

2.0 HISTORICAL BACKGROUND THEMATIC APPROACH

Victoria's Framework of Historical Themes² is a useful '*aide-mémoire*', for investigating the many complex layers of Victoria's History. In terms of Melbourne's tramways, there are several relevant themes, but only one of primary concern –

3.5 'Travelling by Tram'

Heritage Victoria *Framework of Historical Themes* includes a number of examples under this sub-theme, which while not exhaustive, provides a suitable starting point for analysis of the historical themes pertinent to the Melbourne Metropolitan Tram system. The *Framework of Historical Themes* includes:

Prompts (list is not exhaustive),	Examples of places and objects
Early private systems including horse-drawn routes, cable trams and early electric systems	Cable tram engine house e.g., North Melbourne and North Carlton Bendigo Tram Shed complex
Creating municipal networks and electrifying tram systems	Tram depots – Hawthorn, Malvern Ornamental tramway poles in Dandenong Road Tram shelters
Expanding the network – Melbourne and Metropolitan Tramways Board	Preston Tramway Workshop Ornamental tramway poles in Peel Street, Fitzroy Street and Victoria Parade Wattle Park (originally established by Hawthorn Tramways Trust, it was developed by the MMTB)
Building and servicing the trams	Preston Tramway Workshop
Celebrating trams as icons	Early trams Tram technology and ephemera Conductors' bags, uniforms

Table 2: Victorian Historic Themes directly relevant to Melbourne tramways

The other themes that are relevant in some respects are as follows:

6.3 Shaping the suburbs - Melbourne's tramway system was of primary importance in assisting the development of low density residential suburbs allowing the segregation of work and family, and the creation of a commuter class. While parts of the system were created to serve existing established settlement, many individual routes or extensions were built to serve expanding

² Heritage Victoria, 2010, Victoria's Framework of Historical Themes, Published by the Heritage Council of Victoria, Melbourne, February 2010. Also published at www.heritage.vic.gov.au

suburban development, sometimes in advance of the actual building of the suburbs, and as a means of promoting development.

5.2 Developing a manufacturing capacity – the local fabrication of tram infrastructure, tracks, overhead systems, power supply controllers, and of course rolling stock, is a significant part of the tramways history. The critical indicator for this theme is the evidence of manufacture, whether of rolling stock, where the Preston Workshops figure prominently, or of infrastructure, where both the former MMTB, and private companies can be identified. Indirectly, trams served industry and commerce by providing the commuter transport – bringing the workers to the workplace.

While many of the other themes relating to living and working in the city are indirectly related because the tramway served as the link between people and places, only some can be considered to have sufficient connection to the tramways to warrant discussion in the context of the system's on-going cultural heritage values.

9.1 Participating in sport and recreation – many tram routes served mass recreation, such as sea-bathing, sporting events and the like, including areas such as Wattle Park which were purchased and developed by the tramways specifically to create an off-peak recreational traffic, but also as part of a perceived civic responsibility.

5.7 Catering for tourists – allied to recreation, the tram system has served both local and foreign tourists, both as an iconic tourist attraction in itself and as a means of getting to destinations. Some specific routes connected tourist destinations such as St Kilda while at least from the later 20th century, the trams became a feature of tourism promotion for Melbourne, and most recently trams have been tourist destinations in their own right, such as the heritage fleet on display at the Melbourne Tram Museum @ Hawthorn Depot, the City Circle service and the Restaurant Trams.

2.6 Maintaining distinctive cultures – the tramways were seen as a natural employer of 'New Australians' and provided opportunities for many migrants, and so developed a distinctive multicultural character in post war years.

9.4 Creating popular culture, and

9.3 Achieving distinction in the arts – the tramways have been both the subject of and venue or artistic and cultural endeavour.

7.5 Protecting Victoria's Heritage – as a recent and still active heritage issue, the tramways, and in particular the surviving and redundant W class tram fleet is the subject of heritage conservation and public campaigning.

One of the drawbacks of the thematic approach is that a great deal of data on the details of planning, financing, constructing and operating the tramways, the technology, personalities and social history, are not readily captured where the place in question is strongly related to a single theme. Therefore a combination of a chronological and thematic approach sometimes provides for a richer and more comprehensive historical approach. There is a plethora of detailed historical information on Melbourne's tramways and trams, thanks in no small part to the battalions of enthusiastic amateur historians, collectors and restorers.

However, this study cannot do justice to this wealth of information, and has by necessity had to cull heavily from the available sources to provide a skeleton historical account, focussing on

aspects of tramways which might help address issues of cultural significance. Therefore this history interweaves the thematic approach with a more traditional chronological history.

2.1 Comparable tram systems in other countries

The extent or size of the Melbourne tramway system is to some extent relevant to determining its significance, although this should perhaps be considered in relative terms, i.e. in relation to the size of the population or area of the city it serves, as well as the period of development.

Melbourne it is claimed, has either “the largest tram network in the world”³ “, “the third largest tram system in the world”⁴ or “one of the biggest systems in the world”⁵ with 249 kilometres of double track with 494 trams available for regular services. According to Jane's Urban Transport Systems, Melbourne’s tramway system is the 10th largest by length of track, and 3rd largest by number of routes or lines.⁶ This is not a straightforward measure, as the following statistics on other tramways around the world might demonstrate.

City	Population	City area	Total length or tramways (kms.)	Number of vehicles	Age of system	References
Amsterdam			81	236		2007 http://www.gvb.nl/english/aboutgvb/facts-and-figures/Pages/facts-and-figures.aspx
Belgrave			127.3	150	1892	Wikipedia
Berlin			188			http://www.bvg.de/index.php/en/17106/name/Tram.html
Bucharest			143	506		http://www.ratb.ro/index.php?page=stats_cat
Budapest			153	911		2008 Wikipedia
Melbourne	4 million	8,806 km ²	245	578 (inc. 38 W class)	1888 (cable) 1906 (electric)	http://www.yarratrams.com.au/desktopdefault.aspx/tabid-47//74_read-117/
Milan	4.3 million	2,370 km ²	286.8 track	400+	1881 (horse) 1893 (electric)	http://www.lrta.info/articles/art0503.html - n.b. inc 1930s Peter Witt bogie cars
Moscow	10 million	1,081 km ²	444 route		1870s (horse) 1899 (electric)	http://tram.ruz.net/routes/routes.htm http://www.moscow.info/essentials/trams.aspx
Prague	1.3 million		144	968	1875	Wikipedia 2011
Saint Petersburg			228	791		2008 http://citybus.cz/praha/aktevied_dp-ed/index.htm (Russian)
Silesian	2 million		342	371	1894	Trams & Interurbans in Silesia & Dabrowa Region - NB this is more an interurban rail system.

³ "Investing in Transport" Victorian Department of Transport. pp. 69.

http://210.15.220.118/east_west_report/Investing_in_Transport_East_West-Chapter03.pdf. Retrieved 2010-11-22.

⁴ Yarra Trams http://www.yarratrams.com.au/desktopdefault.aspx/tabid-159//37_read-116/ *An edited extract from "A Brief Timeline of the History of Tram operation within Victoria", November 1999. Compiled by Mr Hugh Waldron, Senior Driver, Malvern Depot.*

⁵ Victorian Tram Systems, <http://www.vicsig.net/index.php?page=trams>

⁶ The Age, Monday 16 January 1995. Note however, that since 1995 the St Petersburg network has been greatly reduced to less than 280 km

City	Population	City area	Total length or tramways (kms.)	Number of vehicles	Age of system	References
Interurbans						http://historia.arch.p.lodz.pl/jw37/urbtr/sl-dabr-inurb.html
Sofia	1.2 million	492 km ²	308, mostly single track	190	1901	http://www.skgt-bg.com/History/Tram_en.htm
St Petersburg	4.8 million	605.8 km ²	C 280, previously 678	950	1863 horse 1907 electric	Jane's Urban Transport Systems
Toronto	5.5 million	7,124 km ²	305.8 route 156 double track	248	1861 (horse) 1894 (electric)	Wikipedia 2008 http://www3.ttc.ca/About_the_TTC/Operating_Statistics/2008.jsp
Vienna	1.7 million	414.9 km ²	179	556 or 799	1863 (horse) 1883 (steam) 1897 (electric)	Wikipedia claims this is the third largest in the world http://world.nycsubway.org/eu/at/vienna.html 2008; http://www.wien.gv.at/english/politics/statistics/pdf/public-transport.pdf
Zagreb			142	240	1891 (horse) 1902 (electric)	Wikipedia
Zurich:	0.4 million	91.88 km ²	79	317	1882	2008 http://www.stadt-zuerich.ch/vbz/de/index/service/bookmark.html http://www.proaktiva.ch/tram/zurich/fleet.html#mormain

Table 3: Comparable modern tramways in other countries.

While Melbourne is the only state capital which retains a comprehensive tramway network, several other Australian cities once had extensive systems. One measure of the size of the system is the number of depots, Sydney once had 15 tramway depots, Adelaide 4, Newcastle and Brisbane 3, Hobart 2 and Ballarat, Bendigo, Geelong, Launceston, Perth, Kalgoorlie and Fremantle one each.⁷ Melbourne had a maximum of 14 tram depots in the heyday of the mid 1950's, and currently has eight operational depots (Essendon, Brunswick, Camberwell, East Preston, Kew, Southbank, Malvern, Glen Huntly), one redundant depot (Hawthorn) and another only used for busses and the privately operated trams (North Fitzroy). The former Footscray, Thornbury, East Coburg, and Hanna St South Melbourne depots have been mostly demolished as have the former Victorian Railways tram depots at Elwood and Sandringham.

Another aspect of Melbourne's tramway heritage that should be considered is how the system has retained its historical character, both in terms of public perception and more objective significance criteria. There is clearly a continuing public appreciation of Melbourne's Trams as part of the historic fabric and heritage of the city with the W class trams considered the icon or symbol of Melbourne at least in tourism promotion. However, the reality may be that the system is now predominantly a modern one, both in fabric (90% of rolling stock and infrastructure is relatively recent) and operation (single operator (driver rather than driver and conductor), automatic ticketed and computer controlled).

⁷ List of Electric Tramway Depots in Australia, compiled by Robert Green c 1996 (copy provided by R Green.)

The historical elements are confined to the few vintage trams still operating, the large collections of stored rolling stock and other artefacts, surviving heritage buildings and some public memory of the former staff roles and appearance such as conductors. These elements may provide a sense of continuity with the past, and for a large proportion of Melbourne's residents are still a memory, but with passage of time, will diminish into history, rather than being part of a contemporary cultural identity.

It might be considered that there are two tram systems – a modern city-wide network providing functional needs, and a separate 'heritage component' as scattered elements, museum collections, historic buildings and the discrete set of the mostly redundant W class 'heritage' fleet and specialty operations such as the city Circle and Restaurant Tram.

2.2 Socio-Geographic background

Melbourne's topography and geography have partly influenced transport development in the City and in turn affected the way the city has grown socially, economically and culturally. Melbourne is generally flat to undulating, dissected by rivers and streams, but these generally radiate from Melbourne, so communication along ridgelines minimises the need for bridges. Some swamps and steep hills hindered roads and development, such as the extensive swamps west of the city which inhibited tram development and interconnectivity to the western suburbs, , a few steep slopes which required engineering solutions such as the incline up Rucker's Hill or the Barkers Road Cutting and the presence of two large rivers, the Yarra and Maribyrnong, which created obstacles and forced transport into bottlenecks at the available crossings. The focus of tramways along St Kilda Road into the city at Swanston Street is a major example of this.

Melbourne's climate is generally milder than many European and American cities, and so probably more conducive to travel. Open sided trams, which were also common in overseas use, were well accepted up to the 1930s – people probably responded to the cold by rugging up.⁸ While extreme weather such as frost or snow has not been an issue for Melbourne trams, the usual weather related factors such as heavy rain leading to flooding and wet tracks has influenced some design elements, such as sand assisted brakes, track drainage and cleaning and formation of road surfaces.

Melbourne's tram system should also be viewed in the context of the rapidly expanding city, both in terms of population and area. The various tram lines were each conceived in the mid to late nineteenth century in response to a rapidly growing population, funded by wealth created in the gold rushes and subsequent real estate and industrial booms, and made necessary by rapidly declining environmental and health conditions.

By the 1880s, Melbourne was a sizeable city, probably the largest in the Southern Hemisphere and larger than most European capitals. In just a decade the population had doubled, reaching half-a-million. Office buildings reached up to 12 storeys high and rivalled those of New York, London and Chicago. Prominent and architecturally extravagant banks, hotels and coffee palaces were erected in the city, and houses on larger blocks spreading out on the fringe.⁹

⁸ John D. Keating *Mind the curve! a history of the cable trams*

⁹ Lionel Frost, *The New Urban Frontier: Urbanisation and City Building in Australasia and the American West* (1991) 24-6.

Dense inner suburbs provided a mix of commercial, industrial and residential uses, sometimes with the owners and servants of capitalism living side by side, but equally hampered by crowding, pollution and overtaxed services. Suburban railways, which commenced in the 1850s and 60s, had provided wealthier citizens with opportunities to commute from more salubrious suburbs in the north west and south east of the city.¹⁰

Melbourne's tramways were intrinsically linked to this urban development both as cause and effect.

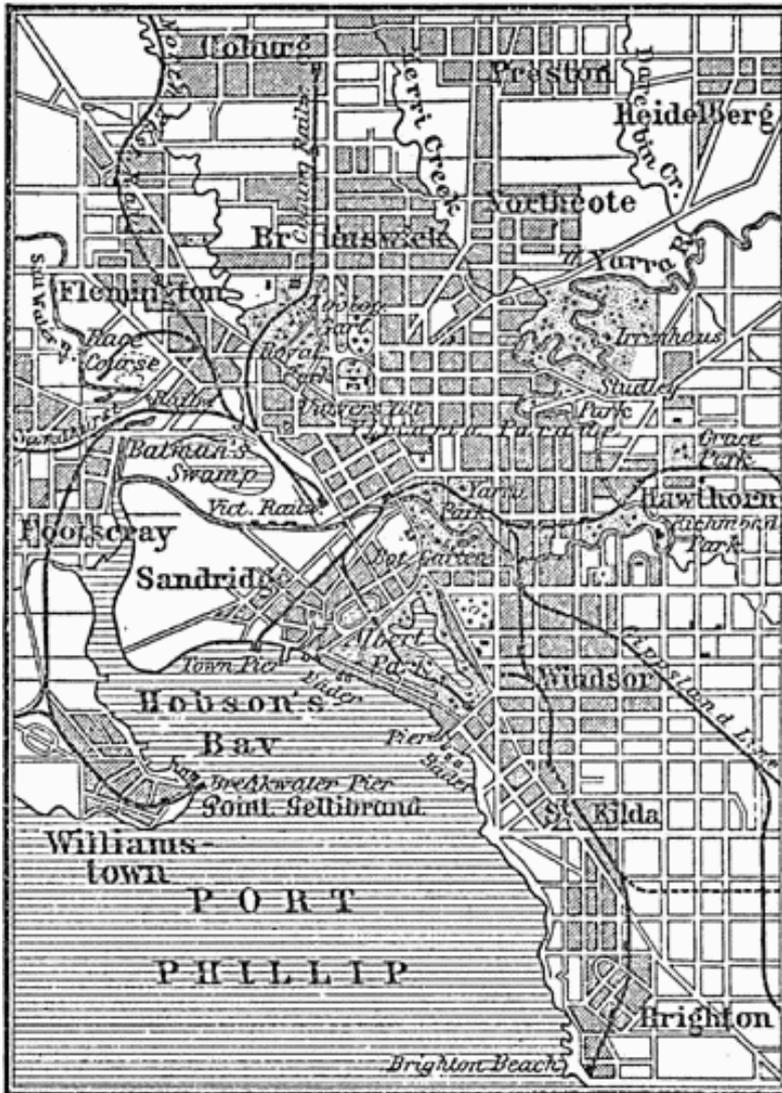


Figure 3: Melbourne in the 1880s showing existing radial rail services and fragmented grid of roads.

¹⁰ Graeme Davison, *The Rise and Fall of Marvellous Melbourne* 1978; Michael Cannon, *The Land Boomers* 1977; Geoffrey Searle *The Rush to be Rich: A History of the Colony of Victoria* 1971;.

2.3 Thematic/chronological history

2.3.1 Origins of trams, overseas development.

Melbourne's tramways grew in the context of development and refinement of transport technologies and economics derived from the second industrial revolution in Britain, Europe and the United States. That is, new forms of motive power, communications, manufacture and transport were invented and applied to the problems of creating consumer goods and moving the raw materials, products and consumers under a predominantly private capital economic structure. All examples of Melbourne's tramway development can be traced to precursors overseas, both in terms of their technology and financial or management structures.¹¹

The horse-drawn Swansea and Mumbles Railway in south Wales, UK, is credited as the first formal passenger tram or railway in the world, inaugurated by an Act of the British Parliament in 1804 and operating in 1807.¹² Alternatively, William Jessop opened the Surrey Iron Railway in south London in 1803 may lay claim to the world's first horse-drawn public railway.¹³ In the US, the first streetcars developed from city stagecoach and omnibus lines began with the New York and Harlem Railroad's Fourth Avenue Line in 1832,¹⁴ followed in 1835 by the St. Charles Avenue Streetcar, in New Orleans, Louisiana, which is the oldest continuously operating street railway system in the world.¹⁵ Sydney's (and Australia's) first tram was a horse-drawn, steel railed line in Pitt St, running from the Railway station to Circular Quay in 1861.¹⁶ In 1879 Sydney also opened Australia's first steam tram with a line to the Sydney International Exhibition near the Botanic Gardens.¹⁷

However, precursors to these passenger rail systems involving various combinations of flanged rail or wheel had been employed from the second half of the 18th century. Apart from ancient wagonways, using stone cut tracks, the earliest railways using wooden rails appeared in Europe in the 14th century. The use of iron for rails was therefore only a minor revolution in development, and by the mid 18th century wooden wagonways were common in the United Kingdom for transporting coal from mines to canal wharfs for transshipment to boats. The first iron plate railway made with cast iron plates on top of wooden rails was put into use in 1768 and from the 1790s, iron edge rails began to appear in the United Kingdom. Hot rolling iron allowed the brittle, and often uneven, cast iron rails to be replaced by wrought iron in 1805. These were succeeded by steel in 1857.¹⁸ Horse tramways, therefore, would have been a well established

¹¹ Alfred D. Chandler, Jr., *Scale and Scope: The Dynamics of Industrial Capitalism*, Belknap Press, Cambridge, MA, 1990.

¹² Charles E. Lee, *The Swansea & Mumbles Railway* Oakwood Press, Oxford, 1988, p.48

¹³ Surrey Iron Railway 200th - 26th July 2003". Early Railways. Stephenson Locomotive Society. <http://www.stephensonloco.fsbusiness.co.uk/surreyiron.htm>. Retrieved 19 September.

¹⁴ Stephen L. Meyers, *Manhattan's Lost Streetcars*, Arcadia Publishing 2005; *Journal of the Stephenson Locomotive Society*, Vol. 43, No. 509 (December 1967), p.364

¹⁵ James Gilbeau, *The Saint Charles Streetcar – or the history of The New Orleans and Carrollton Railroad*, 3rd edition 1992, Louisiana Landmarks Society

¹⁶ R.F. Wylie, *The 1861 Pitt Street Tramway and the Contemporary Horse Drawn Railway Proposals* *Australian Railway Historical Society Bulletin*, February, 1965 pp21-32

¹⁷ Margaret Simpson, *On the Move: A history of Transport in Australia*, Powerhouse Publishing, Sydney, 2004; R. Atkins, "The Sydney Steam Tram" in "Model Engineer" Vol. 143, 6 May 1977, pp.523-4; City of Sydney Archives. City of Sydney Archives.

¹⁸ Stuart Hylton, *The Grand Experiment: The Birth of the Railway Age 1820-1845*. Ian Allan Publishing. 2007

technology by the time Melbourne had grown to the point of needing such a street transport system.

The advantage of a horse tram over a horse omnibus (using wooden wheels running on normal road surfaces) is its smoother ride and ability to haul greater loads due to the lower rolling resistance of iron wheel on steel rail as compared to rough road surfaces, and the elimination of ruts and pot-hole damage to roads and wheels sinking in soft surfaces.

A variety of developments in motive power had also occurred in time for a relatively wide choice to be made when Melbourne was ready for trams. The first steam engine was patented by James Watt in 1794 and the first steam locomotive was demonstrated by its inventor Richard Trevithick in 1804. The first self-contained steam trams were used between 1859 and 1861 in Philadelphia, and from 1873 in London. By the 1880s, steam trams were commonplace in several cities. Cable-hauled trams had been employed in mines from the late 18th century and the cable tram system perfected in San Francisco by 1873.

Development of electric traction stems from the first experiments in alternating current electric commutator motors in the 1830s, although it was not until the 1880s that the first viable electric rail vehicle could be developed thanks to a more reliable direct current motor developed by Werner von Siemens in 1881. Siemens opened the world's first electric tramway in the suburb of Gross-Lichterfelde, (later incorporated into Berlin). In 1883, Magnus Volk constructed a 2ft gauge electric railway along the eastern seafront at Brighton, England. This is the oldest operating electric tramway in the world. The first tram for permanent service with overhead lines was the Mödling and Hinterbrühl Tram in Austria, which commenced operation in October 1883.¹⁹

The first electric street tramway in Britain, the Blackpool Tramway, was opened on 29 September 1885 using conduit collection along Blackpool Promenade. Since the closure of the Glasgow Corporation Tramways in 1962, this has been the only first-generation operational tramway in the UK that continues to survive as more second generation tramways are built.²⁰

Electric trams have run in Budapest since 1887, while Bucharest and Belgrade ran a regular service from 1894 and Sarajevo from 1895.²¹ An electric streetcar was commenced in Montgomery, Alabama in 1886 and another continuously-operating electrified streetcar system in the United States was established in Scranton, Pennsylvania in 1886. However, the first large-scale electric street railway system was the Richmond Union Passenger Railway built in January 1888. By 1890 over 100 such systems had been begun or were planned.²²

2.3.2 Summary of Melbourne's Tramway history

Melbourne's tram system had its genesis in the land boom of the 1880s, in a remarkable variety of different systems and widely separated locations. In 1884 a private steel-railed horse tram was built to serve a real estate development in the northern suburbs. A year later, the first cable tram line operated by the Melbourne Tramway and Omnibus Company opened for business. The first but short-lived electric tram commenced at Box Hill in 1889.

¹⁹ Iain Frew (ed) (1983). *Britain's Electric Railways Today*. Published by the Electric Railway Society and Southern Electric Group

²⁰ Palmer, Steve (15 October 2007). *Blackpool's Trams Past and Present*. Venture Publications Ltd.

²¹ http://en.wikipedia.org/wiki/History_of_trams

²² http://en.wikipedia.org/wiki/History_of_trams#Electric_trams

The first public steam operated tramway in Victoria (as opposed to railways) commenced in 1889 at Sorrento, where a novelty tram operated between the Bay steamer pier and accommodation and the ocean beach. The Sorrento Steam Tram depended on a vertically integrated tourism business involving bay excursion steamers and holiday accommodation, all run by the same entrepreneur, so the tram was probably not a viable operation on its own.

Early horse and steam trams were brief novelties, created as much for their ability to draw people to another more profitable attraction – land sales in the case of the former, and the beach in the case of the latter. The Fairfield Park horse-drawn tramway was as much a real estate agent's gimmick as a serious attempt at providing mass transit. The service was run only for prospective land purchasers, and to give the impression that the area would have convenient public transport. Once the land was sold, the service ceased. Other horse tramways operated in Sydney Road Coburg, in Caulfield between Elsternwick and Glenhuntly railway stations, between Sandringham and Cheltenham railway stations, and in Hawthorn, Kew and Royal Park. Several of them were subsequently converted to electric tramways.

Other Victorian cities including Ballarat, Bendigo and Geelong also developed tramways in the late nineteenth and early twentieth centuries. Bendigo briefly ran a battery-operated system in 1892, then a steam tram from 1892 until 1902. Electric trams followed in 1903, operated by the Electric Supply Company of Victoria in conjunction with generating electricity for sale to domestic and commercial users. Services were taken over by the State Electricity Commission of Victoria (SECV) in the 1930s and continued to operate at a loss until April 1972 when the Bendigo tramways were closed. Following closure a trust was established to continue to operate some of the Bendigo trams as a tourist service.²³

The Ballarat Tramways were commenced in December 1887, with six double-decked horse-drawn tramcars. Ownership was transferred to the Electric Supply Company of Victoria Ltd. in 1902, and the system was extended and electrified in 1905. Like the Bendigo system, Ballarat's tramways were taken over by the SECV in 1934, but operated unprofitably until finally being closed in 1971. A subsequent Tramway Museum was formed with a short section of track around Lake Wendouree kept in use.²⁴

Electric trams commenced in Geelong in 1912 operated by the Melbourne Electric Supply Company Limited (MESCo), which already provided the local domestic supply of electricity in Geelong.²⁵ The system was also taken over by the SECV and was ultimately closed due to low patronage and continuing losses in 1956.

A number of Melbourne trams were transferred to the regional city tramways as they became unsuitable for metropolitan use. As a result several early and unusual trams were retained in use

²³ Bendigo Tramways History, <http://www.bendigotramways.com>, accessed 28/2/2011; The Electric Supply Company of Victoria was taken over by the State Government State Electricity Commission of Victoria (SECV) in 1934 as part of the centralisation of the supply of electricity in Victoria. The SECV was in the power generation business, and did not want to operate the loss making provincial tramways of Bendigo, Ballarat and Geelong but was forced to by the State Government.

²⁴ "Ballarat's Tramway History", Ballarat Tramway Museum Inc. <http://www.btm.org.au/ballarathistory.htm>, accessed 28/2/2011

²⁵ "Geelong tramways - a short history". *Tramway Museum Society of Victoria* <http://web.archive.org/web/20060819124009/http://tmsv.org.au/papers/geelong.htm>. accessed 28/2/11

long enough for their historic value to be recognised, and so were eventually available for restoration as part of the tourist and heritage operations.²⁶

While the Hobsons Bay and Melbourne & Suburban railway companies proved the viability of heavy rail serving the wealthier suburban commuters of Melbourne from the late 1850s, a viable light rail or on-street tramway system running over the public roads took another 30 years to eventuate. This was in part because a successful horse omnibus system was already in place, so despite the cost and inconvenience of managing large horse fleets, trams had to compete on both establishment and operating costs. The critical factor was probably the technological limitations of available sources of motive power. Steam traction continued to be too heavy or cumbersome for small vehicles travelling at frequent intervals (as the street omnibus services had demonstrated) and the reliability of electric traction was still to be proven.

The cable tram, with its central power house transferring traction via a continuous wire rope running under the roadway, became the interim solution. With a relatively direct link between its invention and application in San Francisco, and its implementation on a grand scale in Melbourne within just a few years, the cable tram offered a frequent and accessible public transport, at an economic running cost, although capital costs were high.²⁷ Centralised power, in the form of large stationary steam engines set about midpoint along the lines, were cheaper to operate and maintain than the many separate engines required for a steam tramway. Even in comparison with horse transport, costs were competitive,²⁸ so that the system soon expanded to cover 15 terminus destinations ranging from Northcote, Richmond, St Kilda, Port Melbourne and North Melbourne, within a radius of about 4 miles (6.4km) of the GPO.²⁹

The construction and operation of the cable system required a complex administrative structure with the Melbourne Tramway Trust formed as the owner and constructor of the lines, representing the municipalities, and the Melbourne Tramway and Omnibus Co, leasing the lines and supplying the rolling stock. When the original lease agreement expired June 1916, the Tramways Board was formed to take over the cable system, and operated until 1919, when it was superseded by the Melbourne and Metropolitan Tramways Board.

The cable system continued in operation until World War Two, when the capacity limitations of driving all the cars on a line from one source showed that it could not handle the projected future growth in passenger numbers. The cable network also prevented the outlying electric routes from access the city directly, necessitating unpopular passenger transfers, while the technology was aging and expensive. The capacity of the tramcars themselves was also limited and there was a desperate need to build new trams to replace the aging fleet. Also there were difficulties in obtaining wire rope for the cables while changed cheaper electricity generated from Latrobe Valley brown coal changed the economics of motive power as electric trams prove supreme.

Australia's first electric tram line, from Box Hill Station to Doncaster was, like the Fairfield Park tram, built for selling real estate. The line was constructed in 1889 by a group of land developers using equipment left over from the Centennial International Exhibition of 1888. Like the cable trams, this was only a couple of years after the concept had been proven overseas, showing the

²⁶ William F. Scott Last tram at eleven : tramways of Ballarat, Bendigo, Geelong Full Parallel Productions, 2008.

²⁷ "The Melbourne Tramways", 1888 chapter in *Victoria and its Metropolis – Past and Present*, reprinted in Cranston (1988) *The Melbourne Cable Trams 1885-1940*.

²⁸ Powerhouse Museum, Sydney, catalogue, "Horse-drawn omnibus, 1898"
<http://www.powerhousemuseum.com/collection/database/?irn=207261>

²⁹ Keating, *Mind the Curve* p.

early uptake of technology which typified much of Australia's industrial history. Again it was a novelty (one already proved popular during the exhibition) running through mostly open farming country, between a raw suburban outpost on the railway line at Box Hill and an even less developed bucolic settlement on the heights of Doncaster.³⁰

The first serious electric tramways in Melbourne were commenced in 1906 when The North Melbourne Electric Tramways and Lighting Company Limited (NMETL) built a line from the edge of the cable system to the north west suburb of Essendon, and the Victorian Railways (VR) built a line in the south east from St. Kilda to Brighton. While the North Melbourne Essendon electric trams were seen as extensions of the cable system, the VR operated trams were a compromise means of extending the existing rail system. NMETL, a British concern, was interested in selling electricity to customers along the route.³¹ It built and operated two lines, one between the terminus of the Flemington Road cable tram at Flemington Bridge, then along Mt Alexander Road and Keilor Road and the other from Moonee Ponds along Maribyrnong Road to the Maribyrnong River.

The Victorian Railways operated line was built under Victorian Premier Thomas Bent who used his position to enhance the value of his property interests in Brighton, forcing the railways to build and operate a tram service. However, the Railway department insisted the tram be called a "Street Railway", and built it to the 5 ft 3 inch Victorian railway broad gauge instead of the proposed tramway standard gauge of 4 ft 8.5 inches, and connected it with the St Kilda Railway station instead of the cable tram terminus. The railways later built a second tram line (this time using standard gauge) as a cheap substitute for a much demanded railway extension from Sandringham.³²

In other parts of Melbourne, groups of local councils combined to form municipal tramways trusts in order to build electric tramways, generally as extensions or feeders beyond the cable tram network, with the exception of the Hawthorn Tramways Trusts (HTT) line, which ran to Princes Bridge. In 1910, the Prahran and Malvern Tramways Trust (P&MTT), was the first to commence operations, completing a depot in Malvern, and lines along High Street from Prahran to Tooronga Rd, and a branch line south along Glenferrie Road to Wattletree Road, where it turned east to terminate at Burke Road.³³

The Prahran & Malvern Tramways Trust was formed under the *Prahran & Malvern Tramways Trust Act 1907* to construct and operating electric tramways with the first lines opened on 30 May 1910. Initially representing the two councils through which the lines ran the trust was expanded to include first the municipalities of St Kilda and the Caulfield and then in 1913 Kew and Hawthorn in 1913. The Trust operated lines along High Street Glenferrie Road and Wattletree Roads and soon Dandenong Road, with an extension to connect with the St. Kilda Cable tramway to the City in 1912. In 1915, the City of Camberwell also joined the Trust, and the route was extended to Camberwell in 1916.

³⁰ Robert Green, et al *The Box Hill - Doncaster Electric Tramway* Pamphlet first published by City of Box Hill, 1989 on behalf of the Box Hill - Doncaster Electric Tram Centenary Committee. Reprinted in 1998 by the City of Whitehorse

³¹ The same motive led to the establishment of the Ballarat, Bendigo, and Geelong electric tram systems.

³² Marshall-Wood, L. 1966, *The Brighton Electric Line*, Traction Publications

³³ Graeme Breydon Feeding & filling : the story of the Prahran & Malvern Tramways Trust Tramway Museum Society of Victoria, 1990

The Hawthorn Tramway Trust was established in 1914, initially taking over the Hawthorn horse tramway (which ran from the Yarra River at Bridge Road to Auburn Road) and converting it to electric traction. It had also built new electric lines from Princes Bridge to Burwood and Wattle Park.³⁴ By running to Princes Bridge, it became the first electric tram to serve the CBD. A cable line was not built along Swan St because of the closeness to the rail line.

The Melbourne, Brunswick & Coburg Tramways Trust was formed in 1914, following the takeover of the former Northern Tramway Company's Sydney Road Horse tram operated by the Coburg Council in 1911. The MBCTT initially operated lines from near the cable tram terminus at the north end of Madeline (now Swanston) Street Carlton, along Lygon Street, and along Nicholson Street to the Coburg cemetery, and branching at Moreland Road to head up Sydney Road.

The Fitzroy, Northcote & Preston Tramways Trust (FNPTT) was created as a consequence of both the Northcote Council's prior ownership of the High Street cable tramway and local desire to emulate the perceived convenience and success of the Prahran and Malvern tramway. Fitzroy, Northcote and Preston formed a municipal tramways trust in 1915, with routes commencing at the North Fitzroy cable tramway terminus, continuing along St George's Road to Miller Street, Preston, then splitting into two branch lines, one heading west along Miller Street Gilbert Road to terminate at Regent Street, West Preston, and the other heading east on Miller Street to Plenty Road to Tyler Street, East Preston.

The Footscray Tramway Trust was the last to be formed but did not commence operations under its own name, having been absorbed by the MMTB by the time the lines could be opened. Footscray was somewhat isolated from the rest of the existing tram systems, and any connection to the city had to deal with a considerable distance across the West Melbourne Swamps and docks, where there was very limited potential revenue. As a result the Footscray tramway grew as an isolated system feeding the railway station. Lines ran north to Ballarat road and the Maribyrnong River, to meet up with the North Melbourne system, south to Yarraville and west to Kingsville and Tottenham.

The Melbourne and Metropolitan Tramways Board was formed in 1919, as part of a rationalisation of suburban public transport in Melbourne under the State government. The M&MBT took over operation of the cable system and the various municipal trusts, resulting in a wide range of vehicle types and some differences in operation systems. The Board took over running of the Prahran and Malvern Tramways Trust, the Hawthorn Tramways Trust, the Fitzroy, Northcote & Preston Tramways Trust and the Melbourne, Brunswick & Coburg Tramways Trust, as well as the Melbourne Tramway & Omnibus Companies cable system, which had reverted to the Melbourne Tramway Trust in 1916, when the licence agreement expired the board also took over the NMETL lines The two tram lines operated by the Victorian Railways were not taken over by the MMTB.

The M&MBT undertook a significant modernisation of the system, progressively converting the cable trams to electric traction, constructing new depots, electricity substations and both extensions to the existing lines, and entirely new routes. Part of the MMTB plans included developing a new tramcar design able to cope with much higher passenger loads, which led to the W class and its many variations. Instigation of bus routes was an integral part of the Board's

³⁴ Public Records Office Victoria, Agency Hawthorn Tramways Trust, VA 2978
<http://www.access.prov.vic.gov.au/public/component/daPublicBaseContainer?component=daViewAgency&entityId=2978#> viewed 11/10/2010

strategy, both for temporary replacement of cable trams as they were decommissioned, and for expanding the catchment to less populated areas, and beyond the electric tram system. The Preston Tramway Workshops were constructed to integrate and centralise tram manufacture and maintenance, into the Tramways Board's operations.

After the Second World War, when other Australian and overseas cities were removing street tramways in favour of improving car traffic, the Chairman of the MMTB, Sir Robert Risson, aggressively defended Melbourne's tramways, and even managed to upgrade some aspects of the system.

While the system was neglected to some extent in the late 20th century under The MET and its successors, with the retention of the W class as the main rolling stock, in the 1970s a new, modern style of tram was developed in the Z-class, which led on to a variety of other local and imported designs.

The first decade of the twentieth century has seen a revitalisation of the system, with new routes, rolling stock, greater priority given to trams in sharing the roads and upgraded passenger facilities.

In 1983 the M&MBT was amalgamated with the Victorian Railways suburban services to become the Metropolitan Transit Authority, with "The Met" as its trading name. The Met started experimenting with ticketing systems and introduced new more modern trams. In 1993 the Public Transport Corporation was formed to operate the Melbourne public transport system although it kept "The Met" as its trading name.³⁵

The PTC was corporatised in 1998, as a prelude to privatisation, and in 1999 the trams system was split between two private operators Yarra Trams, and Swanston Trams, which were the operating names of the two franchisee companies Transfield Services and National Express Group respectively. Yarra trams was taken over by Melbourne Metrolink, owned by the French, and Swanston Trams by National Express, owned by the British and later rebranded as M>Tram. Subsequently in December 2002, National Express, which was the operator of three of the five franchises, two rail and one tram, walked away from their contracts so that all of the tram system came under a single operator once again, albeit a private company in 2004.³⁶ The current franchisee of the Melbourne tramway system is the "Keolis Downer EDI Rail" partnership.

³⁵ Metropolitan Transit Authority, 1983, *100 years of Melbourne's trams* / Metropolitan Transit Authority, and Australian Tramway and Motor Omnibus Employees Association

³⁶ Richard Allsop Victoria's public transport, Assessing the results of privatisation Institute of Public Affairs *IPA Backgrounder*, April 2007, Vol. 19/1

Table 4: Summary of operation of Melbourne Tramlines

	Tramway Scheme or route	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	
	Operator		MT&OC			TB	MMTB						MET		Yarra / Swanston	Yarra Trams
	Sorrento Steam Tram															
Horse	Fairfield Park															
	Beaumaris															
	Caulfield															
	Northern Tramway Company (Coburg)															
	MT&OC Kew															
	MT&OC Hawthorn															
	MT&OC Royal Park (Zoo) line															
Cable	MT&OC Spencer Street - Richmor											Converted to electric				
	North Fitzroy											"				
	Victoria Bridge											"				
	Clifton Hill											"				
	Nicholson Street											"				
	Brunswick											"				
	Johnston Street Bridge											"				
	Brighton Road											"				
	Prahran											"				
	North Carlton											closed				
	Toorak Road -Chapel Street											"				
	North Melbourne											"				
	West Melbourne											"				
	South Melbourne											"				
	Port Melbourne											closed				
	Windsor, St. Kilda Esplanade											"				
CHMPTC Northcote											"					
Electric	Box Hill Doncaster															
	VR St Kilda - Brighton															
	Sandringham to Black Rock															
	NMETLC Essendon															
	Puckle Street															
	Moonee Ponds Junction															
	Essendon Aerodrome line															
	P&MTT High Street															
	Glenferrie Wattleree Rd															
Glenferrie and Dandenong Rd																

	Tramway Scheme or route	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
E l e c t r i c	Hawthorn, Balaclava Rd														
	Balaclava Waverley Rds														
	Hawthorn, Glenhuntly Rds.														
	Glenhuntly Road.														
	High Street extension														
	Kew														
	Commercial, Malvern Roads														
	Whitehorse Road.														
	FTT Russell Street														
	Ballarat Road														
	Williamstown Road														
	West Maribyrnong														
	Footscray connecting line														
	MBCTT Lygon St Sydney Rd														
	Sydney Road														
	Lygon Street, Nicholson St														
	West Brunswick line														
	Holden Street link														
	East Brunswick line														
	HTT Burwood.														
	Batman Ave, Swan Street														
	Riversdale Road Wattle Park														
	FNPTT St Georges Rd														
	MMTB Church St Kew														
	Chapel St.														
	St Kilda Beach														
	La Trobe Street														
	Burwood line extension														
	Plenty Rod Bundoora extension														
	Port Melbourne light rail														
	St Kilda Light Rail														
Airport West extension															
Box Hill extension															
Docklands extensions															

Denotes takeover or operation by MMTB from 1920