, 1925
South Melbourne	October 31, 1925

Another tramway within the Metropolitan area was that which ran between Doncaster and Box Hill between the years 1889 and 1896. It never came within measurable distance of fulfilling the high hopes of its sponsors, and after a chequered and spasmodic career ceased finally in May, 1896.

The conversion of the cable system to electric working, as noted above, was started early in 1924 on the section

of cable track in Swanston Street, between Lonsdale Street and Queensberry Street. This was followed in 1925-26 by the conversion of the St. Kilda Road, Fitzroy Street, High Street and Brighton Road lines. By carrying on the Brighton Road line to Elsternwick, the linking up of south and north by direct electric tramway communication was achieved, and it was then possible to travel from Elsternwick and St. Kilda to Coburg, East and West Preston, and East Brunswick, without changing vehicles. East Malvern, Glen Iris, and Camberwell also were connected directly to the city. The Toorak and Chapel Street lines followed, and then came Flinders Street, which gave through travel between the eastern suburbs and the city. On the conversion of Collins Street, several route changes occurred, the East and West Preston lines ceasing to run to the south, thereby reducing the congestion in Swanston Street, while the Mont Albert, Deepdene and Balwyn services were given the west end of Collins Street as their city termini also. During these conversion operations, transport on the routes affected was provided by a fleet of motor buses purchased by the Board. The work had just been completed and consideration was about to be given for further conversion operations, when the financial depression began to have a most serious effect on revenue, rendering further conversions impossible. They will be resumed early next year, when the Brunswick route will be dealt with. In the meantime, the trolley bus has been improved, and the Diesel engine bus has made its appearance in the traction field. Doubtless, in due course, buses will replace the cable trams on any routes on which the required service is not frequent enough to render electric tramways economical.

In one feature the Melbourne tramways are unique—they have provided a liberal endowment for successive Governments in the last 16 years. The merry game of making tramway passengers pay for all sorts of extraneous objects, such as a London loan, the Metropolitan Fire Brigades Board, the Infectious Diseases Hospital and the Licensing Fund, began when the Government of the day seized the Cable Tramways Board surplus of £866,000 (less £100,000 paid over to the present Board) and paid it into the Melbourne and Metropolitan Loans Redemption Fund in order to facilitate a loan operation, continued when it took £60,000 out of the first year's revenue because it happened to be short of that sum for the purpose mentioned, and has prevailed ever since in annual sums ranging from £84,000 in the first nine months of the Board's existence to £118,000 in 1930. All told, in the last 16 years, the various Governments have collected £2,362,075 from the tramways — an enormous financial drain which no other tramway in the world has been compelled to face. The inevitable results have been slower development and dearer fares, from the point of view of the public, while from the domestic side there is the rankling thought that while the Fire Brigades Board,

which has received £699,000 of tram-way revenue, has a superannuation scheme for its employees, the tramway service has none.

When the Board was inaugurated, it took over 45.9 miles of double cable track, 45 miles of double electric track, 19.3 miles of single electric track, and 0.625 miles of double horse track (Royal Park). The horse track has gone long since, but 24.292 miles of double cable track remain, while there are now 106.747 miles of double and 7.796 miles of single electric track. Apart altogether from the task of turning a mass of isolated, unrelated systems into a coherent whole, the work of the Board expressed in terms of figures is impressive. To give a few of the more striking, more than £900,000 has been spent on conversions, £250,000 on duplications, and £680,000 on extensions. The Board has handled a revenue of approximately £29,000,000, the highest traffic year being 1927, when £2,487,573 was taken; has carried in the region of 3,145,000,000 passengers, and the vehicles have run something like 315,000,000 miles.

As indicated above, the Victorian Railways Commissioners commenced the operation of the St. Kilda Station-Brighton tramway in 1906. Later, the Commissioners built the Sandringham-Black Rock line

and, in response to the usual claims by interested parties as to profits which would accrue, the Black Rock-Beaumaris extension. The Sandringham Council agreed to pay up to £2,000 annually for five years, any losses which might be incurred. During the five years the line remained open the Commissioners lost approximately £23,000. The line from Black Rock to Beaumaris was closed on 1st September, 1931. Litigation has been proceeding ever since. The Commissioners were successful in their action against the Council, and in April last the Council successfully defended its decision to strike a rate to cover the £10,000 claimed by the Commissioners. Both the St. Kilda-Brighton and the Sandringham-Beaumaris lines suffer from poor off-peak loading, a condition which is being accentuated by the renewed growth in private motor car registration.

Small electric tramway systems have been in operation in Bendigo from December, 1899, Ballarat from November, 1900, and in Geelong from March, 1912. These systems, started originally by the British Insulated Wire Company, Ltd., in Bendigo and Ballarat, and by the Melbourne Electric Supply Company in Geelong, are now owned and operated by the State Electricity Commission of Victoria. The single track mileage is 16.55 for Geelong, 13.236 for Ballarat, and 8.113 for Bendigo.

Published in the *Sydney Morning Herald*, Tuesday 13 may 1947, page 7.

TRAMS WILL REMAIN Cabinet Review

The new Cabinet would consider the report by the Auditor-General, Mr. Swift, on tram and bus services, the Premier, Mr. McGirr, said yesterday.

Nothing in the report had yet been published, he said. It would be released as soon as Cabinet had examined it.

Mr. McGirr said the Government did not intend to abolish trams in favour of buses. New trams would be put on the road as soon as possible. He said that in his opinion no one type of service would be adequate for the metropolitan area. Both trams and buses were needed.

Mr. McGirr said the Government had placed orders for buses in England, the bodies of which would be built in New South Wales.

The Government would put 1,000 new buses on the roads as quickly as possible.

FEW MODERN TRAMS

A transport authority said yesterday that of the 1,489 tram-cars now in 'operation only 250 were of modern design.

The remainder should be scrapped as early as it was practicable to do so, he said.

The cost of a new tram-car would cost about £5,000. It was estimated that it would cost about £3 million over the next five years to rehabilitate tram tracks in the metropolitan area.

The cost of 1,000 buses - the number mentioned by Mr. McGirr - would be about £3,300,000.

From *Street Railway Review*, September 1897, page 624.

Brill 'Universal' Truck

The ordinary four-wheel non-pivotal truck, when used at high speeds under large cars, is destructive to the track and roadbed and uncomfortable for passengers on account of its excessive and violent motion, besides being exceedingly noisy. It is also severe on the car body, which is rapidly shaken to pieces.

The truck illustrated is a new form of the pivotal type, designed to take the place of four-wheel non-pivotal trucks on long car bodies. It is called the "Universal," and is a modification of the "perfect" or No. 27, and also has certain features of the maximum traction truck. It is intended for use under cars of all kinds where a pivotal truck is an advantage. The objections to pivotal trucks of the usual patterns are numerous, and, being very difficult to meet, really prohibit their employment in most cases for street railway service.

A long wheel base has been considered necessary in pivotal trucks in order to give the motors space between the axles and the bolster transoms. If the wheel base is made short the motors come under the bolster, and it has to be greatly elevated to obtain proper clearance. These conditions prevent a pivotal truck of the ordinary form being used, because, in the case of the closed car, the swing of the truck brings the wheels against the sills, and with the open car the swing interferes with the steps. Such trucks can, therefore, only be employed when the cars are very wide or when they are placed very high, so as to necessitate the use of two steps. There are but few places where such cars can be used successfully.

Certain valuable features have been taken from the maximum traction truck and combined with others

of the No. 27 truck, thus obtaining the great convenience of the first with the easy riding qualities of the latter.

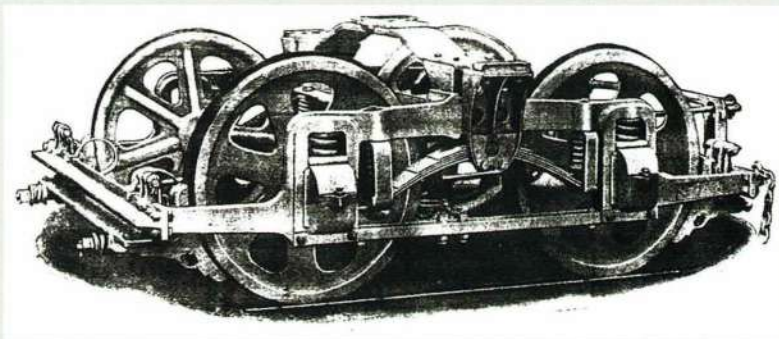
The weight of the car is carried on side bearings, as shown in the engraving. The truck draws from the centre by means of an elevated plate steel bolster. This bolster is so designed that there is ample room for the motors.

Having thus made space for the motor, there is no difficulty in shortening the wheel base to 4 ft. This makes the truck short enough to use upon narrow cars, whether open or closed, without adding to the height of the car, there being ample space to swing on the shortest curves.

A long half-elliptical spring on each side of the truck acts as an equalising bar, the ends being carried in the spring swinging link cases, which are hung from the frame by ball and socket joints. All the weight except that of the wheels, axles and boxes is carried on the springs on the journal boxes, and this together with the arrangement of the bolster and equalizer makes an easy riding truck.

The brake apparatus has been designed with a view to prevent the kicking up under the action of the brakes which is characteristic of the ordinary equalized swing beam truck. Also, the braking pressures are graduated to the weights on the wheels to prevent skidding the non-driven wheels.

The "universal" truck was first adopted by the Consolidated Traction Company of Jersey City, which ordered 50 trucks at first and soon followed with an order for 100 more.



HERE AND THERE

AUSTRALIAN AND OVERSEAS NEWS

Newcastle

Around 5:30pm on Sunday, 5 April, emergency services were called to an unoccupied licensed hotel between King and Hunter Streets, Newcastle, following reports of an explosion followed by a fierce fire. The fire burned into the night and early morning. Eyewitnesses report that they saw people, possibly squatters, run from the building about the same time. A crime scene was established and Hunter Street was closed between Auckland Street and Worth Place indefinitely due to the instability of the front walls of the building.

As a result, the Newcastle light rail was closed. Tram 2151 was stranded at the Newcastle Beach terminus and was still there on Wednesday, 8 April. Local buses replaced trams and operated via an alternative route.

Services resumed on Saturday, 11 April.

Adelaide's Emu Dreaming tram returns

An Adelaide tram featuring contemporary Aboriginal art - the Kardi Munaintya (Emu Dreaming) tram - started operation on 24 May 2020 to support National Reconciliation Week, which ran from 27 May to 3 June, and NAIDOC week.

Initiated in 2010, the Kardi Munaintya tram wrap was designed as a living work of art by Department of Planning, Transport and Infrastructure (DPTI) employee, Kurna/Ngarrindjeri, and landscape architect and visual artist Paul Herzich.

This year's wrap was a refreshed design that recognised and celebrated the diversity of Aboriginal cultures in South Australia.

In the design, each tram stop was illustrated as a circular meeting place symbol, and kardi (emus) were shown moving across the Kurna/Adelaide landscape. The kardi is a significant totem of the Kurna people.

According to a media statement, "the social impact this living work of art has had on our entire community has led to DPTI continuing to fund the installation each year in the spirit of reconciliation."

The Emu Dreaming tram was to remain in service until 18 July.

Canberra tram carries safety messages

Be street wise ... be safe ... be seen ... Don't tempt fate, wait!

These are the safety messages which have been carried by a Canberra tram since December 2019. The eye-catching design is the work of Tahlia Jones, joint winner of a Canberra Metro and Gungahlin College light rail safety campaign competition.

A graphic design student at the college, Tahlia says the pop art and comic book style of her concept is designed to speak to all ages and jump out for everyone who looks at it.

"When we started the project at school, the first thing that came to mind was comic books and pop art," she says.

Canberra Metro worked with the Year 11 and 12 design students who entered the competition, providing them access to resources including existing digital branding assets and technical advice from local graphic design agency Transit Graphics.

Canberra Metro's customer service team also worked with students to identify current rail safety risks and safety campaigns.

Winning posters from the competition are on display across the Gungahlin Town Centre and have been printed on coasters that are being used in restaurants, cafes and licensed venues across the ACT to help promote light rail safety.

Sydney

Passengers can now ride Sydney's new light rail from Circular Quay to Kingsford. The NSW Minister for Transport announced on 3 April 2020 the opening for revenue service of the 3.2 km five-stop light rail branch from Moore Park to Juniors Kingsford via Anzac Parade South.

The L3 Kingsford line completes the 12-kilometre CBD and South East Light Rail, with the first passenger tram departing Juniors Kingsford at 5:00am. Trams will operate from 5:00am to 01:00am each day, with a headway of 8 to 12 minutes in conjunction with route L2 from Randwick, giving a combined headway of 4

to 8 minutes on the common section from Moore Park to Circular Quay.

Commuters will benefit from faster travel time and more space on Sydney Light Rail with more than 810 extra services added to the L2 Randwick and L3 Kingsford lines. There are now an additional 518 services a week, on top of the 294 services added on 18 May.

Service frequency has also increased with services around every four minutes between Circular Quay and Moore Park and around every eight minutes in the South East, between 7:00am and 7:00pm weekdays.

During the quieter than normal period since the L3 Kingsford line opened to customers, improvements have been made to traffic signal phasing and the infrastructure and systems in place. Since April, end-to-end journey times have been around 38-40 minutes for both the L2 and L3 lines.

As the new timetable is bedded in, there will be further improvements to the end-to-end journey time with services running around 38 minutes L2 Randwick and L3 Kingsford lines. The new timetable will provide another 26,900 spaces each week, supporting people returning to jobs and school while allowing safe physical distance.

Customers can also access free temporary event-style parking at Moore Park, where people can drive then hop on light rail to the city.

On the L1 Dulwich Hill Line, a further 55 services have been temporarily added between 10:00am and 3:00pm to provide a consistent 10 minute service on weekdays.

The final tram was delivered to Randwick in March after being trucked in two parts from the wharf at Port Kembla.

At 11:36 am on 3 April 2020, the morning of the 'soft opening' of the Kingsford Branch of Sydney's newly completed CBD & South East light rail line, LRVs 2227 & 2228 turn for Juniors Kingsford at New Kensington Junction. Circular Quay bound siblings await the signal having made the journey from Randwick. John Cowper



Alstom Operations Manager, Stephen Drosdeck said it was a bittersweet moment for the team with some member also marking their last day on the project. "It's been an absolute pleasure working with all the guys that I worked with for quite a while and obviously, due to the current circumstances, it's a little unfortunate that we all can't all get together and celebrate the achievement."

Passenger services are now operating along the whole CBD and South east Light Rail alignment with the L2 Randwick line opening on 14 December 2019 and the L3 Kingsford line opening on 20 April 2020.

Transport for NSW understands the critical role that all modes of transport are playing as the state deals with the coronavirus outbreak.

Public transport is an essential service and Transport for NSW is working with all agencies and private operators to ensure their vital services keep running for all their customers, especially for health and emergency services.

It is not business as usual at the moment but they know their network remains a critical part of people's daily lives and they are committed to keeping these essential services running.

They have already seen the reduction in the number of people using public transport, which is helping people comfortably distancing themselves from others, helping to limit the spread of Coronavirus on the network.

Tram doors are now opening automatically at platforms to minimise contact with trams. This applies to all services.

Nambour tram plans move ahead

Nambour's newest planned attraction has moved a step closer with the Nambour heritage tramway depot and terminus building complete and works under way on the tramway tracks.

The terminus building, located near the Nambour Mill Village Shopping Centre in Mill Street, includes an information centre.

Construction of the depot and terminus, at a cost of \$840,000 was jointly funded by Sunshine Coast Council and a \$500,000 Australian Government grant awarded through the National Stronger Regions Fund. The site at 28 Mill Street was home to a bakery, a private residence and a community built occasional day care facility before council offered the site to the Nambour Tramway Company (TNTCo).

The three-track depot is now home to the locomotive *Petrie* which was gifted to the Nambour Tramway Co by Bundaberg Sugar in 2014 and has been housed and displayed since then at the Nambour Museum.

Petrie was purchased by the Moreton Central sugar mill in 1968 to complete its change-over from steam to diesel locomotives and remains in full working order.

The plan is to run a tourist service along part of the 610mm gauge tramway which served the former Moreton Central sugar mill at Nambour. Unlike most sugar cane tramways it ran along one of Nambour's main streets. The project is a strategic project in the Sunshine Coast Council's Nambour Activation Plan; see <https://www.sunshinecoast.qld.gov.au/Council/Planning-and-Projects/Council-Plans/Nambour-Activation-Plan>

The service is to run between the shopping centre built on the site of the mill, along Mill and Howard streets to the southern end of Quota Park, (between Repco and Aldi), adjacent to an area once occupied by a tramway marshalling yard. The line is planned to be operational by 2021.

The section of track to be used remained in place after the mill closed in 2003. About three-quarters of a kilometre in length, it was placed on the Queensland Heritage Register in 2005.

The tram or trams proposed for the line will be powered by solar panels and batteries. There will be no overhead wiring. The vehicles to run on the line will be newly built.

At <http://www.eastrains.com/index.asp> there is information about a company which appears to be a potential supplier.

The project is governed by a Heads of Agreement between Sunshine Coast Council and TNTCo, a not-for-profit company. TNTCo's aspirations include currently-unfunded future stages that could eventually connect the tram to the Nambour Showgrounds.

Some history

The Nambour sugar mill was once served by a very extensive 610mm gauge network of which the remaining street track is a tiny fragment. In earlier times when local roads were of poor quality, it ran passenger trains as well as hauling sugar cane; the last passenger services, from Nambour to Coolum, ended in 1935.

Between 1980 and 2003 more than 1,000 hectares



A view looking down Mill Street, Nambour. The 610mm track can be seen turning to the right towards the site of the former sugar mill. The new terminus is to the left of the photographer. Dale Budd

A view of the new Nambour Tramway Depot (terminus) building, which also includes an information centre.

Sunshine Coast Council



of cane land in Maroochy Shire were lost to urban development and other uses. This meant that some cane was being brought to the mill from 60–70 kilometres away. As it is very important that cane is crushed soon after harvesting to maintain its sugar content, this had an adverse effect on the functioning of the mill. The price of sugar also fell and a crisis

was reached in 2002. It was decided that Moreton Mill would close and its last crush took place on 3 December 2003.

A history of the mill is given at https://en.wikipedia.org/wiki/Moreton_Central_Sugar_Mill

WHITEMAN PARK

PERTH ELECTRIC TRAMWAY SOCIETY (INC)

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Michael Stukely

Response to the COVID-19 pandemic

While there have been no public passenger services during the COVID-19 close-down, we have been able to maintain limited tram operations over the whole system. Several full trips have been run each week to keep the service trams and the tramway in fully operational condition.

Whiteman Park has remained open to the public, and some commercial operations have re-opened on a limited basis, as restrictions have been progressively lifted.

Maintenance of trams and infrastructure

Rolling stock maintenance continued after a brief interruption from mid-March, with the first of our mid-week team members resuming work in early and mid-April. By late May, volunteer numbers in the maintenance and restoration areas were again approaching normal (observing the necessary physical distancing, etc).

Repairs were completed on Melbourne SW6 891 following a controller problem, with its final successful testing being carried out on 24 June. Work is continuing on the refurbishment of the No. 15 trucks for Melbourne W6 998, which is yet to enter service at Whiteman Park.

Our track maintenance program has continued following the loss in April of just one scheduled workday. The last six-monthly full track inspection was completed in February, with the track maintenance plan then being updated. This work remains on target.

Track workdays on 9 May and 13 June focused on the main line heading west from the Workshops Road level crossing towards the Mussel Pool tram stop. A total of 15 life-expired timber sleepers were replaced with steel sleepers, with additional packing and adjustments to the track gauge being carried out as needed.



Terry Young watches as Perth E class No. 66 on a special trip passes through the track work site near the Workshops Road level crossing, on 13 June.

Michael Stukely



The track team hard at work on 13 June, packing the newly laid steel sleepers to the west of the Workshops Road level crossing: Terry Young (left), Nick Tsiaglis and Trevor Demhardt.

Michael Stukely



Delivery on 11 March of another 22 tonne load of road-base for spreading in the Don & Laurie Tyler Carbarn.

Lindsay Richardson



Steel sleepers were laid in May and June west of the Workshops Road level crossing. Michael Stukely

The overhead was fully inspected following severe storms in early June, with just a small tree branch needing to be trimmed back.

Transportable building placed in position

A transportable building, donated to the Society in 2018 by Natural Area Consulting Management Services at the Park’s Lord Street Entrance, had been temporarily placed alongside our road entry driveway, south of the Carbarns. Repairs and painting were carried out there. A concrete foundation slab was poured in November 2018 on the south side of the Don & Laurie Tyler Carbarn, and this will form the floor of the building.

In a two-day operation on 27-28 May, the building was moved from the driveway to its new home. This was achieved using sections of old steel traction poles of suitable length as rollers. These were placed under the building which was then towed by tractor to its new site. Sleepers were laid to support the tractor and rollers where the ground surface was soft.

The building was towed in a complicated procedure involving a 90° turn and a reversal of direction, to reach the concrete slab where it was placed in position.



On 27 May, starting from the road access driveway to the PETS site, the transportable building had been moved, via the Oketon Geddes Carbarn fan and the main line, as far as the east end of the Don & Laurie Tyler Carbarn. It was towed by the tractor to its new site. Nick Tsiaglis



On 28 May, the building was moved along the sleepers laid on the south side of the Don & Laurie Tyler Carbarn, to its final position. The steel pole sections that had been used as rollers can be seen here, viewed from the east on 13 June. Michael Stukely



Stuart Darbyshire relocating a stripped-down Melbourne No.15 truck into the Oketon Geddes Car barn, watched by Graham Barkla and John Barlow on 15 July.

Lindsay Richardson

Len Pearce pondering over a newly made fitting on 11 December. Lindsay Richardson

Following some internal modifications and the connection of power, the building will house traffic crew facilities and some general archival storage space, in separate rooms.

Tram restoration

The restoration team has continued to make good progress with the body restoration of WAGT A class 130. The motorman's cabs at both ends have been fully undercoated, and all saloon window frames have been stripped down, and the damaged glass removed. The window battens have been stripped down and estapol has been applied to the upper internal window frames. Our team has also painted the timber cable-carriers on the saloon floor. The complex job of installing the steps on the western end platform is continuing, a job that has been made more difficult because each has a different set of dimensions.



Graham Barkla and John Barlow guiding the removal of a motor from a Melbourne No.15 truck on 11 March.

Lindsay Richardson

ST KILDA

AUSTRALIAN ELECTRIC TRANSPORT MUSEUM (SA) INC

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Colin Seymour

New road crossings

Our project to re-align the Mangrove Street level crossing required rebuilding the overhead to suit the new layout. Downer Group, the firm that is the principal contractor for the City of Salisbury, engaged Laing O'Rourke to carry out the overhead works.

Several new poles were installed when the track was being rebuilt in March as part of the preliminary works for modifying the overhead. To enable the work to take place, the AETM was asked to supply an assortment of overhead fittings, all of which were overhauled, prepared and assembled in the weeks prior to the work commencing. The new overhead was strung over four days from Thursday 25 June 2020 to Sunday 28 June 2020.

In early May, the overhead spans were renewed around the Samphire Road curve. The replacement poles erected in December 2019 had overhauled fittings attached to them, and the old poles were disconnected pending their removal. The works were undertaken in house with assistance from our contractors North East Demolitions (NED).

On 30 June the AETM successfully conducted test runs over the new crossings in conjunction with Downer (track), Laing O'Rourke (overhead) and the City of Salisbury. Four different tram types were used for the test runs: a large tram, H1 381; a medium tram, W7 1013; a maximum traction car, E1 111; and a single truck car, C 186. Car 381 was the first tram to test the new crossings.

Other track work

Our contractor NED continues with the track upgrade with recent work being replacement track in concrete closer to the Museum near the locations where the Northern and Southern Depot tracks join the main line.

Public closure due to COVID-19

Tram rides remain suspended pending completion of the Museum's Safety Management System documentation. Because of restrictions associated with COVID-19, the AETM remains closed. When restrictions are eased, it is probable that visitor numbers will be small. For these reasons, it is likely to be some time before tram rides can resume.

Laing O'Rourke overhead staff install the overhead to the new poles across the new Mangrove Street level crossing on 27 June 2020. They are positioned on the curve leading from Shell Street, St. Kilda, to the Mangrove Street crossing.

Kevin Collins





The overhead contractors have moved closer to the Mangrove Street crossing on 27 June 2020. Kevin Collins



Adelaide C type tram 186 crosses Mangrove Street from Shell Street, St. Kilda, on a test run on 30 June 2020. One of the new poles casts a shadow over the crossing. Kevin Collins



A new section of concrete track constructed by our contractors North East Demolitions on the approach to the Museum yard. 8 July 2020. Colin Seymour

LOFTUS

SOUTH PACIFIC ELECTRIC RAILWAY CO-OP SOCIETY

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From *SPER* News

COVID-19 fallout, and re-opening

The pandemic has caused the closure of the museum to the public since March 2020. By imposing strict protocols, museum members have been able to carry out good work – see below.

Investigations are continuing into any possible COVID-19 grants, although the criteria are

challenging. The pandemic has put on hold obtaining spare parts for Melbourne Z2 111 and retrieving brake rigging for Sydney P 1729 from Victoria.

Work is continuing to set a date for the museum to reopen. Our COVID-19 plan will require extra duties to be undertaken by our traffic staff and others,



Old timber sleepers were removed on 9 May from the excavated track site using forklift No. 2. Martin Pinches



A truck-load of broken concrete is delivered to the ground floor of the YMCA building on 16 May. It will be used to lessen the amount of new concrete to be supplied. Martin Pinches

including a paid cleaner to be on site during museum opening hours.

Details of our re-opening will be placed on our Facebook page and our website www.sydneytramwaymuseum.com.au

60th anniversary of the closure of Sydney tramways

Special event days at the museum have been suspended due to the impact of the ongoing pandemic, with all events planned for 2020 cancelled.

Our next planned event will commemorate the 60th anniversary of Sydney's last tram to La Perouse on 25 February 1961. A committee is being formed to plan this event, for which the tentative date is the weekend of 27-28 February 2021. This will of course be subject to relevant approvals and an improvement in pandemic outcomes.

Museum Facebook page

While the Museum is currently closed, our public profile is being maintained by our website and our Facebook page.

Originally created by Andrew McCabe a few years ago, the Facebook page is now managed by a team including David Critchley, Mitchell Skillcorn, Danny Adamopoulos, Craig Parkinson and Matthew Geier. The Facebook page features regular updates from the museum as well as historical images and anecdotes. Many people use the page to ask questions of the museum, and appeals for donations through it have had some success.

The page currently has 7642 followers and regularly gets 'hits' of 3000 or more on individual posts. It is thus an important tool in keeping the Museum's profile high during the ongoing pandemic.

Tramway era street furniture

Telephone fire alarm pedestals were a common sight on street corners in the era of the Sydney tramways, before telephones in households became common in the 1950s.

A while ago Mike Giddey collected a number of pedestals from the then Department of Motor Transport. His contact was a Shire resident who was familiar with the museum. As secretary at that time, Mike requested the donation of the set of cast iron illuminated pedestrian safety bollards from Kings Cross. We were given these and were also offered



Peter Warr painting a fire alarm box.

Robert Merchant

vintage traffic lights, fire alarm pillars and cast traffic domes ('silent cops') including the large illuminated unit from the northern approach to the Harbour Bridge

Peter Warr retrieved the bases from outside storage and has repainted them in the appropriate bright red.

Richard Clarke was able to obtain a complete telephone. Adam Greaves obtained an interior for a telephone fire alarm which is similar to a tramway telephone. However, on inspection it was found to be larger than a tramway telephone. Adam was able to swap the fire alarm phone for a tramway telephone.

Thus, the museum now has complete telephone fire alarm and tramway phone. It is proposed to place the telephone fire alarm on a street corner in Tramway Avenue and the tramway phone on display at the Sutherland Substation.

Brisbane tramway drawings

A computer file of Brisbane tramway drawings has been obtained, including retraced Sydney R1 drawings. The drawings indicate the co-operation between Sydney and Brisbane in the 1930s. One surprise was the inclusion of track brake drawings for Sydney K type tramcars. The drawings will be added to our archives.

Tramcar maintenance

The air compressor and scrubbing cylinders have been refitted to scrubber car 134s. The car has been powered up, the compressor has been run and the governor settings checked. Both scrubbing cylinders have been tested. The timber beams that supported the water tanks in the saloon were rotted and have been

Melbourne cable trailer 393 as it appeared in the workshop on 18 July. Robert Merchant



replaced with galvanised angle iron. The water tanks have had access openings cut into their top steel plates and the insides are being de-scaled and treated with rust converter prior to sealing with bituminous paint.

San Francisco PCC 1014 did a trial run on 27 June 2020 but after a couple of test trips one motor was found to be incorrectly connected. Further, the car has a temporary resistor fitted in the motor-generator set regulator circuit to enable it to operate. A further test run to the Royal National Park on 4 July was successful but some further finishing work needs to be completed and crew familiarisation carried out before the car returns to service.

Work on Sydney J class 675 has slowed in the last few months due to the museum closure. Our carpenter has completed the flooring and is profiling the timber slats to be installed when he returns, together with the reinstallation of seats and panels that had to be removed for the underframe repair.

As the original bumper was damaged beyond repair, a new metal bumper bar has been manufactured by Beauchamp Engineering and is also awaiting installation.

In the last month, Sydney Variotram 2107 has been undergoing braking tests on the depot access road to



San Francisco PCC 1014 stands at the Royal National Park platform during testing on 4 July. William Parkinson



The western track relay work continues in Tramway Avenue on 18 July 2020.

Robert Merchant

allow measurement of the regenerative voltage rise on the museum's overhead.

Initial tests, with the software as the tram came from Pymont, confirmed that the regenerative braking was causing the overhead voltage to rise to 875 volts, which is incompatible with the museum's other rolling stock.

The manufacturer supplied us with more museum-friendly code images for the traction system, and these were installed and tested. The result was a regenerative braking voltage of 735 volts. This is a step in the right direction, but we are aiming for 680 volts as this is the open circuit voltage of the museum's rectifier.

A request has been made of the manufacturer for another code version with 680 volts as the maximum for the regenerative braking voltage.

Track work

Work continues on the relay of the western track in the street from the front gates to the scissors crossover. The two long lengths of Kensington grooved rail were placed into the freshly excavated road bed and welded to the existing former Bondi Junction grooved rail at the front gates. The Kensington rails have been aligned and levelled, gauged and tie-barred.

Broken concrete from a local building site, along with broken concrete from some of our own works, has been placed to reduce the amount of concrete that will be needed to complete the relay work,

The final rail connections to the scissors crossover will not be welded in until most of the track is concreted

to minimise problems with expansion and contraction of these long lengths of rail which, incidentally, were rolled by Australian Iron & Steel at Port Kembla in 1955. After less than six years of use they were hardly worn when they ceased to be used in February 1961.



The overhead pole braced in Lakewood Park on 18 July.

Martin Pinches

Overhead

The failing pole opposite Lakewood Park has been strengthened by the installation of a backstay held by some large concrete blocks.. The pole has taken on a decided lean due to severe rusting around the base.

Work is progressing on the repair of the overhead troughing, in road 4 of the main shed.

This allowed the depot fan overhead to be adjusted and converted for limited use with pantographs.

Plans are under way to replace life-expired poles at various locations. At this time extra poles will be installed at Sutherland to enable the wiring of Rawson Loop.

This is a reminder that the 'new site' is not so new any more and more maintenance will be the new normal in the future.

Miscellaneous

There have been numerous trees falling onto our tracks and overhead on both the Sutherland and Royal National Park lines. These were cut up with chain saws and cleared. Member Arthur Perry has donated a single-axle galvanised box trailer which is a useful addition to our equipment and has already been put to good use.

The ground floor of the YMCA building has been concreted and is looking good. Formwork is being constructed to form a solid concrete base on which to install our new fuel shed so the old rusty railway LCL container can be retired.

LAUNCESTON

LAUNCESTON TRAMWAY MUSEUM SOCIETY

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Tony Weston

Track extension

On 12 October 2019 the Launceston Tramway Museum officially opened an extension of its track around the rear of the Queen Victoria Museum, thereby forming a loop. The new track, dubbed the 'back track', is in addition to the mainly straight section of track let into concrete from the Victoria Bridge to the former Launceston locomotive roundhouse.

From left to right Brad Bale, Mayor Albert van Zetten, Michael Leslie, LTMS President Andrew Mackenzie and tram No 29, at the ribbon cutting for the back track, 12 October 2019.

Tony Weston



The Mayor of Launceston, Albert van Zetten, spoke about the history and the contribution of the museum to the city before cutting a ribbon at the northern junction of the back track. He then travelled on tram No. 29 over most of the back track with other guests. Twilight runs were made later that day.

The back track was previously the main railway access to the Launceston locomotive roundhouse. It passes the Launceston railway workshops and runs parallel to the north-east railway to Herrick. Neglect, together with construction works associated with the conversion of the former railway workshops to the Queen Victoria Museum and tertiary education facilities, left the track in poor condition. It meant that tram No. 29 could not be used on the line.

Reballasting and resleepering of the line was undertaken in two stages, using donated second-hand steel sleepers, and was complicated because of unrelated civil works at one section of the track. The complete loop can be traversed by the tram. However, there is one section of track where timber sleepers under tar sealing have rotted, and this prevents passengers being carried over the section.

Commissioning of single-truck California combination tram No. 1 has been delayed during the work on the back track, and this has allowed consideration of alternative propulsion systems. One option would be to use batteries in place of the diesel-engined generator set on the trolley attached to the tram. This could also include an electronic control system with regenerative power being returned to the batteries.

Tram No. 29 hauling the generator set trolley with the University of Tasmania School of Architecture and Design on the left and York Park stadium on the right, 12 October 2019.
Tony Weston



Tram No. 29 passes the former North East Junction signal box, 12 October 2019.
Tony Weston

HADDON

MELBOURNE TRAMCAR PRESERVATION ASSOCIATION

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Anthony Smith

Restoration of W5 792

Our restricted work force has continued restoration work on the body of this tram with good progress being made.

The rebuilding of the two saloon interiors has continued and during May the two drop-centre bulkheads were refitted along with new bulkhead windows. This has involved a lot of time and effort to ensure the correct fit as the timbers used are a combination of originals from 792 plus some from 826. New mouldings have also been fitted.

During this period, two saloon sliding doors for use in 792 were removed from store and temporarily fitted to the car to ensure their correct operation. After some minor adjustments, the doors have had all their old varnish removed. They were then sanded with new French polish and a clear lacquer coating applied. Another task undertaken has seen the fitting of the brass pillar guides for the side window sashes and louvres along with the sill retaining strips.

In early June, a number of suitable saloon window sashes and louvres were removed from store after which they were trial-fitted into their respective



Anthony Smith applying french polish to saloon door for use in 792.
Jacqui Smith



Anthony Smith fitting new internal fascia strips on 792.
Jacqui Smith

New dropcentre bulkhead, No1 saloon 792 Anthony Smith



Anthony Smith planning a window for use in 792.

Jacqui Smith



window pockets with machining carried out as required to ensure correct fit. They have now been number-stamped in correct order of fit, and placed into store pending refurbishment.

After a detailed examination of the condition of the interior saloon side wall panels previously removed from both 792 and 826, they were found to be too badly deteriorated to allow them to be restored to an 'as-built' clear timber finish. Using two of the old

panels as patterns, we commissioned our contract joiner to make up four new units. They are now at Haddon awaiting the application of stain and clear lacquer coating before being fitted into 792.

As part of a spare parts rearrangement, two suitable front windshields were removed from store for use in 792 in early June. These windshields will require new sashes and modifications to restore them to the square window style that all early built Clyde W5 trams had when new.

Rolling stock

During July, as part of the rearrangement of trams within the main carbarn, the opportunity was taken to check the clearance of the lifeguard trays with relation to swing of the No. 9 trucks on W4 670 on the North West curve. With the whole of the tram positioned on the sharpest part of the curve, it was observed that the brake adjuster rods were making light contact with tray rear timbers. Work is now underway in modifying these timbers to provide clearance.

Carbarn trackwork

Work has commenced on replacement of the old sleepers in front bay of No. 5 road within the carbarn. In early June, the asphalt floor surface was cut and removed in readiness for the main works. Work resumed on this project in mid-July when the main excavation work took place. We are currently preparing the road base and fitting tie rods ahead of the mass concrete pour. The work should be completed by late July.

W4 670 undergoing clearance trials on the North West curve.
Jacqui Smith



Around the site

During the COVID-19 lock down period in April, Anthony Smith and Daniel Edwards undertook a comprehensive rearrangement of spare parts within the shipping containers and a former railway box van. As part of this process, an additional 20-foot container was delivered to house the large number of spare windshields we have acquired over the years. The end result of this project is a much better layout of parts allowing for easy access and inventory purposes.

Also, as part of this project, a number of worn and damaged MMTB No. 15 trolley bases stored outside on a pallet were dismantled. Components that could

be refurbished were placed into store.

In June, a request was received from the Ballarat Tramway Museum for a loan of our tram body jacks and beams. Use of these items was required at the Bungaree workshops to enable the body of W7 1029 to be lifted to enable its trucks to be removed. As we have no plan to use this lifting equipment in the foreseeable future, we agreed to make them available on an as-required basis. They have now been transported to Bungaree.

View showing No 4 road inside the carbarn after the removal of old sleepers. Anthony Smith





*Dan Edwards sorting parts for storage in ex-railways box van.
Anthony Smith*

FERNY GROVE

BRISBANE TRAMWAY MUSEUM SOCIETY

PO Box 94, Ferny Hills, Queensland 4055

www.brisbanetramwaymuseum.org

Peter Hyde

COVID-19 has been the theme of activity (or non-activity) at Ferny Grove since the last public tramway operations on Sunday 22 March.

However, this does not mean that nothing has happened.

Each of the trams used in public service was operated once a fortnight to make sure that everything remained in operating condition. Similarly, points were cleaned and greased. In the workshops the only significant work involved continuing the restoration of the Scammell Recovery Vehicle.



Restoration work on the Scammell showing the first layers of undercoat paint.

The new uniform display cabinet complete with faux brick wall and a view of a tram through a doorway – also 'faux'.



The new tram driving simulator for the young (and young at heart) visitors. In the background is the video demonstration with the mercury arc rectifier display.



During the shutdown the Brisbane City Council facilitated construction of a storage shed for the Rotary Club within the museum grounds.

The new windows are much smaller than the previous openings to cut down on light exposure to archival material. Because of this, external wall panelling was required plus some external repainting.

Weekday workdays and the Men's Shed activities were suspended apart from essential maintenance and security. This involved mowing and other grounds maintenance so that the site did not appear abandoned.

As restrictions eased to permit small numbers, advantage was taken of the lack of visitors to undertake a complete repaint and remodelling of the display

At the time of the community shutdown work was under way on replacing the louvre windows in the archives room with dustproof sliding windows. This work was arranged and funded by the Brisbane City Council and was performed by external contractors. This work continued and included replacing the internal lighting with sensor operated LED lights.



The interior of the display room showing the new suspended display panels.

area and shop. All the standing display boards have been replaced with plastic display panels suspended from the ceiling. Two TV screens have been provided high up on the walls in two corners to show relevant tramway scenes while another smaller one has been mounted on top of the display case which houses the glass bulb mercury arc rectifier. This shows the rectifier in operation.

The museum reopened to the public on Sunday 5 July. Because of the need to observe social distancing limiting the carrying capacity of trams, the only publicity for the reopening was a mention on Facebook and a note on the museum webpage. Nevertheless, 27 people visited that day.

All photos by Peter Hyde.

BENDIGO

BENDIGO TRAMWAYS

1 Tramways Avenue, Bendigo, Victoria 3550

www.bendigotramways.com

Tynille Thurlow

Effects of COVID-19

We have been navigating through the COVID-19 pandemic one day at a time.

On 17 March we ran our final Vintage Talking Tram service and went into hibernation in response to government advice regarding the pandemic. We remain closed to the general public.

Our workshop has continued to operate behind closed doors with a number of new measures being implemented to ensure a safe working environment

for our team. During the closure we have continued refurbishing City Circle trams Nos. 925 and 1000.

With tram services having ceased for the time being, we are using the opportunity to complete a number of track and infrastructure projects.

Women's T20 Cricket World Cup

Tram No. 275, a Melbourne SW2 class car, was a showstopper at this event. Painted in the traditional

green and cream Melbourne livery, No. 275 was positioned at the entrance to the Melbourne Cricket Ground from 21 February to 8 March. The craftsmanship of the Bendigo Tramways workshop

team was on show to the masses, with over 86,000 people attending the final on 8 March. The tram has now returned home to Bendigo and is currently on display at Central Deborah Gold Mine.

*Car 275 outside the Melbourne Cricket Ground.
Bendigo Heritage*



*A side view of car 275 outside the MCG
Bendigo Heritage*

Vale Andy Rowe

At the beginning of July, we farewelled a dear friend and valued employee of the Bendigo Tramways workshop, Andy Rowe. Coming all the way from New Zealand to work with us, Andy's contribution was essential in maintaining and operating our fleet of heritage trams. Andy's dedication and friendship will be greatly missed by us all. The sympathy and condolences from everyone at Bendigo Heritage Attractions is extended to his family and friends.

*Andy Rowe.
Bendigo Heritage*



BALLARAT

BALLARAT TRAMWAY MUSEUM

PO Box 632, Ballarat, Victoria 3353

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Warren Doubleday

COVID-19 restrictions

The COVID-19 crisis has now seen the Museum cease passenger operations since mid-March, a lot longer than we had hoped. We were fortunate in that we able to operate during the March 2020 Begonia Festival, but since then, the Museum has been closed to the public.

When restrictions were eased in Victoria during June, we made plans to operate trams only from the depot, not picking up passengers along Wendouree Parade, and with a limited number of passengers per tram. All the necessary COVID-SAFE plans were in place for an early July start, but then whack went the Government, with metropolitan Melbourne placed in lockdown again. As a result, our plans have been placed back on the shelf. Tram Tuesday and Workshop Wednesday have recommenced with all staff undertaking their necessary COVID training.

Workshop projects

Quite a lot has been happening in the background in maintaining the tramway and keeping it operational. The scrubber has been out a number of times, maintaining the track and checking the infrastructure.

During late April and early June, a major project was undertaken on the overhead in the depot and along the access track. Firstly, straightening a pole on the south side of the depot; despite many attempts in the past to keep it vertical, it continued to lean and thus putting all the overhead in the depot out of alignment. Other poles were attended to as well. After this, on a freezing day, the overhead at depot junction was adjusted.

Tram W3 661 was transported to Bendigo on Thursday 21 May for repairs to the body following its accident during the 2019 Begonia Festival. It had been loaded at Bungaree the previous day.

Tram 33 was re-united with its truck after completion of the work having the wheels reprofiled at Bendigo and other repairs. It was successfully run to St Aidans Drive terminus and back to the depot for the first time on 3 June. Our workshop team has completed the overhaul of a DH16 compressor for tram 671.

At our Bungaree off-site store, work on refurbishing W7 1029 for service in the future is well under way. The roof is in need of repairs with the trolley pole deck





Tram W3 661 being towed to the Bendigo tram depot for repairs on 21 May. \ Alastair Reither



Digging out the base of the pole that really needed to be made vertical on 27 April. Paul Mong

And another pole at the 'level crossing', also on 27 April. Paul Mong

A good-looking overhauled armature of a DH 16 compressor. Paul Mong



Opposite: Mick Duncan, the team leader for the tram 33 project, poses with Greg King after a test trip to St Aidans Drive on 3 June. Paul Mong



Patterns for the new Brill 21E truck at the pattern maker on 2 April. Paul Mong

Rowan Moore and Alastair Reither at work on the front of W7 1029 on 6 June. In the background is the new heavy-duty storage shelving installed in the new shed at Bungaree. Paul Mong



Tramway Museum. It is proposed to use a wheel and axle set from a MMTB No. 15 truck along with GE247 motors. The main task was to reconfigure the brake rigging to allow for the smaller wheels. The patterns needed for the new truck side frames have been made and quotes are being obtained for the wide wing type axle box patterns along with the other fittings. One interesting thing we found was that the MMTB axle box used for No. 15 trucks is a MMTB Brill 21E wide wing axle box without the wings.

removed and the old canvas stripped off. A number of holes were found in the roof from trolley poles hitting the roof after a dewiring. Another job undertaken inside the new shed has been putting up more shelving for storage of all the parts and equipment we have collected over the years.

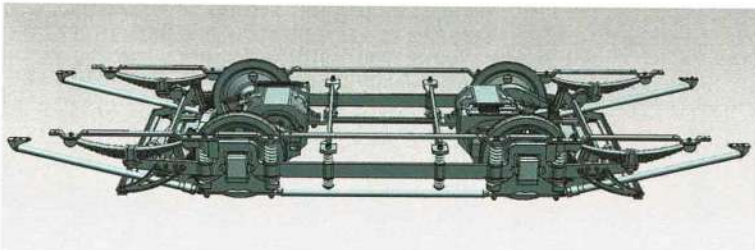
In order to facilitate the construction of a new truck for ESCo 12, the Museum has employed Leyton Chan of Auckland to prepare a set of drawings for the Brill 21E truck. Leyton recently completed the drawings needed for the construction of a pair of new 4 ft gauge Brill 22E trucks for tram 17 of the Wellington

Retrieval of rail from Muckelford

On 19 June a contingent of our crew headed over to Muckelford on the Castlemaine and Maldon Railway to get ready for future use a number of lengths of 60lb rail and the necessary fishplates and bolts.

Archival work

Finally, our Museum Services Manager has been busy working through the many negatives of Provincial tramways taken by Wal Jack. The ‘stay-at-home’ has enabled the scanning of the negatives at high resolution as well as a lot of other jobs.



CAD image of the Brill 21E truck using MMTB No. 15 Wheel and Axle sets for ESCo No. 12.

Leyton Chan,
Zitan Group, Auckland

The BTM work crew at Muckleford on 19 June dismantling long lengths of 60lb rail for future use.

Alastair Reither



Geelong No. 40 on jacks inside the depot after being delivered to the Ballarat depot, 29 March 1956. It became Ballarat No. 43.

Wal Jack

The BTM work crew at Muckleford on 19 June dismantling long lengths of 60lb rail for future use.

Alastair Reither





Adelaide tram 204 in its Emu Dreaming wrap.

SA Department of Planning, Transport and Infrastructure



Canberra tram 006 carrying the 'Be street wise' messages crosses Rudd Street as it departs the city terminus for Gungahlin on 9 July 2020.

Dale Budd