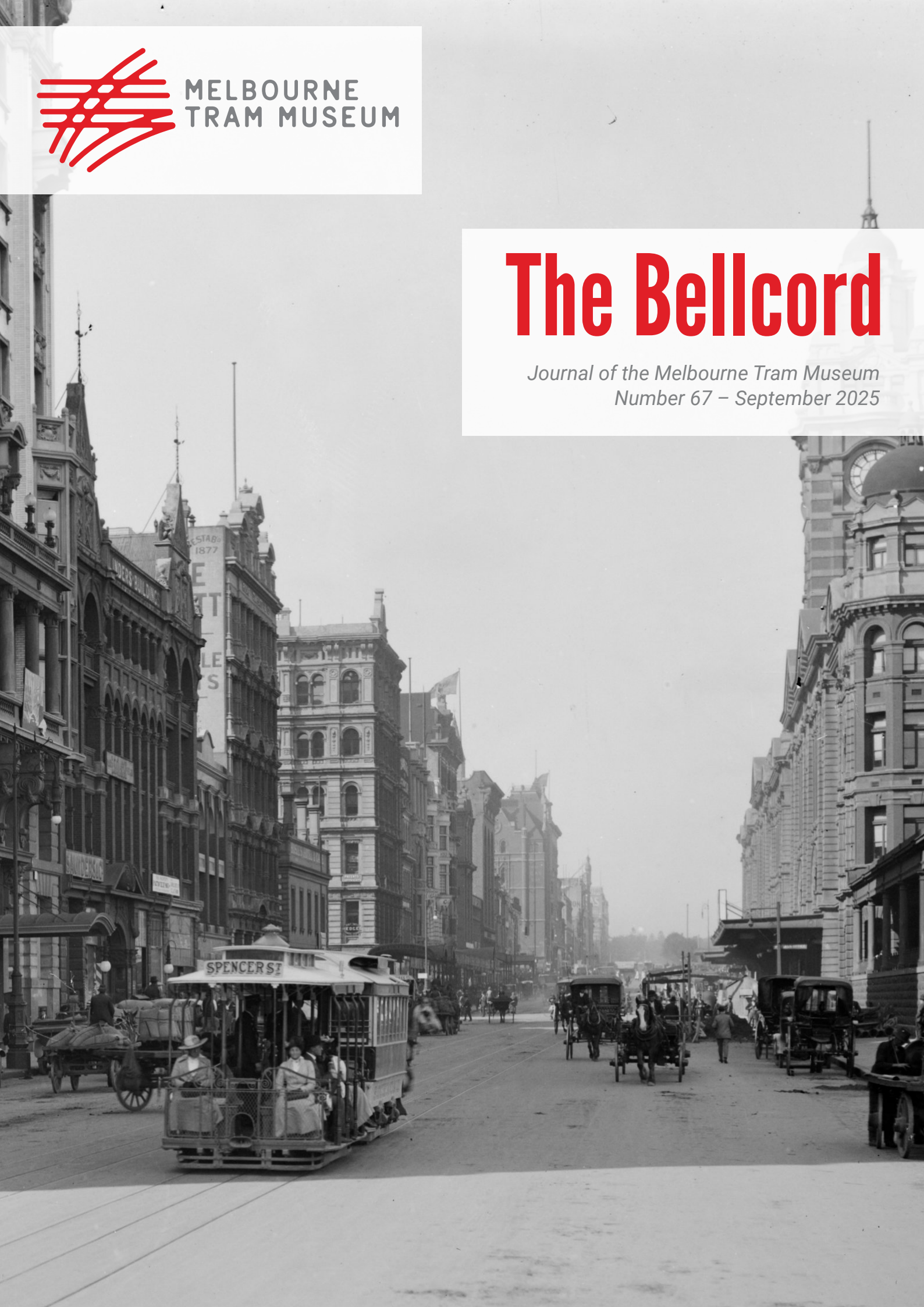
MELBOURNE TRAM MUSEUM

The Bellcord

Journal of the Melbourne Tram Museum
Number 67 – September 2025



Front cover

A Richmond line cable tram passes the new Flinders Street Railway Station en route to its terminus at Spencer Street Station, c1914-18. This cable line was Melbourne's first and from 1885 provided an alternative connection for passengers between the two stations.

Glass negative by Kerr Brothers,, courtesy of State Library Victoria.

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Editor: Noelle Jones

In this issue

November 2025 marks the 140th anniversary of the opening of Melbourne's first cable tram line, which ran between Spencer Street Station and Hawthorn Bridge, Richmond. Geoff Brown explores the background of this line.

Our digitisation project is now complete, with all the original tramway plans and drawings now housed safely at Public Record Office Victoria (PROV). Tara Oldfield from PROV outlines the project and its outcome.

In the years after World War I, population growth and increasing road congestion from motor vehicles created major problems for tramway operations. In the first of a series of articles, Brian Weedon examines the problems caused by these challenges.

Trolley buses used to run in Sydney, Brisbane, Adelaide, Perth, Hobart and Launceston, but never Melbourne. Warren Doubleday explains the reasons why trolley buses were not introduced here.

Plus Museum news and the latest happenings in Melbourne's tramway network.

Enjoy reading!

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Museum news

Museum is currently closed for maintenance

After an exceptionally busy July, the Museum was temporarily closed to address urgent maintenance requirements. While the initial plan was to re-open on 13 September, a break-in occurred during the preceding week resulting in minor theft. As a precaution, the Museum will remain closed while security measures are thoroughly reviewed. The scope of necessary work has now been identified and will be implemented in the near future. At present, we are unable to specify a re-opening date; updates regarding our opening will be posted on the Museum website.

Police have identified the alleged perpetrator using the building's CCTV footage. Thanks to Mike Ryan for his liaison with the Police.

During this period, upgrades to sections of the gutter on the north side of the depot, along with electrical improvements and other essential tasks, have been undertaken.

Preparations are also underway for a forthcoming cable tram exhibition in the display room.

John Pesutto MP visits the Museum

We were very pleased to welcome John Pesutto, our local State Member of Parliament, on his visit to the Museum on 16 July 2025. As with all of our visitors, our volunteer guides were keen to offer their insights on the history of Melbourne tramways.

John Pesutto MP with Museum committee members Kevin Taig and Rod Atkins, 16 July 2025.

Photograph courtesy of the Office of John Pesutto MP.

Record visitors during Melbourne Open House weekend

The Museum is one of the city's most popular venues over the Melbourne Open House weekend and this year was no exception.

With over 3,300 visitors over the two days – 27-28 July – it was a huge weekend at the Museum, setting a new all-time record. And our coffee baristas were kept very busy.

Many thanks to Rod Atkins, and the efforts of our team of volunteers who made this weekend possible.

Museum membership renewals now due

The support provided by our members is essential for our ongoing operation. Museum members will have received a renewal notice for their membership over the 2025-26 financial year. Payments are now due.

If you have not received your notice, or it has gone astray, please email membership@trammuseum.org.au.

Not a member? It's very easy – just download a membership form which explains everything you need to know to become a member.

2025 Annual General Meeting – 25 October 2025

Save the date! The Melbourne Tram Museum's Annual General Meeting will be on Saturday 25 October at the Museum, commencing at 9:30am.

All are welcome to attend, however note that only financial members of the Museum are eligible to vote.

Museum volunteer Mal Rowe hosts a Tram Talk for visitors during the Open House weekend, 28 July 2025.

Photograph by Noelle Jones.

Around the tracks

Maidstone Depot – The new depot at Maidstone is nearing completion, with the remaining work to include landscaping and adjustments to the overhead. The depot will initially be used for maintenance, including wheel lathe work for the existing fleet, until the arrival of the new G class trams. G class tram No 7002 was delivered to Maidstone on 12 September, while No 7001 remained at Dandenong undergoing extensive testing work.

Check out Marcus Wong's website for more photographs of Maidstone.

Victoria and Elizabeth Streets – The on-again/off-again project to reconstruct the intersection of Victoria and Elizabeth Streets is now planned to be undertaken over the period Monday 6 October to Monday 27 October. The work will provide an east-west track across the intersection in Victoria Street. The works notice shows the use of two temporary crossovers – one at the intersection of Victoria and Peel Streets and the other at Queensberry and Elizabeth Streets. The project reportedly aims to provide capacity for extra services to Arden due to significant future development in that area. The tram stop in Elizabeth Street opposite Victoria Market will be expanded to safely accommodate two G class trams.

Maidstone Depot: car storage area which includes the wash dock and sanding shed, 27 August 2025. Tramcar sidings are mostly behind and north of these buildings. The tall fence to the left provides noise abatement for neighbours.

Photograph by Mal Rowe.

M&MTB SW5 no 777 at Wattle Park, 26 August 2025, awaiting the finishing touches for its installation.

Photograph by Geoff Brown.

Haymarket roundabout – North West City News of 13 August reported that a stakeholder group has been lobbying for the removal of the Haymarket roundabout, at the intersection of Elizabeth Street, Peel Street and Flemington Road. According to a statement from the Department of Transport there currently are no plans to remove this roundabout.

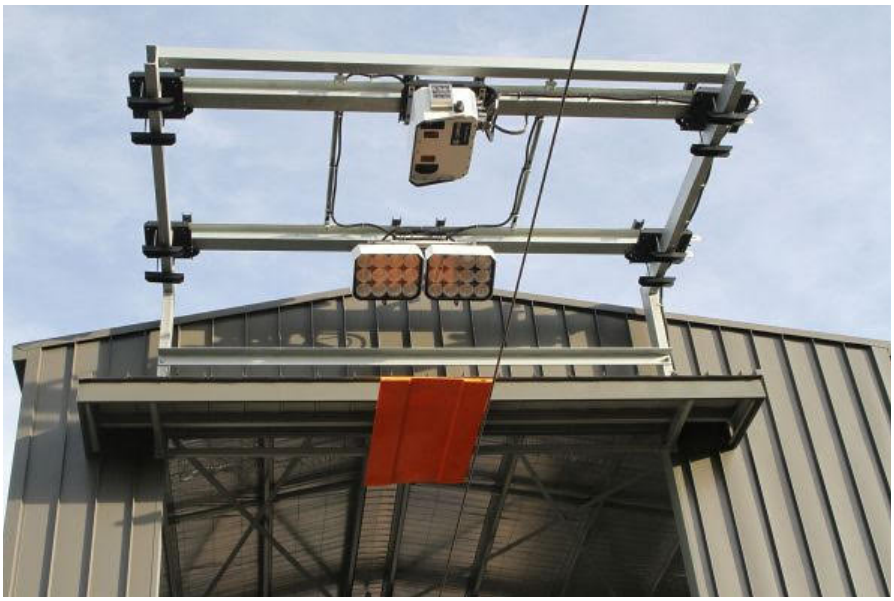
In August 2025 the huge flagpole at this intersection, installed in 1984 to commemorate the 150th anniversary of the State of Victoria, was removed by the City of Melbourne, due to maintenance costs becoming unsustainable.

Trams return to Wattle Park – Two refurbished tramcars are being installed at Wattle Park. M&MTB SW5 class numbers 746 and 777 replace the previous tramcars which had suffered repeated vandalism. Supplied by VicTrack, the tramcars were converted into picnic shelters by the Bendigo Tramways Heritage Rail Workshop. Installation is expected to be completed soon.

Somers Street crossover removed – When the East Burwood line was originally built in 1978, the line was first extended around 300 metres along Burwood Highway from the previous terminus at Warrigal Road, with double track to a crossover at Somers Street. This crossover has recently been removed.

Melbourne to host 2027 World Tram Driver Championship – Competitive tram driving involves a series of challenges to test drivers' precision, timing and skill. At the recent 2025 championship in Vienna, the Melbourne team from Yarra Trams placed 23rd (out of 25), with the winner being the home town team.

The event attracts thousands of spectators – we're looking forward to seeing all the action in person!



'Pantobot 3D' pantograph condition monitoring equipment at the entrance to Maidstone tram depot, 19 July 2025.

Photograph by Marcus Wong.

The Richmond cable line

This year marks the 140th anniversary of the opening of Melbourne's first cable tram line — and the birth of its cable tram network. The six kilometre line from Spencer Street Station to Hawthorn Bridge in Richmond was opened on 11 November 1885, heralding a revolution in Melbourne's street transport.

Until then, street public transport in Melbourne had been dominated by the horse cab and horse-drawn omnibus – slow, cramped and difficult-to-board vehicles. Within just six years, a network of quiet, spacious and accessible cable trams transformed commuter travel, becoming one of the marvels of 'Marvellous Melbourne'.

The photograph above captures a scene from that opening day. While the quality of the image is limited, it records one of the first trams outside the Richmond Town Hall packed with dignitaries as some locals watch on. After many months of construction that had blocked streets and spread mud and dust, local residents could now enjoy the benefits of this disruption.

In the photograph, you may notice the absence of two safety features that would be added to the trams in the following years. One missing feature is the protective skirt below the floor-level of both the dummy and the car. This would soon be added to prevent the wheels from injuring passengers' limbs or causing other damage. The other feature is the set of stanchions along each side of the open dummy. These would soon be added as grab-rails for passengers when rounding curves or boarding and alighting the dummy.

Above: The opening of the Richmond cable tram line on 11 November 1885, with dignitaries and some local residents outside the Richmond Town Hall.

Photograph from the collection of the Melbourne Tram Museum.

Upcoming exhibition

To mark this anniversary, the Melbourne Tram Museum is preparing an exhibition on cable trams. It will showcase the ingenious and complex machinery of the cable tram system and the influence it had on the lives of Melburnians. Readers will be notified when the exhibition opens.

Construction of this first line took a year. This required more time than with subsequent lines as contractors were unfamiliar with the work, plus some of the materials when delivered required adjustment. Three construction companies were contracted to each build one third of the six kilometre tramway; a further two companies were contracted to erect the engine house at Hoddle Street and the car house (depot) at the Hawthorn Bridge terminus.

As with most of the cable lines, the Richmond line replaced an existing horse omnibus route with an established passenger catchment, assuring its strong patronage.

- The busy Richmond Racecourse was located close to the tram terminus. Feeder omnibuses (and from 1890 horse trams) carried intending passengers over the bridge from Hawthorn.
- The increasing Richmond population lived and worked either side of the Campbell Parade line (now Bridge Road) with little competition from the nearest railway stations over a kilometre to the south.
- The Melbourne Cricket Ground just south of Wellington Parade provided heavy Saturday loadings.
- The railway hubs of Flinders Street and Spencer Street stations generated constant patronage. In addition, as there was no railway passenger service between these two stations until 17 December 1894, following the opening of the railway viaduct in 1891, many railway passengers used the cable trams to travel between the two stations.

The success of the Richmond line boosted the confidence of the joint partners, the Melbourne Tramway and Omnibus Company and the Melbourne Tramways Trust, as they pushed ahead with the network's construction.

Geoff Brown

Acknowledgements

My thanks to Brian Weedon and Robert Green for their research.

Crowds leaving the Richmond Racecourse squeeze onto a city bound tram on Bridge Road, early 1920s. The cable trams serviced the racecourse for over 40 years, but were clearly incapable of carrying the crowds by the 1920s. Note the discarded betting slips littering the roadway.

Photograph from the collection of the Melbourne Tram Museum.

Melbourne tram history now preserved at PROV

This article and accompanying photographs previously appeared on the Public Record Office Victoria (PROV) website. They are reproduced here with the kind permission of PROV.

Above: PROV Senior Communications Advisor Tara Oldfield looking through the Tramcar Fleet Plans with Records & Archives Analyst Andrew Harris.

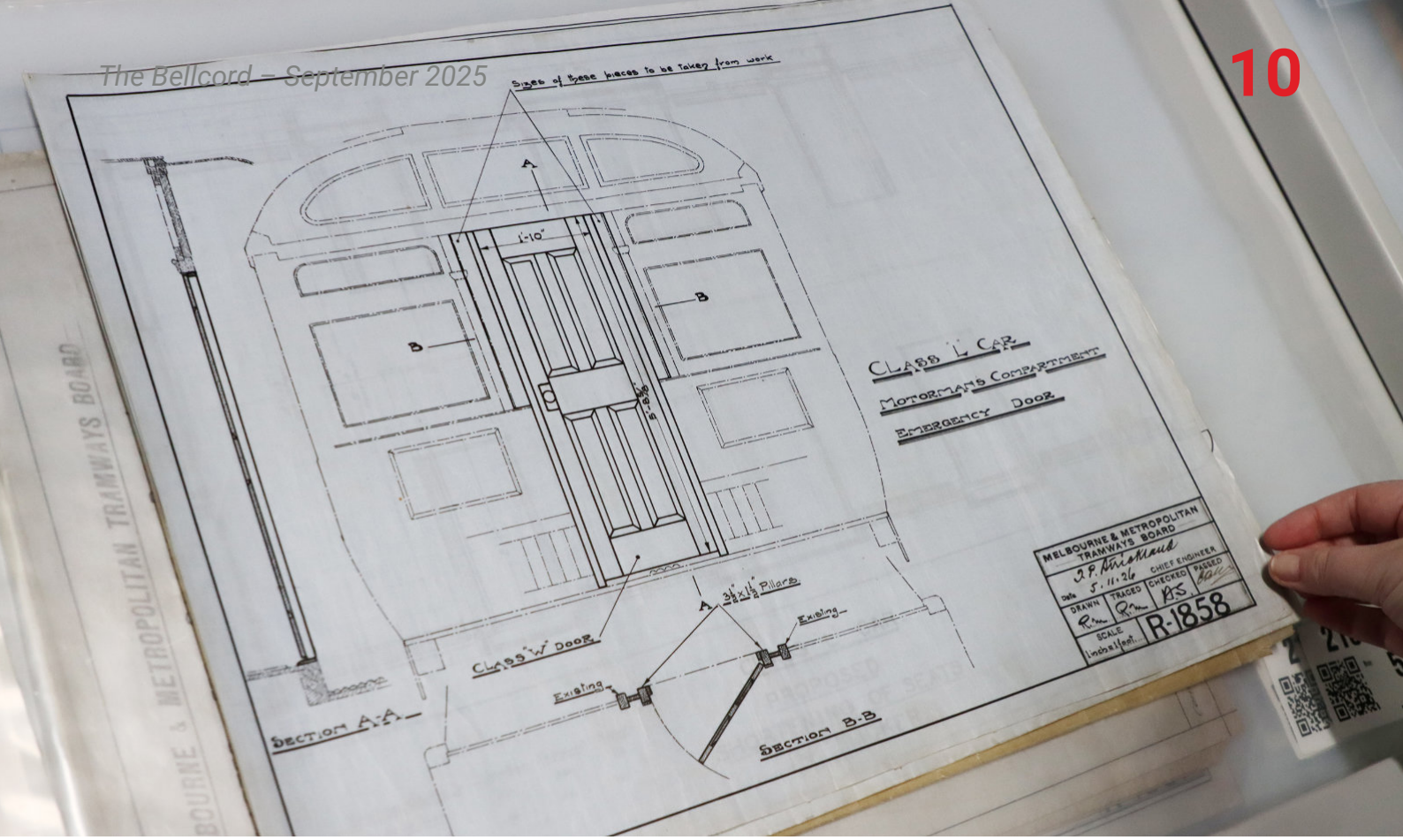
Photograph courtesy of PROV.

More than 1,300 plans used to construct and maintain Melbourne's tramcar fleet have recently been transferred to the Victorian Archives Centre from the Melbourne Tram Museum. The Museum previously had long-term custody of these VicTrack records. PROV wishes to thank the Museum volunteers for having taken great care in managing this extensive piece of Melbourne tram history.

What began with horse drawn, then cable cars, trams in Melbourne went electric in 1906 with continuous improvements to tram infrastructure since.

Each of the tramcar plans transferred to PROV, of which there are broadly four different sizes, detail elements of various tramcars from 1919 through to 1997.

The plans come in three varieties: linen tracings, prints and pencil drawings on tracing paper, representing all stages of the tramcar design and improvement process. Drawings were initially prepared in pencil on tracing paper. An inked copy on linen was then traced from the pencil drawing. The pencil copy was then usually destroyed, but some survived if they were not subsequently traced in ink. The linen tracings were amended as design alterations were made, therefore the linen tracings represent the final version of the drawing, which may have changed in either subtle or major ways from when they were originally prepared.



This L class car plan (above) shows a detailed door design that was retrofitted in these trams in 1926 as a motorman's compartment emergency exit. The design was taken from W class trams.

Photograph courtesy of PROV.

Plans within the series include details of decorated tramcars for centenary celebrations, advertising strip panels and varying seat arrangements through the years.

Now stored in specialised map drawers and shelving in the climate-controlled repository at the Victorian Archives Centre, these plans are available for researchers to order for viewing in the North Melbourne reading room, with more tramcar plans and digitised copies expected to be added to the collection over time.

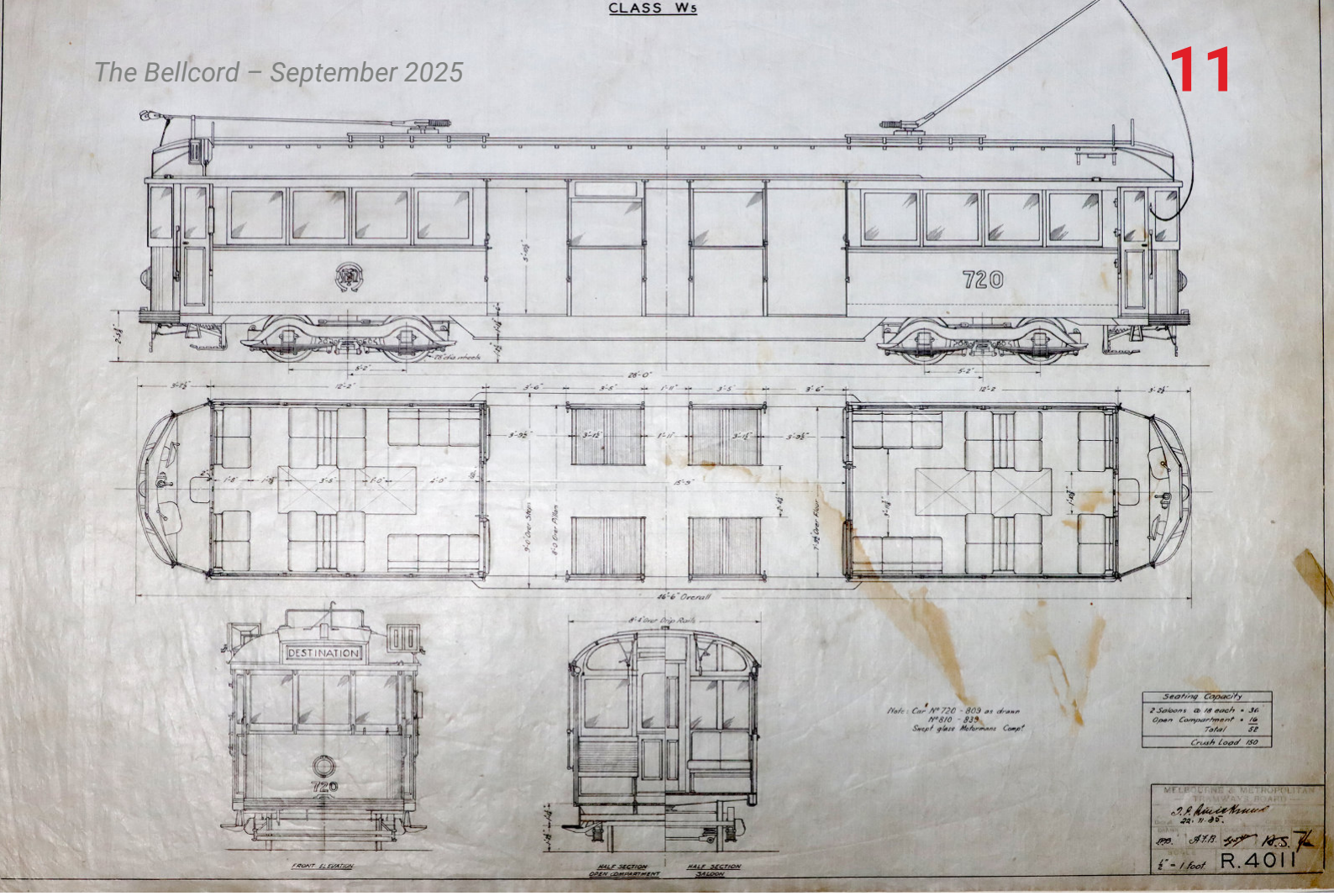
Plans may be ordered from PROV's Tramcar Fleet Plans series webpage.

Tara Oldfield, Senior Communications Advisor, PROV

The plan at right shows a smoker's compartment designed for the SW2 tramcar back in 1956, with a design for the class W7 located beneath it in the plastic file.

The SW2 class of tram was a 1938 variation of the W2 design with sliding doors, while the W7, built to replace buses along Bourke Street, had a sound-proof body and upholstered seats.

Photograph courtesy of PROV.



These general arrangement bogie car designs (above) for the W class show detailed drawings of the side, front and back sections, with a seating capacity of 52. The date on these reads 22.11.35.

Photograph courtesy of PROV.

After two years and thousands of scans, the Museum's digitisation project is now complete.

We were the custodians of around 3,500 original – and extremely fragile – tram plans and drawings. Most of the drawings are between 50 and 120 years old, with some dating back to the earliest days of Melbourne tramways in the 1880s.

Recognised as being of state significance, the originals were made on linen, paper or tracing paper. They include plans of cable cars, early electric trams and classic W class trams through to 'modern' Z, A and B class trams of the 1970s and 1980s.

The originals have been safely deposited with PROV, together with digital copies which are available to order from PROV.

The Museum retains digital copies of every drawing, which have been backed up securely using both local and cloud storage – individual images range between 100MB and 300MB in size.

Many thanks to VicTrack, for funding the project, and to Kevin Taig, leader of the Museum's team, ably assisted by Alan Scott, Rod Atkins and Warren Doubleday.

Noelle Jones

Fair go for trams

As at November this year, Melbourne's trams will have been operating continuously for 140 years. The early routes ran on suburban roads which were shared with other road users, initially commercial horse drawn vehicles and pedestrians. As the suburbs developed around the tramlines, there were limited opportunities to separate trams from other forms of road traffic.

In the second decade of the twentieth century, privately owned motor cars emerged as an option to meet the travel requirements of metropolitan residents. Trams had to compete for space with the additional traffic. Consequently, the operational performance of the tram system was adversely affected.

Congestion in the main was the result of the use of motor cars to meet personal transport requirements. Additionally the cable tram system at the start of the twentieth century was carrying passenger loads far in excess of the loads contemplated when the system was built. This also resulted in less-than-optimal tram performance which led to delays in services.

This article examines the attempts by the Melbourne and Metropolitan Tramways Board (M&MTB) to address both problems. In the second half of the twentieth century, the attitude of the Government slowly changed and various measures were implemented to separate tramway traffic from other road users. Some of these measures were more successful than others and will be discussed in a subsequent issue of *The Bellcord*.

Above: Even in 1908 Princes Bridge was becoming congested with horse drawn vehicles and cable trams. At that time motor vehicles were still uncommon.

Photograph is in the collection of the Melbourne Tram Museum, taken from a stereoscope by Underwood & Underwood.

Mode	Cable	Electric
Frequency (mins)	0.5	0.8
Trams / hour	120	75
Capacity / tram	60	100
Capacity / hour	7,200	7,500

Sources:
The Herald, 2 March 1926, page 4
The Argus, 2 June 1926, page 26.

Royal Commission on Traffic Congestion

In 1918, the Melbourne City Council and other suburban councils approached the Premier of Victoria requesting that a Board be established to investigate and report on the problem of traffic congestion in Melbourne. Five professionals were appointed to the Board, including West Outtrim Strangward (1870-1929). At that time, Strangward was Secretary of the interim Tramway Board which had been established to manage the cable tram system pending the establishment of a permanent Board. This appeared to be the first occasion where the tramway operator participated in an investigation of the emerging issue of traffic congestion.

On 17 June 1919, the Board reported to Parliament suggesting that there were three main causes for street traffic congestion:

- population growth
- increase in the 'travelling habit' of the metropolitan population (see the graph on the next page)
- an increasing volume of commercial traffic resulting from the growth of commercial and industrial activities.

The first two points are particularly relevant to Melbourne's tram and railway services, and are explored below.

In its discussion of industrial traffic the Board focused its observations on Flinders Street. Due to a lack of easy access from Queen's Bridge to St Kilda Road, traffic heading to the southern suburbs generally turned right at Swanston Street and crossed the Yarra River at Princes Bridge.

Traffic on Queen's Bridge, surrounding a Market Street bound cable tram, c1930. In the background is an electric train on the Sandridge Railway Bridge.

Photograph courtesy Public Record Office Victoria.

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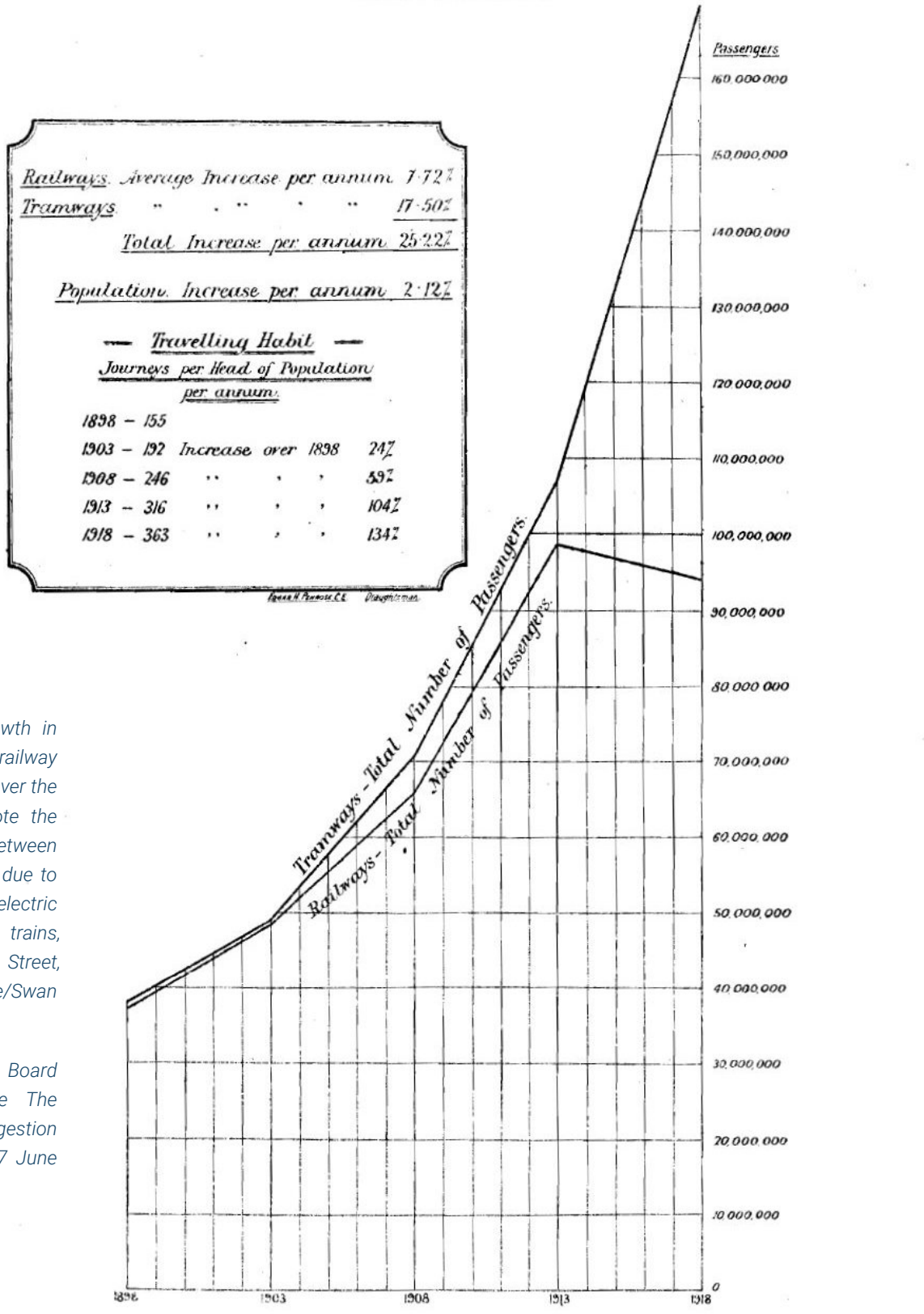
TRAFFIC BOARD
JUNE 1919.

— INCREASE. METROPOLITAN RAILWAY AND TRAMWAY PASSENGERS. —
PERIOD 1898-1918.



Original graph of the growth in metropolitan Melbourne railway and tramway passengers over the period 1898 to 1918. Note the decline in rail passengers between 1913 and 1918. This was due to passengers preferring electric trams over steam trains, particularly on the High Street, Prahran, and Riversdale/Swan Street corridors.

Source: Report Of Board Appointed To Investigate The Problem Of Relieving Congestion Of Traffic In Melbourne, 17 June 1919.

Year	Registered vehicles in Victoria	
	Motor cars	Motorcycles
1915	9,175	6,282
1920	21,722	12,364
1925	83,622	19,929
1930	125,315	25,405
1935	140,483	24,968
1940	127,987	19,246
1945	120,735	16,616
1950	222,254	34,281
1955	420,523	19,934

Year	Population	
	Melbourne	Victoria
1901	494,000	1,205,000
1911	589,000	1,320,000
1921	767,000	1,537,000
1933	992,000	1,821,000
1947	1,226,000	2,106,000
1954	1,524,000	2,481,000

Source: Victorian Year Books.

The Board also noted the increasing use of motor cars for 'social purposes' but otherwise was quiet on the potential future impact of private motor cars on traffic congestion. Parking on city streets was also seen as a major contributory factor to congestion, particularly near intersections where moving traffic was constrained to a single lane.

The Board's main recommendations were:

- to build an additional bridge across the Yarra River at Spencer Street
- to consider parking restrictions in the main city streets
- to ban right hand turns into Swanston Street at certain times of the day.

The impact of motor cars

Although the motor car first appeared in Melbourne at the start of the twentieth century, it took some time for those in authority to recognise the profound impact that privately owned cars would have on people's lives.

The Royal Commission on Congestion included only a cursory mention of the privately owned motor car. Contemporary accounts of motor cars waxed lyrical about the opportunities made available by the increased mobility compared to the previous equine technologies, such as this extract from *The Herald* of 5 May 1927:

> Our good old friend and servant, the horse, went a long way in a long time. He was a promoter of insularity. As far as transport went, his restricted ambit tended to gather people round the parish pump. When the motor came along it carried people far afield, took them to places they had only dreamed of, broadened their vision, showed them how their fellow citizens lived, and taught them geography. Distances that one hesitated to negotiate with a horse were covered by it in an hour. The trip that once occupied two days was done in a morning.

Historian Graeme Davison has written on the motor car and its effect on Melbourne. Writing in 2008, he pulls no punches:

> Motor vehicles were the most transformative influence on the character of Melbourne in the 20th century. Cars and the spaces they occupy now dominate the suburban landscape. Next to housing, they make the largest claim on the expenditure of households. Cars are the largest cause of deaths and injuries among young Melburnians and their dependence on oil, a polluting, non-renewable fuel, potentially threatens the environmental sustainability of the city itself.

The Victorian Year Book has statistics on the number of privately registered vehicles, as well as Victoria's population. It is clear that car ownership was growing more rapidly than Melbourne's population.

The consequences for tramway system were profound, particularly as in the post war years there was little political will to prioritise trams.

Looking east along Collins Street, Melbourne, 1930. Cars are clearly double parked.

Photograph by Rose Stereograph Co, courtesy of State Library Victoria.

Car parking

The 1920 Royal Commission Report discussed car parking at some length. The discussion was headed rather quaintly with the phrase "Loitering of vehicles beside kerbs." The discussion then commenced with this car-centric observation.

> Stationary vehicles restrict the road space, and interfere with the freedom of moving traffic, particularly near intersections, with the result that vehicles are frequently forced to approach the stop mark in single file instead of two or more abreast; consequently more time is occupied by the stream of traffic passing through the intersection.

The Board then suggested three types of parking restriction:

- maximum periods of 30 minutes in the centre of the city
- no parking in some of the main city streets between 4.30pm and 6.30pm on weekdays and 11.30am to 1.30pm on Saturdays
- no parking within 60 feet of the major city intersections.

In 1922, the City Council adopted additional traffic regulations which prohibited vehicles from parking within prescribed distances of the major central Melbourne intersections. In some instances, the distance was 600 feet, otherwise 100 feet was prescribed. These regulations took effect on 22 April 1922.

It was another five years before the Council introduced further restrictions. Opponents were vocal, and the press were quick to report their protests. From *The Argus* of 22 June 1926:

> Representatives of the Royal Automobile Club, the Chambers of Commerce, Manufacturers, and Automotive Industries, the Victorian Softgoods Association, the Real Estate Agents' Association, the Motorcycle Club, and other organisations and merchants, met in the boardroom of the Automobile Club yesterday afternoon to protest against restrictions suggested by the traffic committee of the City Council on the parking of motor cars in the city.

Occasionally, a piece would appear with a more considered point of view. On 1 April 1926, *The Age* published an editorial with the heading 'Traffic Congestion – The Parking Evil'. The analysis could well have been provided by the Tramways Board.

> Whatever interests may be affected, and whatever inconvenience may be caused to a relatively few motorists, the one incontrovertible fact is that streets are for traffic, and for traffic alone. The tram car, which is the most economical means of transport, has a very large claim to fairer treatment. A census taken by the Town Planning Commission revealed the fact that, taking the six most popular cars used in Victoria, the average space per motor passenger was 37 feet, while that of an electric tram, comfortably loaded, was 3.2 feet.

More recent strategies for addressing the challenges of congestion will be discussed in a subsequent issue of *The Bellcord*.

On 1 March 1927, the next stage commenced. Peak hour parking restrictions came into effect in the central streets of the city. The weekday restricted periods were an hour in the morning peak and either two or four hours in the evening peak depending on the location.

These restrictions were still less than satisfactory in mitigating delays to trams caused by traffic congestion. There were no further restrictions over the next decade, and the Tramways Board became increasingly more strident in its commentary on delays to its services. In 1938, Mr. W. McGrath, the Deputy Chairman, offered this rather sobering analysis:

> Eighteen of the worst cases occurred in Collins-street because of the double and at various places the treble parking of motor cars between Swanston and William streets. Towards the late afternoon, the mass of parked cars in Collins-street was so large that it was impossible for trams to run to schedule time, and trams could often be seen stationary midway between the various stops, jammed in the narrow lane left for traffic between the parked motors and the rails.

On 29 August 1938, the parking prohibitions in Swanston Street were extended to operate from 8.00am to midnight. Four months later, the Board Chairman, Mr H. H. Bell, asked that similar restrictions placed on vehicles In Flinders, Collins, Bourke and Elizabeth Streets within at least the area bounded by Queen and Russell Streets. He also added a suggestion that time restrictions be introduced elsewhere:

> In most of the cities I visited while abroad, I found that there was a time limit on the use of parking sites, and I think a suitable time limit should be introduced here.

On 1 July 1939, time limited parking was finally implemented in Queen, Russell and William Streets. The new restrictions worked satisfactorily, leading to their extension to other streets in the city.

Brian Weedon

Heavy traffic approaching Princes Bridge along St Kilda Road, c1928.

Photograph by the Darge Photographic Co, courtesy of State Library Victoria.

Melbourne: trams or trolley buses?

Melbourne was unique among Australian State capitals, being the only city that never operated trolley buses. Nonetheless over the years there were several schemes proposing their use in Melbourne. This brief overview examines early considerations regarding implementation of trolley buses in Melbourne, including for their use on the Brunswick line before it was converted from cable to electric trams.

Support for trolley buses – initially referred to as railless or trackless trams – continues to appear from time to time in newspapers and other sources. In many European cities, there are large fleets of trolley buses, many now equipped with batteries, used to enhance operational flexibility. Trolley buses were similar to trams in that they could not overtake one another, although if a trolley bus became defective it could be parked and the trolley poles pulled down.

Originally developed in 1882 by Dr Ernst Werner von Siemens (1816-1892) – founder of the German technology company Siemens – over the next few years trolley buses started to appear in various European cities. Initially a variety of current collection systems were used; the system that eventually became the trolley bus standard was developed in 1901 by the German engineer Max Schiemann (1866-1933).

Above: Sydney AEC Trolley Bus No 1 going into service at Rushcutters Bay, January 1934. The large building on the right is the Nu-mestic Laundries at 153 Bayswater Road, with the tracks in the foreground going into the tram depot. The former cable engine house alongside the Rushcutters Bay tram depot was used as the trolley bus depot.

Photograph by Sam Hood, Mitchell Library, State Library of New South Wales.

Perth trolley bus in Cambridge Street, Leederville, 1930s. These buses only had a few opening windows (indicated by the window bars), however passenger complaints about the hot conditions led to all the windows converted to enable opening, all with bars. It is believed the conversions were completed before 1939.

Photograph from Wal Jack, courtesy of Ballarat Tramway Museum.

The first two trolley bus services in the United Kingdom were introduced in Leeds and Bradford in June 1911. By the early 1930s, trolley bus services had started in many other UK cities, including Birmingham (1922), Wolverhampton (1923), Ipswich (1923), Darlington (1926), London (1931), Derby (1932) and Nottingham (1932). Typically, trolley buses were replacing first generation tramways which had reached the end of their economic lives, foregoing the need for track or vehicle replacement.

In Australia, the first trolley bus line was an experimental service that operated from May 1932 to August 1934, running between the Adelaide suburbs of Payneham and Paradise. This vehicle, which became known as the 'Green Goddess', was originally built in 1925 by South Australian Railways as an open-topped double deck Garford petrol bus. It was purchased by Adelaide's Municipal Tramway Trust in 1927 and converted to a trolley bus in 1932. It is now preserved by the Australian Electric Transport Museum in Adelaide.

The last Australian city with trolley buses was Perth, which operated its network from October 1933 until August 1969.

In 1922, the Melbourne & Metropolitan Tramways Board (M&MTB) was actively considering 'Railless Trolley Buses' for a route between East Northcote and Ivanhoe – many technical pamphlets from this time are held by the Museum. The aim for this project was largely to support residential land development. However the project was dependent on the local councils forming and draining the necessary roads and possibly providing a municipal guarantee for any financial losses incurred on the route. The M&MTB Act of 1919 was amended in late 1923 to provide the M&MTB with powers to construct and operate 'electric railless trolley omnibuses'. Mentions of the proposal disappeared from the M&MTB Minutes in late 1922, other than in relation to the amendment of the Act.

Municipal Tramways Trust AEC trolley bus No 409 at the corner of Rundle Road and Dequetteville Terrace in Adelaide, on a trial run, 10 July 1937. To the left is MTT tram No 272.

Photograph courtesy of the State Library of South Australia.

In a large file held by the Museum there is extensive correspondence from 1934, including minutes of meetings regarding the use of trolley buses from Flinders Street to Brunswick along Sydney Road. This is outlined in Geoff Brown's article on "Brunswick Depot's hidden past" (in *The Bellcord* No 61).

At that time, trolley buses were replacing trams in the United Kingdom. In Melbourne, both the Royal Automobile Club of Victoria (RACV) and the Motorist's Defence League were keen advocates of trolley buses. The City of Melbourne sent two officers to Sydney to examine its fledgling use of two AEC trolley buses on a route from the CBD to Kings Cross and Potts Point. Sydney's AEC Trolley Bus No. 1 is now in the collection of the Powerhouse Museum in Sydney.

The Council officers noted the 'unsightly' overhead needed and that trolley buses were unsuitable for heavy peak loading conditions – they were better suited to even loading situations. Their report on the Sydney visit reluctantly recommended trams:

> We say [this] reluctantly as it would be pleasing to us to advocate this system of transport in preference to electric trams if it were at all possible, in view of the many advantages that trolley buses possess by reason of their mobility and flexibility and the safety by which they are boarded by passengers at the kerb instead of in the centre of streets, thus obliviating the necessity for safety zones with their consequent reduction in available road space.

Extract from the AEC Trolley Bus specification, stamped with the date 15 August 1922, in the collection of the Melbourne Tram Museum.

Also noted was the lack of car parking on major roads in the Sydney CBD – parking being prohibited in most streets, with a few exceptions having a limit of 30 minutes – and Sydney's superior traffic control measures.

The RACV strongly supported the use of trolley buses. Its representatives met with the M&MTB Chairman, Alex Cameron, and Board members – which included Melbourne's Lord Mayor, Sir Stephen Morell – on 12 July 1934. The M&MTB's formal response to the RACV following the meeting stated:

> ...that the Council of the Club has failed to submit any effective arguments which should induce the Board to alter its decision.

The RACV clearly viewed trams as a major obstacle to improving the flow of motor vehicles. Contemporary reports describe Melbourne traffic as 'manic' – the roads being filled with fast moving traffic with parked vehicles taking up further road space (permitting car parking in the central city area was a contentious issue). The solution, according to the RACV, would be to eliminate tramcars, in particular from Elizabeth Street, with that street being described as too narrow to support trams if converted from cable to electric. The RACV appeared to overlook the earlier highly successful electric conversion of the identically wide Swanston Street.

M&MTB records, including a detailed memo from the Chief Engineer, identified a number of major drawbacks – both logistical and financial – associated with introducing trolley buses on the Elizabeth Street routes:

- Lack of a feasible solution for turning trolley buses at the Elizabeth Street terminus – a turntable was impractical due to the large barrel drains under the street, while the alternative of executing a series of turns around the block of Flinders, Queen and Collins Streets would increase congestion and delays.
- To pick up and drop off passengers, trolley buses would need to weave in and out of the traffic stream, increasing the risk of accidents in traffic that was already chaotic.
- Due to their lower passenger-carrying capacity, 25% more trolley buses than trams would be needed in peak times, increasing the number of vehicles on the roads. Operational costs would rise, to cover the additional buses and their drivers and conductors.
- Under the Motor Omnibus Act, bus operators were required to pay the State Government an annual seat tax of £3/7/6 ($408 in 2024 dollars, adjusting for inflation) per seat for every bus, further increasing costs for the M&MTB.
- Fully loaded trolley buses could weigh around 12 tons (12.19 tonnes) – frequent services would increase the need for road maintenance by councils (who could prohibit vehicles of more than 5 tons (5.08 tonnes) or require them to hold special permits). The councils would then seek compensation from the Board for the maintenance of the whole roadway surface rather than only for the section occupied by the tram tracks.

By the 1930s, car parking in central Melbourne was becoming a major problem, adding to traffic congestion. Alex Cameron, Chairman of the M&MTB noted: "The City Council, however by special legislation, has been authorized to turn its streets into garages". The situation was exacerbated by conflicts between the City Council and the police on parking regulations – at one stage police were ordering motorists to park at an angle, which uses more of the road width, in defiance of Council directions that parallel parking be used.

A letter to the M&MTB from the Motorist's Defence League, dated 13 August 1934, noted that the City of Wolverhampton in the United Kingdom had converted its tram routes to trolley buses. The writer claimed that trolley buses were cheaper to run, there were fewer accidents and that passenger numbers had increased. The League's Secretary suggested that the buses could turn by continuing the routes through to Port Melbourne or South Melbourne beaches. In respect to road damage, it was noted that the old style solid tyres resulted in much more stress on the road surface than that from pneumatic tyres.

Trolley buses were less flexible than motor buses. They tended to keep to the centre of the road in order not to deviate from the overhead wires, causing congestion. If one bus caught up with the bus in front, the first would block the second from pulling into a bus stop, causing even more congestion if there were parked cars. One wag suggested:

> Trams are useful and versatile, trolleys are just hamstrung buses with road constraints.

Given that the Brunswick cable line was the busiest in Melbourne requiring the use of higher capacity bogie trailers, it is difficult to imagine that trolley buses would be successful. It was a potential case of politics getting in the way of practicality and would not have been feasible for that route given the volume of its passenger traffic.

One can imagine the chaos caused by a conga line of trolley buses every two or so minutes during peak period working their way along Elizabeth Street, weaving in and out of bus stops waiting for a motorist to give way.

As Geoff Brown notes in his article, the Chairman and the Board were not for turning away from electric trams to trolley buses. The electrification of Elizabeth Street would proceed.

Warren Doubleday

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Back in 1969 this complex intersection at The Gabba, Brisbane was crossed by a busy tram junction, a rail line and a trolley bus route.

Photograph by Warren Doubleday.