FORMER ASCOT VALE TRAM SUBSTATION

Ascot Vale Substation

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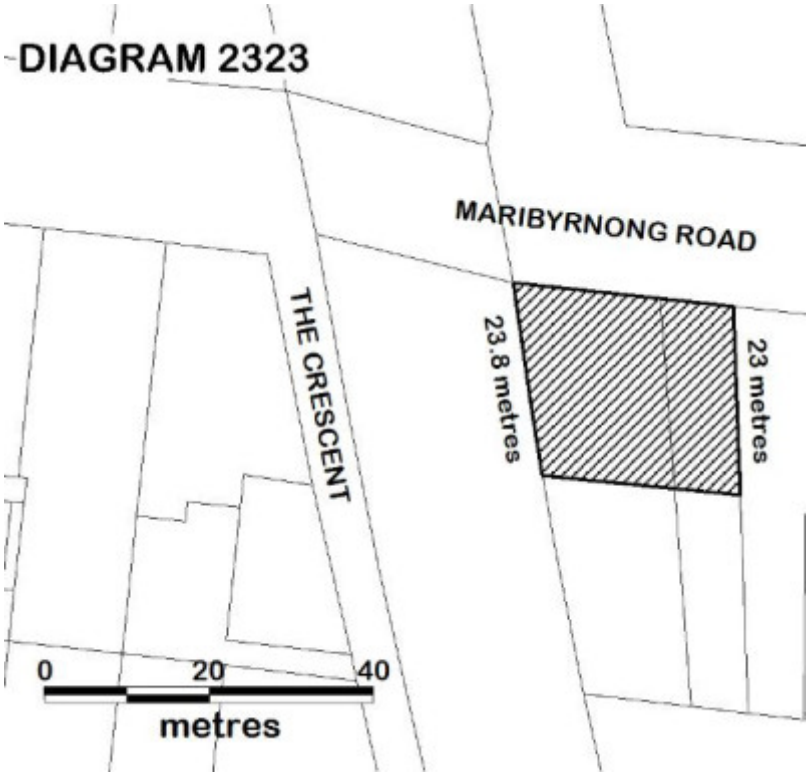

diagram 2323.jpg

Location

53 MARIBYRNONG ROAD ASCOT VALE, MOONEE VALLEY CITY

Municipality

MOONEE VALLEY CITY

Level of significance

Registered

Victorian Heritage Register (VHR) Number

H2323

VHR Registration

December 12, 2013

Heritage Listing

Victorian Heritage Register

Statement of Significance

Last updated on - September 3, 2025

Former Ascot Vale Tram Substation is located on Wurundjeri Country.

What is significant?

The 1925 Former Tram Substation building at 53 Maribyrnong Road.
History Summary
The Melbourne and Metropolitan Tramways Board (M&MTB) was created in 1919 to electrify, integrate and extend Melbourne's existing cable and electric tram routes. Following the formation of the State Electricity Commission (SEC) in 1920 electricity to power Melbourne's tram lines was taken from the state grid system at substations. These converted the SEC's 6500 volt alternating current (AC) to 600 volt direct current (DC) to operate the trams. Between 1925 and 1940 the M&MTB progressively electrified the old cable system, with new depots and substations built, lines were extended and new routes added. The Maribyrnong tram line had been established in 1906 by the North Melbourne Electric Tramways and Lighting Company Limited (NMETL), also known as the Essendon Tramways, a private tramway company which operated mainly within the municipalities of Essendon and Flemington, and was taken over by the M&MTB in 1920. The M&MTB extended the existing line and constructed the Ascot Vale substation in 1925 to power the trams on the line. The substation was probably designed by Alan G Monsborough, the board's architect, who was responsible for the design of all tramway buildings during the formative years of the electric tramway system. In 2005 the Ascot Vale substation became redundant and a new substation has been built at the rear.

Description Summary
The Former Ascot Vale Tram Substation is a tall red brick Inter-war Stripped Classical style building on concrete footings. Projecting from the front facade is a small square cable tower with disused cable insulators marking the original power connection. The substation has a rendered parapet, rendered dressings around the openings, steel-framed windows and a corrugated iron roof. The roof is topped by three large square ridge ventilators. The letters MMTB are inscribed in the render above the front entrance.

This site is part of the traditional land of the Kulin Nation.

How is it significant?

The Former Ascot Vale Tram Substation is of historical and architectural significance to the State of Victoria and satisfies the following criterion for inclusion in the Victorian Heritage Register:
Criterion A Importance to the course, or pattern, of Victoria's cultural history
Criterion D Importance in demonstrating the principal characteristics of a class of cultural places and objects

Why is it significant?

The Former Ascot Vale Tram Substation is significant at the State level for the following reasons:

The Former Ascot Vale Tram Substation is historically significant for its association with the development of Melbourne's transport systems in the early twentieth century, and with the role this played in the development of Melbourne and its suburbs. It is significant for its association with the development by the M&MTB of an integrated electric tramway system from the 1920s and as a demonstration of the scale and quality of works undertaken by the M&MTB. The Former Ascot Vale substation is one of four 1920s substations which survive relatively intact, and these, individually and as a group, help to demonstrate the scale of the electric tram network developed by the M&MTB in Melbourne and its suburbs and the infrastructure required for this work.
(Criterion A)

The Former Ascot Vale Tram Substation demonstrates the form and scale of the substation buildings constructed in the 1920s to house the rectification and switching equipment required to operate the electric tram system. The building is a fine example of the application of the Inter-war Stripped Classical style to a utilitarian industrial building.
(Criterion D)

Permit Exemptions

General Exemptions:

General exemptions apply to all places and objects included in the Victorian Heritage Register (VHR). General exemptions have been designed to allow everyday activities, maintenance and changes to your property, which don't harm its cultural heritage significance, to proceed without the need to obtain approvals under the Heritage Act 2017.

Places of worship: In some circumstances, you can alter a place of worship to accommodate religious practices without a permit, but you must notify the Executive Director of Heritage Victoria before you start the works or activities at least 20 business days before the works or activities are to commence.

Subdivision/consolidation: Permit exemptions exist for some subdivisions and consolidations. If the subdivision or consolidation is in accordance with a planning permit granted under Part 4 of the *Planning and Environment Act 1987* and the application for the planning permit was referred to the Executive Director of Heritage Victoria as a determining referral authority, a permit is not required.

Specific exemptions may also apply to your registered place or object. If applicable, these are listed below. Specific exemptions are tailored to the conservation and management needs of an individual registered place or object and set out works and activities that are exempt from the requirements of a permit. Specific exemptions prevail if they conflict with general exemptions.

Find out more about heritage permit exemptions here.

Specific Exemptions:

General Conditions: 1. All exempted alterations are to be planned and carried out in a manner which prevents damage to the fabric of the registered place or object. General Conditions: 2. Should it become apparent during further inspection or the carrying out of works that original or previously hidden or inaccessible details of the place or object are revealed which relate to the significance of the place or object, then the exemption covering such works shall cease and Heritage Victoria shall be notified as soon as possible. Note: All archaeological places have the potential to contain significant sub-surface artefacts and other remains. In most cases it will be necessary to obtain approval from the Executive Director, Heritage Victoria before the undertaking any works that have a significant sub-surface component. General Conditions: 3. If there is a conservation policy and plan, all works shall be in accordance with it. Note: A Conservation Management Plan provides guidance for the management of the heritage values associated with the site. It may not be necessary to obtain a heritage permit for certain works specified in the management plan. General Conditions: 4. Nothing in this determination prevents the Executive Director from amending or rescinding all or any of the permit exemptions. General Conditions: 5. Nothing in this determination exempts owners or their agents from the responsibility to seek relevant planning or building permits from the responsible authorities where applicable.

Interior works:

Any interior works which do not affect original fabric and are not visible from outside the building are permit exempt.

Theme

3. Connecting Victorians by transport and communications 6. Building towns cities and the garden state

Construction dates	1925,
Architect/Designer	Monsborough, Alan G,
Heritage Act Categories	Registered place,
Hermes Number	192284
Property Number	

History

CONTEXTUAL HISTORY

The first trams operating in Melbourne were horse-drawn. The first of Melbourne's cable trams opened in 1885 on the Richmond line, and in the following six years the councils of Melbourne and the ten surrounding municipalities built a system of cable-hauled tramways. The 46 miles [74 km] of double track serving seventeen routes radiating from the centre of the city to neighbouring suburbs was probably the world's largest cable tram network, but by 1891 it had reached its maximum extent. By 1900 it was recognised that other countries had established electric tramways that were less expensive to install, and an electric tram had already begun operating in Sydney.

The first electric tram to run in Australia was demonstrated during the Centennial International Exhibition in Melbourne in 1888. From 1889 until 1896 this pioneer vehicle and a second car ran a regular tramway service between Box Hill Station and Doncaster. It was opened mainly as a means of attracting potential land purchasers, but it did demonstrate the viability of electric traction.

The first two regular electric tram service in Melbourne opened in 1906, with the opening of a line from the cable tram terminus at Flemington Bridge to Essendon and the Victorian Railways line from St Kilda to Brighton. In the early 1900s, several municipalities formed trusts and built electric tramways in their areas. In 1909 municipal authorities in Prahran and Malvern combined to form a Trust to operate electric tramways within their boundaries and opened lines in 1910, which by 1919 had grown to a network of thirty-five route miles [56 km]. During World War I other suburban electric networks developed, including municipal trust undertakings in the areas of Hawthorn, Brunswick, Coburg, Fitzroy, Kew, Preston and Footscray. Until the State Electricity Commission of

Victoria was formed in 1920, electricity for the trams was provided by various private and municipal power generators.

The Victorian Government in 1910 set up a Royal Commission to enquire into the 'present condition of the Railway and Tramway systems of Melbourne'. Their 1911 report recommended electrification of the suburban railway network, and also recommended that all the metropolitan tramways, cable and electric, municipal and private, be vested in a Municipal Tramways Trust, and that the cable tramways be converted to electricity. The advantages of electric tramways were considered to be lower capital costs, greater speed and flexibility, adaptability to extension and simplification of terminal shunting.

Implementation of these recommendations was delayed by World War I, but in 1918 legislation was passed setting up the Melbourne & Metropolitan Tramways Board (M&MTB). In 1919 it took over authority for the cable trams, and in 1920 for the Northcote line and all the electric networks operated by municipal trusts. The M&MTB formulated a comprehensive plan for integration and development of the system as a whole, with considerable extension of the electric lines and gradual conversion of the cable lines.

The first cable tram line electrified was the St Kilda line in 1925, and in less than a month electric trams were serving the whole length of Swanston Street. Within the first year a considerable part of the southern section of the system had been electrified. The last cable tram line (Northcote) closed in 1940. During this time the cable trams were converted to electric traction, new depots and substations were built, lines extended and new routes added. Hundreds of new, large, electric trams were built to replace the fleets of small cars previously operated by the municipal tramway trusts.

Tram Substations

With the establishment of the M&MTB new substations had to be built to electrify the converted cable tram lines and for new routes, and to systematise the distribution of power from the Latrobe Valley generator of the State Electricity Commission (SEC, formed in 1920). Electricity to power Melbourne's tram lines was taken from the state grid system at the substations, where the SEC's alternating current (AC) at 6600 volts was transformed (or rectified) to direct current (DC) at a lower voltage to operate the trams. Substations housed the equipment required to transform the high voltage AC power down to the low voltage DC traction power.

Since the 1880s electric trams have been powered by direct current (DC) at a relatively low voltage - initially at 500 volts, but in later years more commonly between 600 and 700 volts. DC motors were well-suited to use on trams as they were compact and light and could easily be incorporated into the restricted space on the trams. However direct current has a major drawback: voltage drops quickly with distance and tram performance therefore falls off rapidly if the tram is much more than 4 km from the power source. So substations were usually built near the middle of tram routes.

The earliest rectifier systems used mechanical rotary converters with electric motors to drive generators. The initial installations by the tramway trusts were often co-located within the tram depots, as at Malvern, Kew, Elsternwick, Hawthorn and Coburg depots, which all used massive rotary converters. In the 1930s new technology was introduced, using mercury arc converters, which employed a process involving ionising mercury vapour. These were smaller and were initially housed in glass bulbs and later in steel tanks. From the 1960s the system progressed to solid state silicon diode rectifiers. These are what are now used, together with the extensive use of electronics, to control switching, and require much less space than the old systems. Melbourne had to re-equip its substations in the 1990s due to the higher electric current required to air-condition trams.

In order to reduce supervisory labour costs, the M&MTB constructed remote control gear of its own design for its substations. The main central control room was in Queensberry Street at Carlton, which was able to operate all the other substations remotely. By 1933 there were 19 substations, 15 of them fully automatic unattended stations, and by 2013 there were 55, with more planned.

Many of the early tram substations were free-standing buildings, the oldest being the Elsternwick substation built by the Prahran & Malvern Tramways Trust in 1914. The early substations housed rotary converters and required deep foundations to prevent damage to the building fabric. They also had large doorways and high roofs, to permit easy handling of the electrical plant, and large high windows to provide natural light. A series of similar large impressive brick substations were built between 1924 and 1929 by the M&MTB in Camberwell, South Yarra, Ascot Vale, South Melbourne and Carlton, all designed to house rotary converters. All were similar in materials and form but varied in their size, their floor plans, and the degree of rendering and decoration.

In 2005 a number of Melbourne's substations and their equipment became redundant, including Ascot Vale, Glenhuntly, Essendon, South Yarra, Deepdene, Maribyrnong, Brunswick, West Brunswick, Coburg, Preston and South Melbourne. The old substations were cleared of hazardous materials and new substations were built adjacent to the old buildings.

HISTORY OF PLACE

The first of two regular electric tram services in Melbourne was opened in 1906 by the private (British-owned) North Melbourne Electric Tramways and Lighting Company Limited (NMETL), also known as the Essendon Tramways. It operated two lines, from the edge of the cable tram system at the Flemington Bridge over Moonee Ponds Creek and then to North Essendon and to Maribyrnong. It also sold electricity to customers along the route and provided the municipal electricity supply, making effective use of the heavy capital investment required for generator plant.

Essendon was then a prosperous residential suburb about 5 km north-west of the centre of Melbourne and grew to 20,000 residents by 1909, when it became a city. In 1905-6 the NMETL built a large power station and an adjacent tramway depot and offices, all designed by the architects Ussher &Kemp, on the east side of Mount Alexander Road (near South Street) at Ascot Vale.

NMETL power station at Ascot Vale (c1910)

The Melbourne & Metropolitan Tramways Board Act of 1918 which created the M&MTB empowered the M&MTB to acquire the Essendon Tramways. Another act of 1918 created the framework of the State Electricity Commission of Victoria (SECV), which was to hold the monopoly of electricity supply for the state. It was authorised to acquire private electricity companies and incorporate them into its own operations.

Most of the suburban electric tramways trusts were transferred to the M&MTB in 1920. But it was not until 1922 that negotiations were completed for the sale of the NMETL by the State Government for a total of £110,000. The electrical supply arm was acquired by the SECV and the tramway part of the business by the M&MTB. Under the M&MTB the NMETL tram routes were altered, but remained a core part of the Melbourne electric tram network. The original depot building survives as part of the current Essendon depot (VHR H1215), though the company offices and power station were demolished. The M&MTB built a new substation on Maribyrnong Road in 1925 to power the trams. The old Essendon Tramways lines operated on a different voltage to the M&MTB lines, necessitating a complete change to the power distribution and overhead systems.

In 2005 the Ascot Vale substation became redundant and a new substation has been built at the rear.

KEY REFERENCES USED TO PREPARE ASSESSMENT

Biosis Research (Gary Vines), 'Melbourne Metropolitan Tramway Heritage Study', Report for Heritage Victoria, 2011

Information in HV file PL-HE/03/0424 (Maribyrnong Tram Substation)

Public Transport Victoria website: http://corp.ptv.vic.gov.au/managing-victoria-s-public-transport-network/history-and-heritage/early-history-of-public-transport/#trams]

Russell Jones for Friends of the Hawthorn Tram Depot, 'Fares please! An economic history of the Melbourne & Metropolitan Tramways Board', 2008, online at http://www.hawthorntramdepot.org.au/papers/ecohist/ecohist0.htm

John Keating, *Mind the Curve! A history of the Cable Trams*, Sydney 2001.

Russell Jones for Friends of Hawthorn Tram Depot, 'From Rotary Converters to solid-state: tramway substation architecture in Melbourne', 2013; online at http://www.hawthorntramdepot.org.au/papers/substations.htm.

Plaque Citation

Built in 1925, this is one of five impressive electrical substations built in the 1920s by the Melbourne & Metropolitan Tramways Board as part of the electrification of Melbourne's tram system, and is attributed to the

Board's architect Alan Monsborough.

Assessment Against Criteria

Criterion
The Former Ascot Vale Tram Substation is of historical and architectural significance to the State of Victoria and satisfies the following criterion for inclusion in the Victorian Heritage Register:

Criterion A Importance to the course, or pattern, of Victoria's cultural history Criterion D Importance in demonstrating the principal characteristics of a class of cultural places and objects
The Former Ascot Vale Tram Substation is significant at the State level for the following reasons:

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Criterion A)
The Former Ascot Vale Tram Substation demonstrates the form and scale of the substation buildings constructed in the 1920s to house the rectification and switching equipment required to operate the electric tram system. The building is a fine example of the application of the Inter-war Stripped Classical style to a utilitarian industrial building. (
Criterion D)

Extent of Registration

All of the place shown hatched on Diagram 2323 encompassing parts of Lot 1 on Title Plan 695735 and Lot 1 on Title Plan 692716.