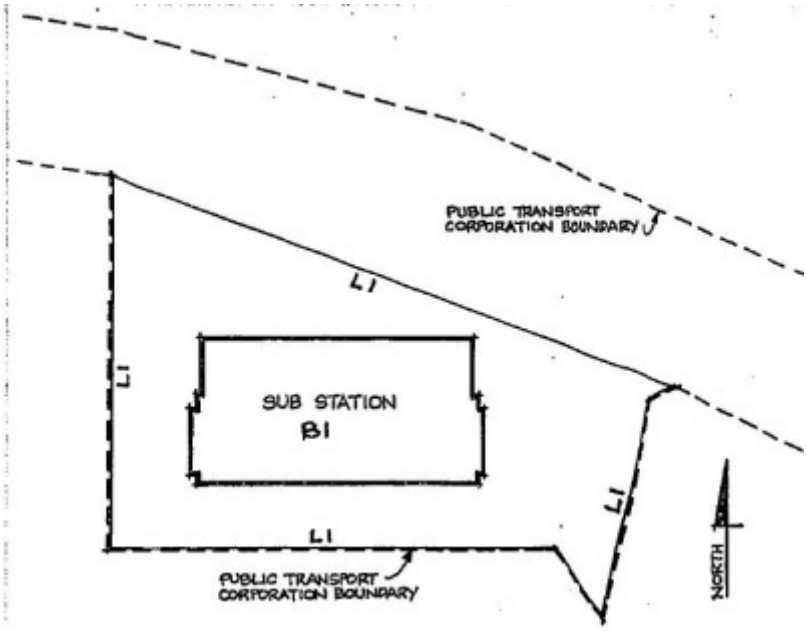
# RAILWAY SUB STATION

RAILWAY SUB-STATION
SOHE 2008

1 railway sub station off newmarket street flemington front view




h01199 plan h1199

## Location

132-164 NEWMARKET STREET FLEMINGTON, MOONEE VALLEY CITY

## Municipality

MOONEE VALLEY CITY

## Level of significance

Registered

## Victorian Heritage Register (VHR) Number

H1199

## Heritage Overlay Numbers

HO139

## VHR Registration

September 19, 1996

## Heritage Listing

Victorian Heritage Register

## Statement of Significance

Last updated on - May 11, 1999

What is significant?

The large red brick Newmarket railway sub station was built in 1914-15 and began operation in 1918 as part of the program to electrify the Melbourne suburban railway network. The electrification scheme and its associated infrastructure was designed by the English consulting engineer CH Merz, and the Newmarket sub station was constructed by the Victorian Railways Ways & Works Branch. The sub station initially supplied 1500V DC at a frequency of 25Hz to the overhead distribution system. Upon conversion of the frequency to 50Hz, most of the functions of the building were transferred to new sub stations erected at North Melbourne and Essendon in 1966.

How is it significant?

The Newmarket railway sub station is of scientific and architectural importance to the State of Victoria.

Why is it significant?

The Newmarket sub station is scientifically important because it as one of the first group of buildings constructed for the electrified Melbourne suburban railway network, which was the first electric railway system in Australia, had the largest power generating plant in the southern hemisphere, and was the largest electrified suburban train service converted from steam operation in the world. The Melbourne suburban network was the first electric system to employ a 1500 volt Direct Current overhead system. It became the model for later installations in England, France, Holland, Brazil, Japan, New Zealand and India. The Melbourne electrification scheme was a significant work of engineer Charles Hesterman Merz, who had acquired experience of railway electrification while acting as consulting engineer on the 1904 electrification of the Newcastle suburban system on Britain's North Eastern Railway in 1904. The electric railway system was also important because its central power generating station supplied electricity for suburban domestic and industrial use, thereby replacing a number of small scale power generating plants. The railways continued to be a major generator of power until 1951 when they handed over full responsibility to the State Electricity Commission.

The Newmarket sub station, one of the first group of buildings constructed for the inauguration of electrified services is architecturally important for the adoption of the neo-Classical style on a grand scale for what is essentially a utilitarian structure. The three mature Canary Island date palms, dating from about 1930, enhance the surroundings of the building.

## 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:

EXEMPTIONS FROM PERMITS:

INTERIOR DECORATIVE SCHEMES

Interior painting, provided the preparation work for painting does not remove evidence of the building's original paint or other decorative scheme.

Removal of existing carpets / flexible floor coverings eg vinyl.

Installation of carpets and flexible floor coverings

REFURBISHMENT OF TOILETS

Refurbishment including removal of existing sanitary fixtures and associated piping, mirrors, and wall and floor coverings, and installation of new fixtures, and wall and floor coverings.

Removal of existing benches and fixtures and floor coverings and installation of new benches and fixtures, including associated plumbing and wiring.

INSTALLATION OF HEATING SERVICES

Installation of hydronic, or concealed radiant (Ceiling Foil Radiant Heating or under carpet heating) type heating, provided that the installation does not damage existing skirtings, architraves and the location of the heating unit (boiler etc) is concealed from view.

RE-WIRING

Re-wiring provided that all new wiring is fully concealed and any original light switches, pull cords, or GPO's are retained in-situ. The exposed dual-wire light and power system wiring is to be conserved.

Note : If wiring is original to the building, timber conduits should be left in situ rather than removed.

HANGING OF WALL-MOUNTED ITEMS

Installation of hooks, nails and other devices for the hanging of wall-mounted items.

INSTALLATION OF SMOKE DETECTORS

Installation of smoke detectors.

REMOVAL OF EXTRANEOUS EXTERNAL ITEMS

Removal of air-conditioners / pipework / wiring / antennae / aerials / and making good.

INSTALLATION OF DAMP-PROOF COURSES

Installation of damp-proofing by either injection method, or "grouted pocket" method.

SIGNAGE

Existing signage may be altered/replaced provided that the new sign is no larger than the existing, is located in the same position and that no internally signage is used.

| | |
|---|---|
| Construction dates | 1914, |
| Heritage Act Categories | Registered place, |
| Other Names | NEWMARKET, |
| Hermes Number | 3763 |
| Property Number | |

## History

Contextual History:History of Place:
Although a private proposal to electrify the Melbourne metropolitan railway network was made in 1896 it was not until 1907 that the Victorian Government employed C H Merz, an English consulting engineer to prepare a scheme for electrification. Merz's scheme allowed for the staged conversion of 124 route miles of the metropolitan system at a cost of more than 2.2 million pounds. The protected third rail system was to adopted and a new power generating station was proposed to be built at Yarraville to provide alternating current at a potential of 800 volts.

The Victorian Railway Commissioners contended that electrification was premature because they did not agree with Merz's financial projections. In 1910 the government established a Metropolitan Traffic Commission which also recommended that electrification should be an integral part of a general improvement of existing transport services. Merz was subsequently engaged to review his scheme, and after consideration by a Parliamentary Select Committee, Merz's scheme was adopted by the Government.

Merz's revised scheme differed in one significant aspect from his earlier proposal - instead of a third rail alternating current distribution system Merz now proposed an overhead wire direct current system operating at 1500 volts and a frequency of 25Hz. The overhead wires were to be powered from twelve wayside substations housing converting machinery which received high tension three phase alternating current at 20,000 volts from the central generating station. Each traction substation was to contain stepdown transformers, rotary converter plant and switchgear.

Under the revised scheme all suburban lines, comprising 150 route miles of running track and 24 miles of sidings, were to be electrified. Approximately 12% of the total cost was to be spent on the substations. By June 1913 major contracts for supply of electrical equipment had been let to English and American companies. As the revised scheme required greater generating capacity the site for the generating station was changed from Yarraville to Newport where improved condensing water facilities could be provided. In addition to the twelve substations originally proposed, it was decided that substations be installed at Reservoir, Seaford and Newmarket. The latter facility was considered necessary to cope with heavy traffic anticipated on the Flemington racecourse branch line.

The electrification of the suburban railway network provided the opportunity to install an electrically operated automatic signalling system, which would provide more safety than the existing installation. The power supply for the new signalling system was therefore located within the traction substations.

The First World War caused considerable construction delays. The Newport generating station began producing power in June 1918 and the first electric train made a trial run between the Newmarket substation and Flemington race course on 6 October 1918. The first permanent electric train service began operating between Sandringham and Essendon on 28 May 1919. This was the first electric train service in Australia. During the next four years the scheme was completed. The final cost amounted to some 6.27 million pounds.

The new electric trains surpassed the steam trains they replaced. Running at faster speeds, they reduced travel times and the frequency of services and reduced the number of trains and staff required. Greater flexibility in train size was possible and for the first time Flinders Street station was able to be through-worked. As the Newport power station had reserve capacity, power was sold for other purposes, thereby realising extra revenue. Melbourne then had the largest electrified suburban train service converted from steam operation in the world, and the largest power generating plant in the Southern Hemisphere.

Between 1926 and 1964 seven extensions of the electrified suburban network were commissioned and in 1956 the line from Dandenong to Traralgon, in the Latrobe Valley, was also electrified. This was the first railway main line in Australia to be electrified, and also the longest. Over the years the power supply installations were upgraded and new facilities constructed to cope with increasing services.

In 1951 the power station at Newport was taken over by the State Electricity Commission (SEC) and the Victorian Railways ceased generating its own power. As the SEC had adopted the national standard for industrial power generation of alternating current at a frequency of 50Hz the frequency of the existing railway power distribution system had to be increased accordingly. In conjunction with this change it was decided that a large number of small capacity sub stations should replace the small number of large stations. This had the advantage of reducing the problem of electrolysis, and voltage drop associated with long distances between substations.

New 50Hz equipment was installed in some of the original substations but other substations were replaced by new installations at other locations. Four of the original substations have since been demolished. All suburban traction substations now use silicone diode rectifiers in place of rotary converters.
Associated People: C H Merz

## Extent of Registration

NOTICE OF REGISTRATION
As the Executive Director for the purpose of the Heritage Act, I give notice under Section 46 that the Victorian Heritage Register is amended by including Heritage Register Number 1199 in the category described as a Heritage Place:
Railway sub station, off Newmarket Street, Flemington, Moonee Valley City.
Extent:
1. All of the building marked B1 on Diagram 605277 held by the Executive Director of the Heritage Council.

2. All of the land marked L1 on Diagram 605277 held by the Executive Director of the Heritage Council, being part of the land vested in the Public Transport Corporation.
Dated 5 September 1996
RAY TONKIN
Executive Director
[*Victoria Government Gazette* No. G37 19 September 1996 pp.2472-2473]