

# Victorian Heritage Database Report

Report generated 06/07/20



## FORMER AUSTRALIAN BEAM WIRELESS RECEIVING STATION



Entrance to accommodation complex



Beam Wireless Receiving Station Mt Cottrell family cottage



Beam Wireless Receiving Station Mt Cottrell recreation bldg



Beam Wireless Receiving Station Mt Cottrell rear of recreation bldg



Beam Wireless Receiving Station Mt Cottrell cypress avenue at rear



Beam Wireless Receiving Station Mt Cottrell road to operations complex



Beam Wireless Receiving Station Mt Cottrell operations bldgs



Beam Wireless Receiving Station Mt Cottrell porch between 2 operations bldgs



Beam Wireless Receiving Station Mt Cottrell operations buildings from west



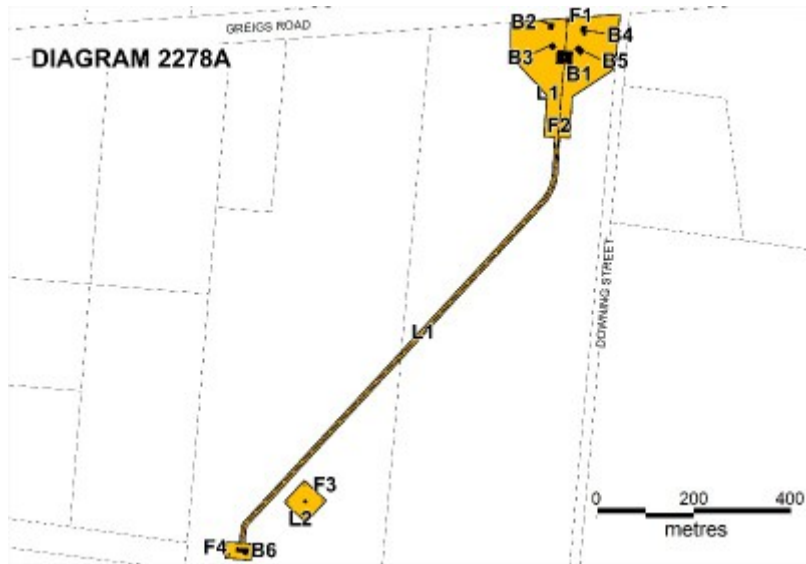
Beam Wireless Receiving Station Mt Cottrell operations buildings from east



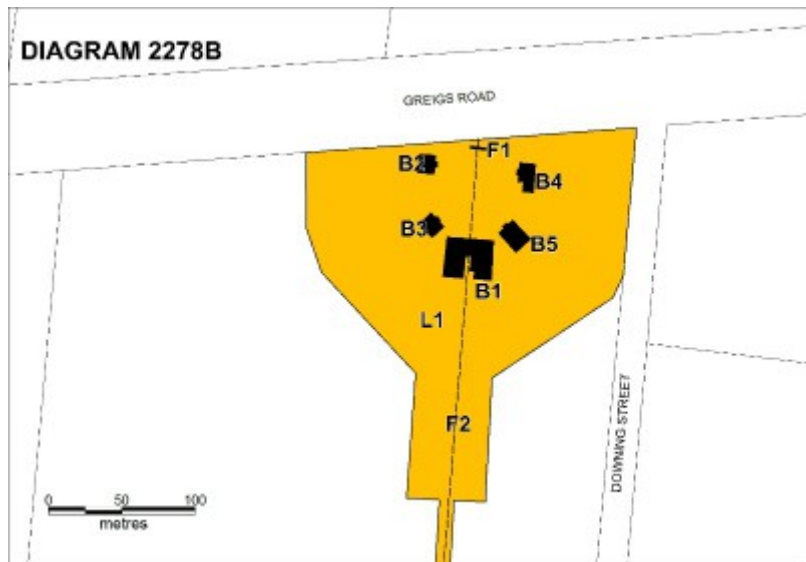
Beam Wireless Receiving Station Mt Cottrell side of operations building



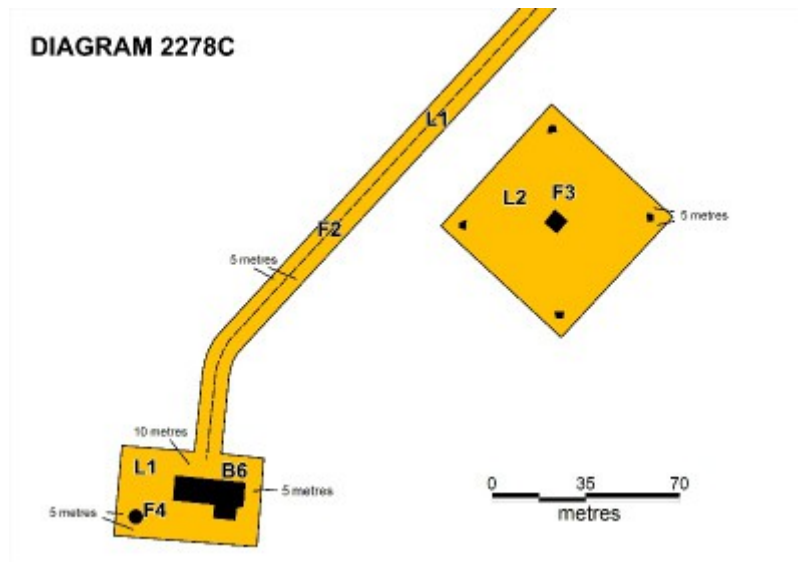
Concrete water tower



cotrell a revised by heritage council.jpg



cottrellB.jpg



cotrell c revised by heritage council.jpg

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## Location

653-701 GREIGS ROAD and 703-735 GREIGS ROAD FIELDSTONE, MELTON CITY

## Municipality

MELTON CITY

## Level of significance

Registered

## Victorian Heritage Register (VHR) Number

H2278

## Heritage Overlay Numbers

HO108

## VHR Registration

February 23, 2012

## Heritage Listing

## Statement of Significance

Last updated on - February 8, 2012

What is significant?

The former Australian Beam Wireless Receiving Station is located on a rural site at Mount Cottrell, south of Melton on the plains west of Melbourne, and consists of separate residential and operations complexes located about a kilometre apart and linked by the remnants of a roadway, adjacent to which are the concrete bases and guy wire anchors for the six original antenna masts. The station was built in 1926 as part of Australia's first direct international communications system. The receiving station operated in conjunction with a transmitting station at Fiskville, south of Ballan. The scheme was developed by Ernest Fisk, the Managing Director of AWA (Amalgamated Wireless (Australia) Pty Ltd), who had in 1918 demonstrated the feasibility of direct wireless communication between Australia and Britain, and with the support of Prime Minister William Hughes had overcome the objections to Fisk's scheme of Britain, which favoured a relay scheme. The two stations were built by AWA for 119,000 pounds. The official opening, attended by the Prime Minister Stanley Bruce and the Governor-General, took place in Melbourne on 8 April 1927. The system linked Britain, and in 1928 North America, directly with Australia by means of a telegraph system transmitted by short-wave beam wireless. From 1930 a radio-telephone service began, and in 1934 the system also began to send and receive pictures. Both stations included the workers' accommodation required to man the station continuously. The buildings are thought to have been designed under the supervision of the Commonwealth Architect, J S Murdoch. With the advent of co-axial cables in the 1950s and 1960s and satellite communication in the 1960s, demand for the beam wireless system decreased and the transmitting and receiving stations both closed in 1969.

The former Australian Beam Wireless Receiving Station accommodation complex on Greigs Road consists of four identical bungalows in a garden setting arranged symmetrically around a central drive, which leads from the entrance gates to an impressive main building in an Inter-war Spanish Mission style. This has an elaborate arched portico and central carriageway, and once contained bachelor accommodation and recreational facilities. The houses are constructed of rendered reinforced concrete and have hipped, corrugated iron-clad roofs and central entrance porches. The houses are separated by lawns, and Canary Island palms (*Phoenix canariensis*) line the driveway. The complex is enclosed on three sides by a tall hedge of mature Monterey cypresses (*Cupressus macrocarpa*), which also line the road beyond the recreation building. From the rear of the accommodation complex a track leads to the operations complex about a kilometre to the south-west. Along the south-east side of this road are the concrete bases and massive concrete guy wire anchors for the six original antenna masts, now removed. The operations complex includes two similar adjoining single-storey gabled concrete buildings, connected by a lower entry porch, and there is a tall concrete water tower nearby.

How is it significant?

The former Australian Beam Wireless Receiving Station is of historical, architectural, and scientific (technological) significance to the state of Victoria.

Why is it significant?

The former Australian Beam Wireless Receiving Station is of historical significance for its association with the first direct commercial telegraphy communication across the British Empire between Britain and Australia, bridging the longest 'wireless' span in the world. Telegraphy via the Australian Beam Wireless received enthralled media attention during the 1920s and was an achievement celebrated by engineers and politicians. A large part in this scheme was played by Australia, under the leadership of Prime Minister William Hughes, and by Sir Ernest Fisk, the outstanding figure in the early history of radio in Australia, who was knighted for his achievements in 1937. The former Receiving Station is significant for its association with Amalgamated Wireless (Australia) Pty Ltd, the second largest radio company in the British Empire, which became an Australian icon through its provision of radio, and later television, equipment, and was one of Australia's largest companies. The accommodation complex is historically significant as a small but fine and intact example of a workers' housing estate designed to attract and retain employees, which demonstrates the need to operate the station around the clock and the difficulties of transport in such relatively isolated locations at the time.

The former Beam Wireless Receiving Station is of architectural significance for the accommodation and recreation buildings, thought to have been designed under the supervision of the Commonwealth Architect J S Murdoch, which reflect contemporary Commonwealth styles. The layout of the buildings in the accommodation complex reflects post-World War I concepts of a planned garden community.

The former Beam Wireless Receiving Station is of scientific (technological) significance for its association with one of the major scientific feats of the inter-war period. Wireless was considered one of the wonders of the early twentieth century, and the Australian Beam Wireless Receiving Station at Mount Cottrell was an essential element of the longest distance direct radio link in the world.

The functional layout of the Station is significant, including the separation of accommodation and recreational areas in a landscaped setting from the operations facilities, including the Radio Operations building and remnant set of concrete pads for mast and guy wires.

## Permit 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. General Conditions: 3. If there is a conservation policy and plan all works shall be in accordance with it. Note: A Conservation Management Plan or a Heritage Action 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. Minor Works : Note: Any Minor Works that in the opinion of the Executive Director will not adversely affect the heritage significance of the place may be exempt from the permit requirements of the Heritage Act. A person proposing to undertake minor works must submit a proposal to the Executive Director. If the Executive Director is satisfied that the proposed works will not adversely affect the heritage values of the site, the applicant may be exempted from the requirement to obtain a heritage permit. If an applicant is uncertain whether a heritage permit is required, it is recommended that the permits co-ordinator be contacted.

**Accommodation complex:** Interior works are exempt from permit

**Operations complex:** Interior works are exempt from permit

Landscape Maintenance :

The process of gardening, including mowing, hedge clipping, bedding displays, removal of dead plants and replanting the same species or cultivar, disease and weed control, and maintenance to care for existing plants.

Removal of dead or dangerous trees if the tree is an immediate risk of personal or damage to property

In the event of the loss of any plant specified in the Statement of Significance/Extent of Registration, replanting with the same species of tree/plant as that removed

Repairs, conservation and maintenance to hard landscape elements: roads and paths, edges, fences and gates, drainage and irrigation systems

Non-structural works and installation, removal or replacement of garden watering and drainage systems that occur at a distance greater than 5 metres from the canopy edge of a significant tree, plant or hedge

Removal of vegetation to maintain fire safety and to conserve significant buildings and structures

Removal of (intrusive) plants not identified in the registration or management report

## Theme

3. Connecting Victorians by transport and communications 6. Building towns cities and the garden state 9. Shaping cultural and creative life

Construction dates	1926,
Architect/Designer	Commonwealth Department of Works and Railways,
Heritage Act Categories	Registered place,
Other Names	Rockbank Beam Wireless Station,
Hermes Number	44598
Property Number	

## History

### CONTEXTUAL HISTORY

[Information from David Moloney, 'Uniting the Empire: the Australian Beam Wireless Service at Rockbank and Fiskville', published in Institution of Engineers Australia, *Australian Journal of Multi-Disciplinary Engineering*, vol 6 no 1, 2008. Copy in HV file PL-HE/03/1253 (Former Australian Beam Wireless Receiving Station).]

### CONTEXTUAL HISTORY

The first international system of communication was by means of telegraph cables, which enabled Australia to be connected to Europe through Darwin in 1872 via submarine cables.

It was first suggested in 1906 by the Marconi Company that Britain could be linked to its colonies by means of a chain of high-powered wireless stations. In 1910 the British Parliament accepted a proposal for a scheme that would link the British Empire by an 'Imperial Chain' of eighteen radios stations in Egypt, India, Malaya, China, Australia and Africa, but the project was shelved with the advent of WWI.

Between 1899 and 1901 all the Australian colonies and states built experimental wireless telegraph stations to communicate over distances of a few kilometres, sometimes with nearby ships. In 1912 Australia's first government-owned coastal radio station commenced operation from Melbourne's Treasury Gardens, and by 1914 a network of nineteen coastal stations had been established. The stations had been built by Australasian Wireless Ltd of Sydney, which in 1913 merged with the English Marconi Company merged, forming Amalgamated Wireless (Australasia) Ltd (AWA) (which by 1944 had become one of the largest organisations in Australia). AWA from 1923 became the designer, builder and supplier of the transmission equipment for Australia's first broadcasting stations.

AWA's first general and technical manager was Ernest Fisk, who by 1917 became managing director and by 1932 chairman. Fisk did not support Britain's proposed chain of wireless stations to connect it to the colonies.

The stations would be in potentially unstable nations, would result in cumulative delays, and costs would be too high. He proposed a 'one-hop' transmission and reception process. In 1918 he confirmed the feasibility of direct wireless communication in a series of experimental transmissions between Wales and his home in Sydney using long wave length signals.

Experimentation continued between Britain and Australia with both long and short wave signals, and by the early 1920s it was established that short wave signals were more economical and just as reliable as long wave (14,300 metre) signals.

After WWI the British Government continued to support the idea of a chain of stations to link with Australia. The 1921 'Wireless Communications' Parliamentary Committee considered the technical and commercial feasibility of establishing direct long-distance wireless communication. It eventually endorsed the scheme, proposed by Fisk and AWA and supported by Prime Minister William Hughes, which would provide high-powered Australian stations capable of commercial services to both the United States and Canada (the gateway to North America), under which the Australian Government would acquire a half share of AWA, which would provide £500,000 for the construction and operation of the Australian stations, which would operate by a super-powered long-wave system.

FISK, Sir ERNEST THOMAS (1886-1965) (author Murray Goot)

[condensed from the entry for Fisk in *ADB Online* at <http://www.adb.online.anu.edu.au/biogs/A080531b.htm>]

Fisk, the radio pioneer and businessman, was born in 1886 in England, and 'graduated in engineering' in the works of Frederick Walton, before joining the British Post Office as one of their earliest wireless telegraphists. In June 1906 Fisk joined the Marconi training school and qualified as a radio engineer and operator. From 1909 he worked for American Marconi, before returning to Marconi's administrative headquarters in London.

When Fisk first visited Australia in mid-1910 to demonstrate Marconi's apparatus for the Orient Steam Navigation Co., wireless was still largely the preserve of amateur enthusiasts. That year the government let the contract for the construction of two land stations for ships to Australasian Wireless Ltd, a Sydney firm with rights to the patents of Marconi's German rival, Telefunken. In 1911 he returned to Australia as resident engineer to represent the interests of the English Marconi's Wireless Telegraph Co. Ltd, trading under several names.

In 1913 a new company, Amalgamated Wireless (Australasia) Ltd (AWA), was formed, with exclusive rights throughout Australasia to the patents, 'present and future', of both Marconi and Telefunken. Fisk, a foundation director, was general and technical manager. In 1916 he became managing director and in 1932 chairman.

In 1916, on one of his regular visits to England, he arranged for a series of test transmissions from the Marconi long wave station in Caernarvon, Wales. With Australia then dependent on underwater cables for its contact with the world, Fisk obtained official permission to use a receiver in his home in Sydney. In September 1918 he arranged for the transmission of messages to Australia from the Prime Minister Billy Hughes and Sir Joseph Cook and established that direct wireless communication between Britain and Australia was practicable.

In 1921 Hughes took Fisk as an adviser to the Imperial Conference in London. Against the recommendation of the Imperial Wireless Committee, which envisaged an Empire linked by short distance relays, Hughes promoted Fisk's scheme for direct communication between Britain and the Dominions. In 1922 the Australian government, insisting that it was not prepared to settle for anything less, commissioned A.W.A. to create the service, boosted the company's capital and became its majority shareholder. A beam service between Australia and Britain, undercutting the cable companies, was inaugurated in April 1927; that between Australia and Canada in 1928. In September 1927 A.W.A. pioneered Empire broadcasting; in April 1930 an Empire radio-telephone service. In 1931 Marconi was godfather to Fisk's fourth son David Sarnoff Marconi.

Fisk promoted wireless as integral to the Empire; 'No scientific discovery offers such great possibility for binding together the parts of our far-flung Empire, and for developing its social, commercial and defence welfare'. He became a member of the New South Wales branch of the Royal Empire Society in 1934, and was its president in 1941 and 1944. Awarded King George V's Silver Jubilee Medal in 1935, Fisk was knighted in the Coronation Honours of 1937.

## HISTORY OF PLACE

Soon after the 1921 Parliamentary Committee report a series of technical developments in the early to mid-1920s revolutionised the possibilities for long-distance radio communications.

These included research into high frequency short-waves, which were less affected by sunlight, land masses and atmospherics than long-waves; Appleton's discovery of the ionosphere, which reflected radio waves back

towards the earth; and Charles Franklin's development of directional aerials, which narrowed signals into a beam. A high frequency short-wave service would operate with 2% of the power, three times the speed and 5% of the cost of the long-wave service originally proposed.

The original long-wave scheme had to be re-designed, and the stations therefore opened later than the proposed 1924 date, but the government's new agreement with AWA would now cost only £119,000 compared to the £500,000 originally proposed.

Melbourne was then the centre of the Federal Government, and the decision was made to locate the stations close to Melbourne to allow easy management, and just west of the city: the transmitting station south of Ballan and the receiving station at Mount Cottrell, south of Melton. This appears to have been because of the suitability of the local atmospherics and other transmission and reception conditions in these areas. The flat topography at Mount Cottrell also permitted the large array of antennae necessary, and had large tracts of land in single ownership (previously part of the vast Clarke pastoral estate) were available.

Under the 1922 agreement with the Federal Government, AWA was to construct and operate the Australians stations, but a previous agreement between AWA and Marconi meant that the English Marconi Company was to be the sole contractor and AWA would be the operating company.

IN 1925 AWA, of 167 Queen Street, Melbourne, purchased 1767 acres of land which had been part of WJT (Big) Clarke's Rockbank Estate. Construction of the 'Imperial Wireless Communications Stations' commenced in April 1925. In November 1926 it was reported that the station at Mount Cottrell, often referred to as the Rockbank station, including a number of bungalows and a club house, had been built. The Melton Shire ratebooks reported that the AWA complex consisted of a 'Beam Station and Power House' and 'Staff Quarters'.

The opening of the two stations was performed on 8 April 1927 at the Queen Street office, attended by dignitaries including Fisk, the Prime Minister Stanley Bruce, the Governor General, and future Prime Minister Robert Menzies, with the former Prime Minister William Hughes at the Sydney feeder station. Hughes was described by Fisk as 'the great pioneer of Australian communication . whose work in bringing this great thing to Australia will never be forgotten'. The technical journal *Radio* described the opening as a 'great step forward in the history of radio'. The *Argus* noted that the system comprised an aerial that concentrated signals into a beam, localising reception, and enabling transmission by one hundredth of the power that would otherwise have been necessary.

The operations complex at the Mount Cottrell station had separate buildings for power generation, telegraph reception, amplification, relay, etc. There were three antenna masts, with two 16 HP oil engines for power, coupled to 100 volt, 90 amp DC generators, which were used to charge a bank of accumulators. The bank consisted of 60 230 amp-hour accumulators. There were two additional generator sets: one to charge the 'A' batteries, the other the 'B' batteries. The B' battery generator delivered 6 amps at 300 volts.

It has been suggested, but not verified, that the buildings were designed by the Commonwealth Department of Works and Railways which was under the design control of J S Murdoch, the Commonwealth Chief Architect and Director General of Works.

The new beam wireless was able to provided an 'instantaneous' telegraph service, compared to the delays involved in cable relays, and established the first direct link between Australia and Britain. The price of telegrams was also reduced, and within a few months the system was carrying almost half the UK-Australia telegraph traffic.

The system also provided a direct link to Montreal (from 1928), and from there to the United States and South America. Telegrams could also be sent around Australia: from Melbourne telegrams went via landline to Fiskville and Mount Cottrell and thence by beam wireless to other parts of the country.

The Beam Wireless was also able to transmit pictures, the first picture received in Australia from Europe being a photo of the assassination of Prince Alexander of Yugoslavia in Marseilles in October 1934.

This western plains area became a major centre of wireless in Australia, with the later establishment of: RAAF wireless bases at Point Cook, Laverton and Werribee; Army international transmission and reception stations at Diggers Rest and Rockbank; and AWA's 'Radio Centre Melbourne' at Braybrook.

#### Post-war developments

As the Beam services expanded so too did the transmitting and receiving complexes. Between 1935 and 1947 several new aerials were erected for communication with Montreal, Port Moresby and San Francisco, and the new relay stations at Perth, Colombo and Bombay.



The Overseas Telecommunications Commission (Australia) (OTC) was formed by an Act of Parliament in 1946, with responsibility for the maintenance and operation of Australia's overseas telecommunication services, and assumed operation of the two beam wireless stations in February 1947.

In the 1950s both stations were upgraded with more modern equipment to cope with rapidly increasing demand, required also by the Melbourne Olympic Games in 1956, and new rhombic antennae (broad band directional antennae commonly used in high frequency or shortwave ranges) replaced the old Franklin antennas.

A major post-war development in communications was the multi-channel communications cable, the first, in 1956, being the first trans-Atlantic coaxial cable, in 1959 a trans-Pacific co-axial cable scheme was proposed, and in 1961 an extension of the latter to south-east Asia.

In 1957 signals from the first man-made orbiting satellite were received at Mount Cottrell, and in 1964 OTC was one of the founding members of the International Telecommunications Satellite Consortium, to develop a global communications satellite system. Australia's first satellite earth stations were opened in 1966 at Carnarvon in WA, then Moree (1968) and Ceduna (1969).

International communications could now be sent by coaxial cable and satellite relay, as well directly by radio. The 'beam' was rapidly being superseded by more modern technologies. The two stations at Fiskville and Mount Cottrell though continued to operate until their closure on 31 May 1969.

## **Assessment Against Criteria**

### *a. Importance to the course, or pattern, of Victoria's cultural history*

The former Australian Beam Wireless Receiving Station is of historical significance for its association with the first direct commercial telegraphy communication across the British Empire between Britain and Australia, bridging the longest 'wireless' span in the world. Telegraphy via the Australian Beam Wireless received enthralled media attention during the 1920s and was an achievement celebrated by engineers and politicians. The former Receiving Station is significant for its association with Amalgamated Wireless (Australia) Pty Ltd, the second largest radio company in the British Empire, which became an Australian icon through its provision of radio, and later television, equipment, and was one of Australia's largest companies. The accommodation complex is historically significant as a small but fine and intact example of a workers' housing estate designed to attract and retain employees, which demonstrates the need to operate the station around the clock and the difficulties of transport in such relatively isolated locations at the time.

### *b. Possession of uncommon, rare or endangered aspects of Victoria's cultural history.*

### *c. Potential to yield information that will contribute to an understanding of Victoria's cultural history.*

### *d. Importance in demonstrating the principal characteristics of a class of cultural places or environments.*

The former Australian Beam Wireless Receiving Station is of architectural significance for the accommodation and recreation buildings, thought to have been designed under the supervision of the Commonwealth Architect J S Murdoch, which reflect contemporary Commonwealth styles. The layout of the buildings in the accommodation complex reflects post-World War I concepts of a planned garden community.

### *e. Importance in exhibiting particular aesthetic characteristics.*

### *f. Importance in demonstrating a high degree of creative or technical achievement at a particular period.*

The former Australian Beam Wireless Receiving Station is associated with one of the major scientific and technical feats of the inter-war period. Wireless was considered one of the wonders of the early twentieth century, and the Australian Beam Wireless stations at Rockbank and Fiskville were part of the longest distance direct radio link in the world.

*g. Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions.*

*h. Special association with the life or works of a person, or group of persons, of importance in Victoria's history.*

The former Beam Wireless Receiving Station is associated with Sir Ernest Fisk, the outstanding figure in the early history of radio in Australia, who was knighted for his achievements in 1937. It is also associated with Prime Minister William Hughes, who played a major role in obtaining support for the Beam Wireless scheme from Britain, which had at first opposed it in favour of a slower, more expensive and less reliable relay scheme.

## **Plaque Citation**

This 1926 complex formed part of the system developed by Sir Ernest Fisk which, in association with a transmitting station at Fiskville, provided Australia's first direct communication with Britain. It included Spanish Mission style staff housing.

## **Extent of Registration**

1. All the land marked L1 and L2 on Diagram 2278 held by the Executive Director, being part of Lot 1 on Plan of subdivision 416271Y and part of Portion 6 Section 18 on Title Plan 284193.

2. All the buildings marked B1-6 and features marked F1-4 on Diagram 2278 held by the Executive Director.

B1 Main recreation and accommodation building.

B2-5 Cottages.

B6 Radio operations building.

F1 Front fence and entrance gateway.

F2 Entrance driveway and road between the accommodation and operations complexes.

F3 Concrete base and guy wire support for one of the former antenna masts.

F4 Concrete water tank.

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*This place/object may be included in the Victorian Heritage Register pursuant to the Heritage Act 2017. Check the Victorian Heritage Database, selecting 'Heritage Victoria' as the place data owner.*

*For further details about Heritage Overlay places, contact the relevant local council or go to Planning Schemes Online <http://planningschemes.dpcd.vic.gov.au/>*