

The Bellcord



Siemens D1 3501 in M>Tram livery at its launch in William Street at Dudley Street (2 August 2002). D1 3501 and three other D1 class trams entered service in December 2002 – the same month that National Express returned its franchise to the government. A total of 38 three-section D1 class trams had commenced service by 29 February 2004. The M>Tram fleet was transferred to Yarra Trams in April 2004 under a new single franchise. Photo: Mal Rowe

Introducing low-floor trams to Melbourne

In a short three-year period from 2001 to 2004, 95 European built low-floor trams entered service on Melbourne's tram network. Details of these Alstom and Siemens trams (now designated C1, D1 and D2 classes) are available in *Destination Waterfront City (2014)* by Randall Wilson and Dale Budd.

This article looks at some of the factors behind the choice of European trams and their rapid deployment at a rate of 30 per year – considerably faster than the deployment rate of the previous B2 class (22 per year) and the current E class (13 per year).

Privatisation

During the early 1990s, the world economy took a severe downturn which had a significant impact on Victoria and its manufacturing industries. A new state government was swept to power focused on reducing costs and improving the state's finances.

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As public transport had lost patronage before 1990 and required considerable state subsidy, the new government decided to apply the prevailing economic view that private sector disciplines and innovation could significantly reduce these losses.

The government set about reducing staffing levels and splitting the rail and tram networks into separate corporations in readiness for their privatisation. In 1997 the tram network was divided in two. Yarra Trams operated the routes running East-West in the CBD and Swanston Trams (renamed M>Tram by the franchisee) operated those running North-South.

Tenders were then called for each with successful applicants signing franchise agreements in mid-1999, obliging them to purchase new rolling stock that would provide disability access and enable replacement of the oldest trams in their fleets.

So why hand the responsibility of purchasing new rolling stock to the new franchisees rather than assign it to those with long term knowledge of the network? The (then) director of the Transport Reform Unit, Department of Treasury and Finance, David Greig, provided an answer in his 2002 review.

"One of the benefits of privatisation was seen as avoiding repetition of poor public sector decisions on rolling stock design. For example, new trams were bought in the 1950s using a 1920s design; the newest PTC trams had significant technical problems..." (page 242). (It is not known what problems David Greig was referring to.)

Procurement process

The Victorian Auditor-General's Report of September 2005 on franchising Melbourne's trains and trams outlined the rolling stock procurement process. "Under the original agreements, rolling stock leasing companies contracted with manufacturers to build new trains and trams, and leased them to the franchisees to operate. The

rolling stock leasing companies funded the purchase of the new stock, and the franchisees paid them leasing charges out of the government's payments." (page 30)

David Greig explained that the reason for this arms-length process was to ensure that the government or successor franchisees had access to rolling stock to provide continuity of service.

The international leasing companies placed production orders with Alstom and Siemens, and preparations were made on the Melbourne network to operate the new European trams. The rolling stock deadline was met with 95 low-floor trams in operation by the end of 2004.



D2 5001 in Swanston Street (31 March 2004) during its first weeks in service. A total of 21 five-section D2 class trams had entered service by 30 November 2004.

Photo: Mal Rowe

Disability Discrimination Act

The short delivery timeline was influenced by the federal government's Disability Discrimination Act (DA, 1992) that prohibits discrimination against people with disabilities. In the 1990s, all Melbourne trams were considered inaccessible to many mobility-impaired persons.

In 1998, Victorian transport authorities applied to the Australian Human Rights Commission for an exemption to the DDA for Melbourne's trams. The Commission heard submissions from a variety of groups.

Transport authorities argued that tramway rolling stock was designed for a longer working life than the compliance timeline of the draft standards. They proposed a revised action plan to bring forward some rolling stock replacement from 2008 to 2002, so as to allow a longer timeline to replace the remaining non compliant fleet.

The Commission accepted this action plan, granting an exemption in March 1999, just months before the signing of the tram franchise agreements.



Alstom C 3001 on the day of the official launch of the C class (12 October 2001) in Collins Street at Swanston Street. Fleet numbers were shown only on the side of these trams at this time. A total of 36 three-section C class trams had entered service by 30 August 2002.

Photo: Dale Budd

This exemption was subject to a number of conditions which included the following:

“3 (a) provided that an adequate interface between low-floor trams and infrastructure can be achieved [eg. platform stops], new trams will be introduced in Melbourne commencing in 2002 with 106 vehicles being replaced by the end of 2004 by 90 larger capacity low-floor vehicles, ...” (The franchisees exceeded this requirement by introducing 95 new trams.)

“...The effect of the decision will be that if the applicants commence in 2002 to replace their existing fleet with accessible trams, they will not be acting unlawfully in continuing to provide services with trams that are now part of their fleet even though those may be inaccessible to some people with disabilities.”

The details of this exemption help to explain the speed with which low-floor trams were introduced. Representatives of disabilities groups disagreed with the Commission’s decision. Since 1999 the revised compliance timeline has been further lengthened.

Low-floor tram development

Franchisees and leasing companies preferred European trams when sourcing new vehicles for the Melbourne system. Many European cities had retained their tramway networks throughout the twentieth century rather than dismantle them. So it was unsurprising that much of the ongoing tramcar development occurred in Europe. In the early 1980s, experimentation with partial low-floor trams caught the interest of European manufacturers.

Melbourne had also begun research into partial low-floor trams. In 1982 the Victorian Minister for Transport encouraged the development of a concept design for a low-floor tram, but it was rejected by the M&MTB. In 1989-90, Commonwealth Engineering (Comeng) proposed that the second half of the B2 class order be built to a 60% low-floor design. The first body shell was under construction when the low-floor decision was reversed.

Then in 1998, ADtranz, the successor to Comeng, undertook the design of a low-floor module to be inserted between the two sections of a B2 class tram. Such an approach had been applied in Europe, but this proposal did not proceed.



Artist's impression of the low-floor variant of the B2 proposed in 1989-90.

Artwork by Phil Belbin for John Dunn/ABB

100% low-floor

In 1990 a 100% low-floor tram was produced for the German city of Bremen. This design enticed a number of rail vehicle manufacturers, some with many decades of experience, to develop their own models and promote them internationally. These designs caught the imagination of the travelling public including advocates of equal access for people with disabilities.

Many of these designs have fixed trucks with motors either side of a central passenger aisle, and wheels of small diameter – 600mm or 610mm. To enable these trams with their fixed trucks to negotiate corners, the vehicles are divided into a number of short sections with flexible connections.



Siemens D class fixed truck at Southbank Depot showing the space for the central passenger aisle. (2011)

Photo: Kevin Taig

Melbourne's franchisees chose these fixed-truck trams, now designated C and D class. They were sufficiently successful that when more trams were needed in 2007, the Victorian Government leased, and later bought, five additional low-floor trams using this design. These became the C2 class.

Experience in service

Operational experience has shown that this fixed-truck design can cause extra wear on wheels and track and increased structural strain to the vehicle. For example, the Siemens D series trams have required major structural re-building with additional bracing on the corners of the frames.

Optimum results have been achieved operating the fixed-truck design on purpose-built track with limited curves and reserved right of way. Such specifications suit cities that are re-introducing trams and have the opportunity to build new routes.

However, legacy tramways in cities such as Melbourne often run along narrow suburban streets with multiple curves. These cities cannot always modify their routes to the above mentioned specifications.

Many such cities appear to be supporters of trams using swivel trucks, either partial low-floor or 100% low-floor, such as Melbourne's E class tram. With renewed interest in tramways world-wide, no doubt further design developments are on the horizon.

My thanks to Mal Rowe, Randall Wilson and Dale Budd for their assistance.

Geoff Brown

References:

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Overnight Testing

Melbourne tram driver and enthusiast, Ron Scholten, was one of the M>Tram staff sent to Siemens in Germany during 2001 to learn about the new low-floor Combinos. Upon return, he and others were rostered on overnight shifts to drive the new trams during their safety accreditation trials. Ron takes up the story.

One night in 2003, I was allocated a five section D2 Combino – its floor laden with sand bags to seat height. It appeared to be the heaviest tram in Australia. On board this night I had a Department of Transport inspector who was to pass or fail the tram. This made me very nervous.

After hours of testing on the reserved track near Airport West terminus, I was instructed to drive through Moonee Ponds Junction to Maribrynong Road and to descend the steep grade to Ascot Vale Junction in our overweight Combino. I was told to put the controller to full speed and, when directed, to drop the pantograph and stop the tram without track brakes. We reached 80kph, panto came down, computer turned itself off and we were free wheeling. "Brake," came the instruction and I did so with sweat pouring down my face and no track brakes.

Thankfully the junction lights were green as we were not able to stop until we were level with the third shop on the other side. I thought I'd failed the test but the inspector said, "Not bad - but we have to do it again to get a correct reading." It was now around 4 am.

This time I said to the inspector that if those lights changed I would have to use the track brake. "No worries. You do what you have to do." So down the hill at 80kph, more sweat, panto down, brake – but the lights changed against us and out came a yellow cab. I yelled, "Abort!" and used the track brake to stop at the tram stop.

The inspector said, "Great tram. Let me out. I'm going home." Going home, I thought. I need a change of underwear.

Abbotsford Street

There were many other interesting and hair raising tests. One night in 2002 I was driving a three section



Siemens D2 class tram on night testing at St Kilda Junction. (2004)

Photo: William D Fedor

D1 Combino with several computers and three German experts on board. At the Flemington Road and Abbotsford Street intersection, we met a group of technicians standing at the junction box with a computer on top.

I was instructed to cross the intersection a number of times as the technicians observed current flow and point changes. Then I was told to push the controller hard forward and cross the intersection as fast as I could without cutting off. Many flashes were observed from the overhead.

Then came the challenging part. I was instructed to approach the intersection at high speed, stop at the points then make the right hand turn into Abbotsford Street with the controller in full power. The German controller insisted that it had to be done exactly as he instructed because it would only be done once. The motor traffic was stopped, the all-clear given and we came as fast as we could to the points and stopped. Then with the controller set to full power we made the right turn.

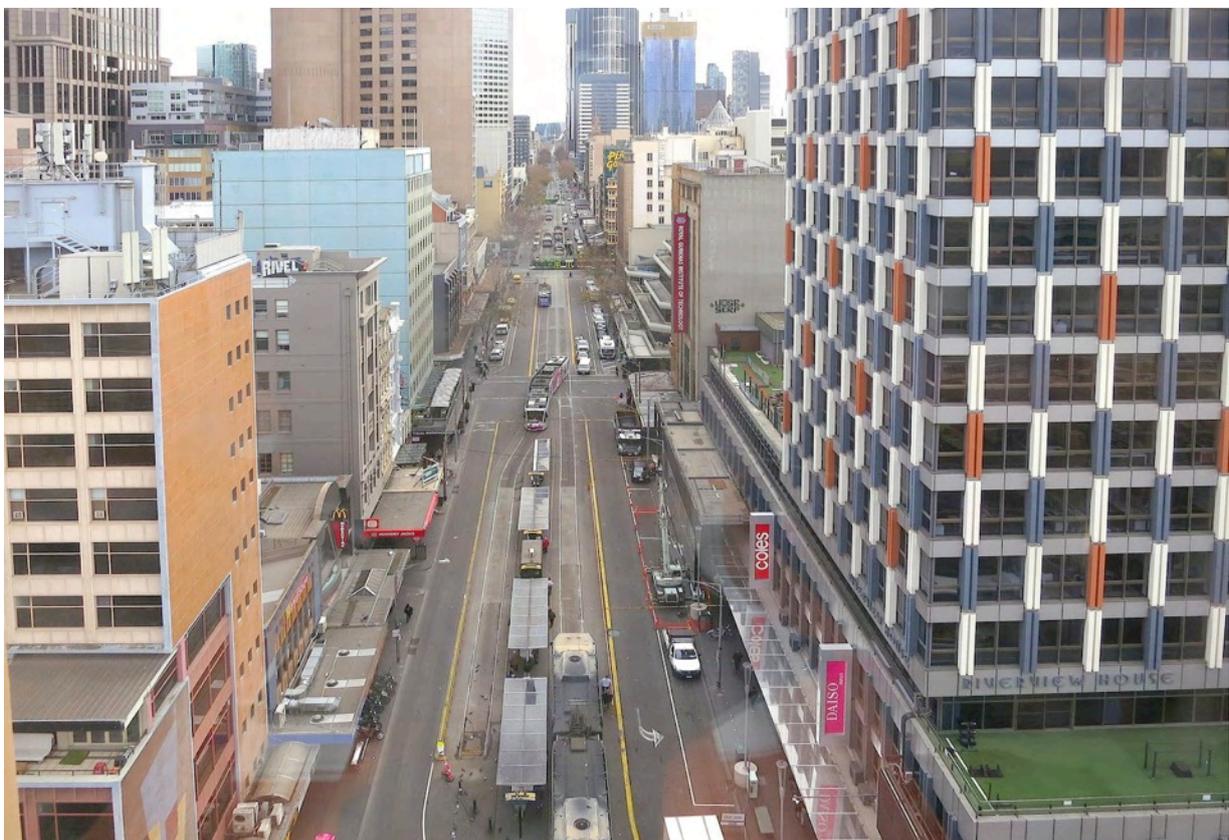
I remember glancing at the all-night service station on the corner and thinking, "Get the coffee ready. We are coming in!" As the Combino lurched on the curve, I cut off as any driver would. The German yelled, "Forward!" Of course nothing untoward happened. We glided around the curve for a perfect test and we didn't need the coffee. But another change of underwear was on the cards.

Ron Scholten



Then and Now

Elizabeth Street at Flinders Street has been a tram terminus since 1887, two decades before construction of the railway clock tower from which these photos were taken. Above, a distinctive bogie trailer from the Brunswick cable line shunts into position behind its dummy, as passengers wait on the platform stop. Trams from North Melbourne and West Melbourne approach. (c1926-35) Photo: Melbourne Tram Museum



Over 80 years later, a B2 class electric tram awaits departure to Airport West while a D2 class arrives from North Coburg snaking across the tracks to reach the terminus. (2018) Photo: Geoff Brown



Outside Kew Depot after the evening peak – a service car from Mont Albert to the City is followed by three cars running in. (1978) Photo: Trevor Triplow

Conductor Tales: School Kids

In my time, route 48 tram to North Balwyn and route 42 to Mont Albert (now part of route 109) had more schools along their lines than anywhere else in Melbourne. Route 69 along Glenferrie Road (now part of route 16) came a close second.

Students would get up to their usual tricks of passing along their school concession cards to others and ringing the bellcord for the driver to proceed when the conductor was off the tram 'punching' the Bundy clock. Some also put railway detonators on the tram tracks.

One group on route 42 was notorious for partially cutting through the leather bellcord. When the connie tugged on it to signal the driver, he or she sometimes lost control of the heavy conductor's bag and the coins would spill out on the floor.

A knowledgeable connie would get his or her own back by tying the straps of school bags to the seat legs when the kids were distracted. When they struggled to pick up their bags at the school stop, "Sorry, we can't wait all day." Ding! Ding! We did hear that some of kids got the strap or were given lines for being late for school.

However, the kids had the last laugh by placing pink bubblegum in the Bundy clock slots and other practices.

*Kevin Tierney
Museum member*

Transporting Art

Artist Elizabeth Gower painted tram SW5 806 in 1988 as part of the original Transporting Art program.

She has graciously supplied the museum with a number of digital images of her tram for use with our exhibition, including one image of the conceptual artwork for her original design.

Gower has been exhibiting her work since 1976, with over 30 solo exhibitions in Australia and overseas to her credit.

Her practice draws much of its inspiration from the everyday, including commercial and familiar objects, creating innovative abstract compositions from humble materials, with an emphasis on translucency, impermanence and fragility.

Her work is held in national and state collections, and she has received a number of public commissions including her art tram. Gower has also been the recipient of numerous grants and residencies.

Elizabeth Gower hopes to visit the museum to view the Transporting Art Exhibition in April, together with fellow members of the Women's Art Register.

Russell Jones



Artist Elizabeth Gower with SW5 806 and assistants in the background. Photo supplied

Museum News

Assistance for Yarra Trams

The museum was approached by Yarra Trams in May 2018 to again provide the correct car number artwork for the latest W8 class trams, and to provide input for PTV's updated fleet livery guidelines.

Using the M&MTB drawings held in our archive, Adam Chandler who is also a trade graphic designer was able to supply the correct artwork in digital format, and to advise on the correct application of these and the Board's monogram.

W8 961 is the first car out-shopped with the complete and correctly positioned livery. This is a great example of the ongoing partnership we have built with Yarra Trams.

New arrival at museum shop

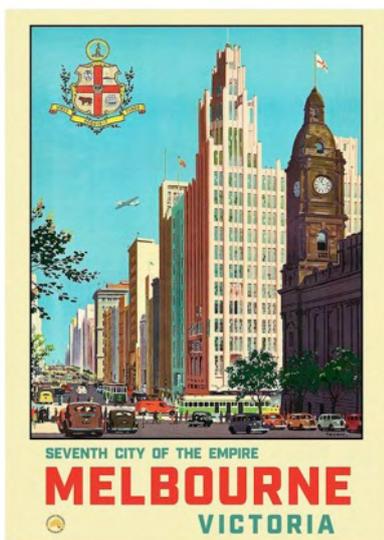


Now in stock are our new navy blue Melbourne Tram Museum caps at \$17.50 each. One size fits all.

Classic Melbourne

Also available for purchase is this reimagining of a Melbourne travel poster originally commissioned by Victorian Railways in 1930.

Designed by noted Australian commercial artist Percy Trompf, this unframed poster comes in two sizes – 595 × 422mm (\$50) and 894 × 630mm (\$80) – both printed on 230gsm archival quality paper.

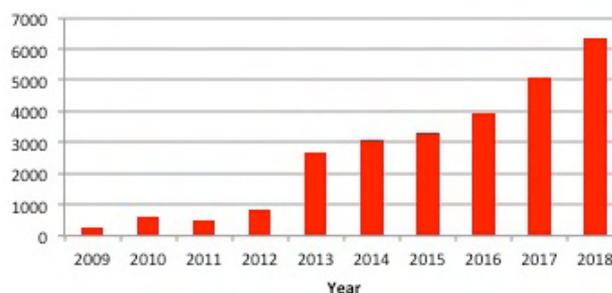


Orders can be placed at the museum shop.

Visitor numbers

The graph below illustrates the growth in our visitor numbers between 2009 and 2018. Last year's total was a 25% increase on 2017. The marked increase in 2013 was in part due to our participation in Open House Melbourne.

Annual Museum Visitors



Getting involved

With visitor numbers increasing, now could be your opportunity to lend a hand at the museum on open days.

If you are interested, contact the museum committee at info@trammuseum.org.au, phone the museum on open days (03 9819 6447) or speak with one of the committee members.

The Melbourne Tram Museum is open on the 2nd and 4th Saturdays of each month (except the 4th Saturday of December). Normal opening hours are 11am–5pm. It is also open by appointment.

Upcoming open days are: 23 March, 13 April, 27 April, 11 May, 25 May, 8 June, 22 June

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