

**Heritage Overlay No.:** 108  
**Citation No.:** 311  
**Place:** Former Rockbank Beam Wireless Station

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**Other Names of Place:** Former Australian Beam Wireless Receiving Station.  
**Location:** 653-701 Greigs Road East, Mt Cottrell  
**Critical Dates:** Built 1926; Opened 1927; Closed 1969.  
**Existing Heritage Listings:** None.  
**Recommended Level of Significance:** NATIONAL/STATE



**Statement of Significance:**

*Rockbank Park*, 653-701 Greigs Road, Rockbank, is significant as the substantially intact former residential quarters of the Australian Beam Wireless Receiving Station, which commenced operation in 1927, and possibly as a fine example of early twentieth century ‘Commonwealth Departmental style’ architecture (with particular Mission Revival overtones) in a landscape setting. It may have been designed by the Commonwealth Department of Works and Railways which was under the design control of J.S. Murdoch, Commonwealth Chief Architect and Director General of Works, and was built in 1926. The buildings and landscape setting at Rockbank Park appear to be remarkably intact.

*Rockbank Park* at 653-701 Greigs Road is architecturally significant at a STATE level (AHC D.2, E.1). The main building and associated four Bungalows demonstrate outstanding original design qualities that appear to relate to the Commonwealth's 'Departmental style' with specific Mission Revival overtones. The original design qualities of the main building include the elaborate arched portico and carriage way that appears to draw on the Mission Revival design of the San Carlos Church, Monterey, U.S.A, together with the long hipped roof form and rear hipped roofed wings clad in terra cotta tiles: the whole forming a U plan. Other intact or appropriate qualities include the symmetrical composition, single storey height, rendered brick wall construction, round ventilation turret, recessed verandahs under the main roof, paired vestigial and rendered verandah columns, regular bays of timber framed double hung windows and French doors, rendered brick chimneys and the broad eaves.

The four nearby cottages also demonstrate original design qualities typical of interwar Bungalow cottage design by the Commonwealth Department of Works and Railways and cottage types espoused by the Federal Capital Commission in Canberra. These qualities include the hipped roofs form clad in red-painted galvanised corrugated steel, rendered brick wall construction, broad eaves, simple rectilinear rendered brick chimneys, and the timber framed double hung windows.

*Rockbank Park* at 653-701 Greigs Road is aesthetically significant at a STATE level (AHC E.1). The substantial formal landscaped setting with mature Canary Island palms, Cypresses and other trees, open grassed areas and perimeter rose gardens, and a central drive to the main building and flanking cottages, have significant visual qualities. The landscaped setting appears to have been designed in the 'Garden Town' idiom of the Commonwealth Department of Works & Railways, which was also responsible for the development of Canberra (under the control of the Federal Capital Advisory Committee and Federal Capital Commission) in the 1920s. The 'Garden Town' has its roots in the English Garden City movement, landscape architecture of Walter Burley Griffin and his contemporaries, and the garden pavilion hotel designs and landscapes in U.S.A., including Santa Barbara, California. The metal entrance gates and surrounds also contribute to the significance of the place.

*Rockbank Park* at 653-701 Greigs Road is historically significant at the NATIONAL level (AHC A.4, H.1). It was the receiving station of the Australian 'Imperial Wireless Service' (generally known as 'the Beam' service), which in 1927 provided the nation's first radio communication with Britain and North America, first through telegraphy, and then facsimile 'picturegram' services (1934). (It may also have provided Australia's first wireless telephone link with Britain (1930), the first such connection between Britain and a Dominion.) These were the longest radio services of their type in the world. Together with aviation, international radio communication was the marvel of the early twentieth century. For many it represented a hope of strengthening the bonds of Empire, and helping nations to communicate. In isolated Australia the Beam Wireless was regarded as the communications miracle of its age.

*Rockbank Park* is also historically significant for its association with Amalgamated Wireless (Australasia) Ltd which was the second largest radio company in the British Empire, and an Australian icon through its provision of broadcasting transmission equipment, and more popularly its design and manufacture of household radio (and later, television) receivers. In particular the establishment of the Beam service represents the greatest achievement of AWA's Sir Ernest Thomas Fisk, the outstanding figure in the early history of radio in Australia. Fisk's unswerving vision of a direct 'one hop' radio connection between Australia and Britain (and the rest of the Empire) persuaded Australian Prime Minister WM Hughes, whose strong advocacy in turn persuaded the whole British Empire to adopt this system rather than the relay system favoured by the British government. Fisk and AWA also participated in the technical

development of this scheme: Australia's distance and technical competence were critical in the inter-continental experiments conducted between Fisk and Nobel Prize winner Guglielmo Marconi, which established the suitability of short-waves for long distance transmission. High-frequency short-wave transmission (combined with beam aerials) subsequently formed the operating system of the Imperial Wireless Service. *Rockbank Park* was also associated, from 1947, with AWA's successor in this field, the Overseas Telecommunications Commission. The OTC also played a leading role in communications research and development, particularly in relation to rhombic aerials (although nothing remains of this system on the site).

*Rockbank Park* is also of historical significance as one of the first radio reception/transmission stations established in Melbourne's western and north-western plains, which became a major centre of radio in Australia.

The complex may also be of historical significance for its associations with the Commonwealth Department of Works and Railways that was under the design control of J.S. Murdoch, Chief Architect and Director General of Works. Murdoch was Australia's first Commonwealth Government Architect.

Overall, *Rockbank Park* at 653-701 Greigs Road is of NATIONAL significance.

### **Description:**

The property, now known as *Rockbank Park*, 653-701 Greigs Road, Rockbank, is set within a substantial formal landscaped setting having a central drive flanked by open grassed areas with rose gardens, mature Canary Island Palms, Cyprresses and other exotic tree species. The centrepiece of the complex is the main staff recreation and administration building, which is flanked by four modest interwar Bungalows of similar construction. Access to the property is through the early metal gates having flanking rendered brick piers and surrounds and pedestrian gates. Crowning the flanking gate piers are ovoid lamps.

The planting is notable for its symmetrical layout of the distinctive Canary Island palms (*Phoenix canariensis*) of which four remain, and lozenge shaped rose beds along the central drive. The garden and the complex of buildings enclosed in a protective Monterey cypress (*Cupressus macrocarpa*) hedge make a significant impact in the barren landscape.

The substantial, symmetrical, single storey, rendered brick, interwar eclectic Georgian and Mission Revival styled administration building is characterised by an elaborate arched portico and carriage way flanked by minor pedestrian arches. The portico has ornate round pilasters that separate the triple-arched opening that is crowned by a parapet having decorative urns. A long hipped roof form clad in terra cotta tiles traverses the site, with hipped roofed wings at the rear: the whole forming a U plan. It is crowned by a round ventilation turret. Flanking the portico are recessed verandahs under the main roof that are supported by paired rendered vestigial columns. Regular bays of timber framed double hung windows and French doors are identified on the main elevation. Early rendered brick chimneys also adorn the roofline and broad overhangs are features of the eaves.

The nearby symmetrically located houses are modestly scaled and have hipped roof form clad in red-painted galvanised corrugated steel. These rendered brick buildings have broad eaves and the roofs are adorned with simple rectilinear rendered brick chimneys. Other early features include the timber framed double hung windows.

These 'staff buildings' were originally bachelor quarters, cottages (for married personnel) and recreation rooms, all equipped with electricity and running water. Located in a district that was

regarded as quite isolated, and needing staff on-hand 24 hours a day, it was necessary to provide comforts and be reasonably attractive, comfortable, and self-sufficient regarding entertainment.<sup>1</sup>

There were separate buildings for the wireless operation (power generation, telegraph reception, amplification, relay etc), but none of the buildings or equipment associated with these functions remain.

Similarly, apart from some concrete block guy cable anchors, nothing remains of the two great ‘Franklin’ or ‘English’ curtain antennas (supported by massive lattice steel masts 195 metres apart and 91.5 metres high) with reflectors, one directed to the UK, the other to Canada. Similarly, there is nothing remaining of the arrays of rhombic antennas that replaced them after the war.

## **History:**

### ***Context: The Development of Radio***

#### *General*

Telegraph cable technology had given the world its first international communications system, and Australia had been connected to Europe via submarine cables through Darwin in 1872. After a period of experimentation, by c.1910 the new technology of radio, or wireless as it was then known, had made a significant contribution to communications, primarily in the form of wireless telegraphy between coastal stations and ships at sea. Although ‘the Marconi Co’ (Marconi’s Wireless Telegraph Company Ltd, situated at Chelmsford, Essex) had installed demonstration transmitting and receiving equipment at Queenscliff and Devonport in 1905, its successful communication across Bass Strait did not persuade the Government to approve or purchase the equipment. But by 1914 there were 19 coastal wireless telegraphy stations established around Australia providing communications with shipping, making an important contribution to maritime safety.<sup>2</sup>

However long distance radio telegraphy took considerably longer: although in 1918 Guglielmo Marconi in England and ET Fisk in Australia set a new international telegraphy benchmark in a successful London-Sydney wireless communication, it was not until the opening of the service from Ballan (transmitting) and Rockbank (receiving) stations in 1927 that the longest ‘wireless’ span in the world was bridged by a regular commercial telegraph service. New possibilities into long distance communication emerged as a result of experimentation by Marconi with short wavelengths, combined with the development by Franklin of directional ‘beam’ aerials.<sup>3</sup>

In contrast to ‘broadcasting’, which had made its first Australian appearance in Sydney in 1923, the ‘beam’ wireless concentrated and then directed narrow signals to equivalent facilities on the other side of the world (where the signals were transcribed onto tapes and then into the written word by similar high speed machinery as had been used by cable systems). Although the spread of broadcasting was one of the most famous achievements of the age, telegraphy ‘via beam’

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<sup>1</sup> At Ballan the recreation room included a billiard table and pianola, and there were tennis courts, but there are no records of these at Rockbank, which was a little less isolated.

<sup>2</sup> Australian Academy of Technological Sciences and Engineering, *Technology in Australia 1788-1988*, (Melbourne 1988, On-line 2000), p.536

<sup>3</sup> *Radio Review of Australia*, January 1937, p.22

was probably a larger field of radio application by the late 1920s.<sup>4</sup> In 1930 Australia was also provided with international telephone service through the same Ballan/Rockbank facilities, followed in 1934 by an international ‘picturegram’ service also through Ballan/Rockbank.

*(Sir) Ernest Thomas Fisk, and Amalgamated Wireless (Australasia) Ltd*

Born in England in 1886, in 1911 ET Fisk came to Australia as resident engineer representing the Marconi company, trying to persuade ship owners to fit Marconi equipment. In 1913 the English Marconi company and its Australian competitor Australasian Wireless Ltd (with links to Marconi’s rival, the German Telefunken company) settled their differences and merged, forming Amalgamated Wireless (Australasia) Ltd, with exclusive Australasian rights to present and future patents of both the Marconi and Telefunken companies. Fisk was general and technical manager; in 1916 he became managing director, and in 1932 chairman.<sup>5</sup>

While the prime task of the newly formed AWA had been to develop wireless for shipping in the Australian region, from 1923 it became the designer, builder and supplier of Australia’s first radio broadcasting stations’ transmission equipment, and a pioneer of long-distance radio. By 1926, protected by and with a unique relationship with the Australian Government, AWA could boast that it was ‘the second largest wireless organisation in the British Empire’.<sup>6</sup> It was popularly known in Australia (and the Pacific region) as the manufacturer of the radio receivers (such as the ‘Fisk Radiola’) that crowned the mantelpieces of many homes. By 1944 it had 6000 employees and was one of the largest organisations in Australia.<sup>7</sup> After the war it became the predecessor of Australia’s Overseas Telecommunications Commission (OTC).

The pioneering achievements of ET Fisk and AWA were numerous. In 1920 AWA conducted two of the very first public demonstrations of wireless broadcasting anywhere in the world (to the Royal Society Sydney, and of a concert in Queens Hall, Federal Parliament Melbourne).<sup>8</sup> It set a world record when in 1924 it maintained wireless communication with the RMS *Niagra* for the whole of its journey across the Pacific; in September 1926 it set another maritime record by maintaining contact with the SS *Jervis Bay* for the whole of its journey to London. These developments led to the adoption of short-wave transmitters by international shipping companies.<sup>9</sup> Its early 1920s experiments with short-wave wireless, primarily the tests between Koo-Wee-Rup and England, ‘proved that direct radio links were possible across the globe’,<sup>10</sup> and culminated in the ‘now famous transmission from Sydney, on 5<sup>th</sup> September 1927 of the first Empire Broadcast Programme to be relayed throughout the British Empire.’<sup>11</sup> Beginning with a 90 metre wavelength, these experiments had established that the 25 metre wavelength would give the best results. Another broadcast on 17<sup>th</sup> October 1927 was claimed by AWA to be the ‘first world-wide programme’. In 1931 AWA launched ‘The Voice of Australia’, the first regular world broadcasting service in the southern hemisphere, in Sydney and Melbourne. These broadcasts were heralded by the kookaburra’s laugh, still used today by Radio Australia.

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<sup>4</sup> The article by CF Elwell, ‘Radio: Its Past, Present and Future’, in *Radio*, 13<sup>th</sup> October 1926, provides a very good overview of the development of radio to that date.

<sup>5</sup> Goot, M, ‘Sir Ernest Thomas Fisk’, in Nairn, B & Serle, G (eds), *Australian Dictionary of Biography*, Vol. 8, (MUP, Melbourne, 1981), pp.508-510 Goot, ADB, *loc cit*.

<sup>6</sup> Chairman Sir George Mason Allard, at AWA Annual General Meeting, 29/10/1926 (National Australian Archives, MP 341/1/0, 1938/5723, Box 553)

<sup>7</sup> Goot, ADB, *loc cit*.

<sup>8</sup> Larkin, *loc cit*

<sup>9</sup> AS McDonald, FW Larkins, ‘Short Wave Research Work’, in *Radio*, Nov.15, 1927, pp.6-7

<sup>10</sup> Miller, M, *The Beamers: A Photographic History of the Beam Radio Service 1927 - 1969* (Australian and Overseas Telecommunications Corporation Ltd, 1992), pp.4-5.

<sup>11</sup> AWA, 1930, *op cit*.

Nobel Prize winner the Marchese (Guglielmo) Marconi, credited with the invention of radio, paid tribute to Fisk in a message to the Radio Foundation Day dinners held in Australian capital cities in December 1936. After acknowledging the achievements of fellow scientists and engineers such as Herz, Preece and Fleming, Marconi added that:

‘the name of Fisk in world communications I also acknowledge with much appreciation. The British Empire, and particularly Australia, owes much to this engineer for its efficient system of communications. It was Fisk who collaborated with me in my early endeavours to give the Commonwealth a cheaper and speedier connection with the Homeland. It was he who, in Australia, personally conducted the receiving experiments which led to the first direct connections by both telegraph in 1918, and telephone, in 1924, between England and Australia.’

Marconi credited ‘his assistant’ Fisk with the establishment of the efficient wireless network of the Western Pacific. In response Fisk, in Sydney, referred to ‘my revered tutor and great friend the Marchese Marconi.’<sup>12</sup>

At the same Radio Day celebration tributes to Fisk’s foresight and energy were also paid by the American Institution of Radio Engineers, and his Australian colleagues. Fisk’s motivations were described as ‘the good of this great country of ours ... the good of our Empire, and ... the good of humanity at large.’<sup>13</sup> Fisk was knighted in 1937.<sup>14</sup> In 1933 he had been appointed to the Order of the Crown of Italy.<sup>15</sup>

Fisk had a broad range of interests, including landscape garden design; in 1931 AWA had promoted its new Ashfield (Sydney) works as ‘An Australian Factory in an Australian Garden’.<sup>16</sup> In 1944 he left AWA to become chief executive of the Electrical and Musical Industries (EMI-His Master’s Voice) group in London. He returned to Sydney after 1952 when his contract was not renewed, and became a business consultant. He died at his Roseville home on 8<sup>th</sup> July 1965.<sup>17</sup>

ET Fisk’s name had been ‘synonymous with the development of radio’ in Australia. In 1930 AWA, in reviewing its recent achievements in long-distance transmission of telegraphy and telephony, paid the following tribute to its Managing Director. He had:

‘not only visualised a direct trans-ocean wireless communication between Australia and Great Britain and Australia and other Dominions, but had consistently advocated and educated the powers-that-be to a realisation of the needs for such services, and had demonstrated to them the technical means and methods by which it could be carried out’.<sup>18</sup>

Very soon after his arrival in Australia Fisk had realised that the greatest use of wireless telegraphy to Australia would be for trans-oceanic communication, said colleague FW Larkins:

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<sup>12</sup> *Radio Review of Australia*, January 1937, pp.16-17. The dates of the connections Marconi refers to were the dates of the first experiment. (Marconi was godfather to one of Fisk’s sons. Goot, ADB, *op cit*).

<sup>13</sup> *Radio Review of Australia*, January 1937, pp.17, 19

<sup>14</sup> Goot, ADB, *loc cit*

<sup>15</sup> Ian McLean, ‘Rockbank, Fiskville and the Beam Wireless: The Beginnings’, in HRSA *Radio Waves*, April 2004, p.5

<sup>16</sup> Ian McLean, ‘Rockbank, Fiskville and the Beam Wireless: The Beginnings’, in HRSA *Radio Waves*, April 2004, p.5

<sup>17</sup> AWA, 1930, *op cit*

<sup>18</sup> Amalgamated Wireless (Australasia) Ltd, *Wireless Progress in Australia* (1930)

‘His work since then has been the constant pursuit of a great objective - the mighty purpose of his life - the establishment and development of a vast trans-ocean service between Australia and Canada, South Africa and India. Visualising this scheme both as an International and Imperial necessity, he has backed it with unlimited faith, and against almost overwhelming opposition striven tenaciously for its accomplishment.’

The successful Australian Beam Station in 1927 - ‘epoch making in the records of Wireless’ - represented the ‘consummation of his scheme’. For Fisk, ‘national interest’ was paramount, and the success of the Rockbank and Ballan Beam Wireless service represented his greatest achievement.<sup>19</sup>

#### *ET Fisk and the Development of the Australian Beam Stations*

The outbreak of the First World War made maritime communications a frenzied field of activity; it also emphasised the vulnerability of submarine cables for international communication. After the war AWA resumed its ‘bread and butter’ maritime wireless activities, but Fisk was also keen to pursue the proposition that had previously been scuttled by the ‘Marconi scandal’ and war - the Empire-wide wireless communication system.<sup>20</sup>

Wireless was thought of by many as a means of uniting and strengthening Empire, culturally, and of course for trade and defence. While his vision was for the development of wireless in Australia, Fisk was also an unswerving advocate of Empire, and active in the NSW Royal Empire Society. ‘No scientific discovery offers such possibility for binding together the parts of our far-flung Empire, and for developing its social, commercial and defence welfare’ he said.<sup>21</sup> In his speech to the 1936 Radio Foundation Day celebration, former Prime Minister WM Hughes’ recalled that he and Fisk had discussed how radio would unite ‘all the dominions of the British Empire’. Of the ‘two great achievements of the modern world, aviation and wireless’ said Hughes, it was the latter which had ‘knitted the Empire closer together’, and might help deliver peace to the world.<sup>22</sup>

Although a champion of Crown and Empire, Fisk had never supported the British Government’s proposal for ‘chain relay’ stations across the Empire, believing that London/Darwin messages in particular, handled through relay points 2000 miles (3200 km) apart would be too vulnerable. In addition, the cumulative delays would be unacceptable, and the costs so high as to be non-competitive with cable. For Fisk the only practical approach was ‘a one-hop transmission and reception’.<sup>23</sup>

In 1918 Fisk (with apparatus designed by him and built by AWA), Marconi and the Admiralty had demonstrated the point in a widely publicised direct wireless telegraphy transmission from Prime Minister WM Hughes and navy minister Sir Joseph Cook (then in England) to Fisk’s personal experimental station in Wahroonga, Sydney. This first successful transmission of low-power short-wave signals from England to Australia (followed by another from Australia to England in 1924) was the first of numerous records established by Fisk and AWA in trans-oceanic communication.<sup>24</sup>

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<sup>19</sup> Larkin, FW, ‘The Man Fisk’, in *Radio*, 15<sup>th</sup> August 1927, pp.10-11, 74

<sup>20</sup> Neville Williams, ‘When I Think Back: Ernest T Fisk: Pioneer, Visionary and Entrepreneur’ (<http://homepages.rootsweb.com>)

<sup>21</sup> Goot, ADB, *loc cit*

<sup>22</sup> *Radio Review of Australia*, January 1937, pp.24, 27. (This hope was also that of Marconi, who had elsewhere expressed the desire ‘to bring the whole world together’ through developments in radio.)

<sup>23</sup> Williams, *loc cit*.

<sup>24</sup> Larkin, *loc cit*.

This communication was one of the benchmark achievements in the development of long-distance radio in which Australia was centrally involved. In a time when trial and error - the empirical documentation of reception conditions (such as ‘fading’ and ‘atmospheric’ conditions), of different wavelengths, in different parts of the globe - was as least as important as theory, Australia’s distance and technical competence was critical. Marconi had been fascinated by the question of whether it would ever be possible to transmit radio signals around the world ‘as far as the Antipodes ... even to far-off Australia ... the greatest possible distance that can be covered by radio on this little earth of ours.’<sup>25</sup> Fisk’s view was simpler still: ‘here in Australia we have more to gain from the development of radio than many other countries have.’<sup>26</sup> The association of Fisk in Australia and Marconi in England was pivotal, the two men personally conducted many communication experiments between the continents.

Following the successful 1918 transmission of the Prime Minister, the English Marconi company offered to build a direct longwave (low frequency) wireless communication with Australia, but the government would not agree to a private foreign company controlling Australia’s wireless lifeline. Consequently in 1920 AWA (then 50% owned by the Marconi Co.) submitted a similar proposal to a sympathetic Prime Minister, but action was delayed by the 1919-20 English ‘Norman Report’, which supported the British Post Office’s proposal for a very high powered, very costly, very low frequency wireless stations no more than 2000 miles (3200 km) apart, with relay stations in Egypt, India, Singapore and then to Darwin or Perth. Hughes did not support Australia being at the end of a very long chain of vulnerable foreign stations.<sup>27</sup> (This sensitivity in Australia to the security of its communication links with Britain had a considerable history. For example, the July 1888 ‘Silencing of the Cables’ when the simultaneous breaking of both undersea cables in the vicinity of Java galvanised colonial defences as fears rose that it was an act of sabotage in preparation for an attack by the Russian fleet.<sup>28</sup> Indeed, the Hughes/Fisk concern with the vulnerability of intermediate links proved prescient given the fall of Singapore in 1942.)

In June 1921 Prime Minister WM Hughes took Fisk as an adviser to the Imperial Conference in London. Against the recommendations 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. The proposal for Empire relay stations was abandoned and Britain agreed to co-operate in the Australian proposals, with other dominions following suit.<sup>29</sup> With opposition at home to the Post Office controlling an Imperial wireless system, the British Government acquiesced to Australia’s unpreparedness to settle for anything less than a direct service.<sup>30</sup> As part of the agreement Australia would construct and operate corresponding transmitting and receiving stations in the UK.

A Federal Parliament Select Committee was established to consider the commercial practicality of establishing direct long-distance wireless communication, and to consider the proposal put by AWA (and another company) for a partnership with the Government to achieve this. Much of its energy was taken up trying to resolve the ‘glaring disagreement’ between these proposals and the Imperial Wireless Telegraphy Commission of 1920 (the ‘Norman Commission’)

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<sup>25</sup> ‘Marconi’s Predictions All Coming True’, reprinted in *Radio*, 29<sup>th</sup> September 1926, p.18.

<sup>26</sup> *Radio Review of Australia*, January 1937, pp.17, 19

<sup>27</sup> Colin McKinnon, ‘The First Direct Wireless Message from England to Australia’ ([www.angelfire.com](http://www.angelfire.com))

<sup>28</sup> *The Argus*, 2/7/1888, 3/7/1888; *The Age*, 4/7/1888.

<sup>29</sup> Williams, *op cit*; McLean, April 2004, *op cit*, p.6

<sup>30</sup> Goot, ADB, *loc cit*; Record of testimony of Rt Hon WM Hughes to Parliamentary Select Committee on Wireless Communication, Commonwealth Parliamentary Papers, 1922, p.20.



finding that commercial wireless telegraphy was not possible for longer distances than 2-3000 miles (and therefore requiring a relay to connect the Empire).<sup>31</sup> Mr Fisk representing the AWA proposal argued that new developments such as the Franklin (or ‘beam’) aerial, and the company’s research at its Koo-wee-rup ‘listening in’ station, pointed to the practicability of a commercial service. He was not able to produce any evidence for his estimate that the stations would cost | 600,000, and had to concede that wireless communication was not possible 24 hours a day due to ‘atmospherics’ and ‘fading’. Further, the committee found that the longest such system in the world was only 4,600 miles (part of the radio relay between the USA and Japan), well short of what would be necessary. Nevertheless, there were efforts and initiatives around the world aimed at developing long distance wireless, and given the shortcomings of the ‘Norman’ relay scheme (including the ‘doubtful security’ of intermediate stations in Egypt, India and Singapore), the committee endorsed a variation of the proposed AWA scheme. The Government would acquire a majority shareholding in AWA, providing £500,000 for it to construct and operate high-powered Australian stations capable of commercial services to both the United Kingdom and Canada (which would also provide the gateway to North America).<sup>32</sup>

One of the members of the committee was Frank Brennan, later attorney-general in the Scullin government, an individualist who combined a ‘conservative legalism’ with an egalitarian approach to government that is evident in his dissenting report.<sup>33</sup> (Brennan was no doubt one of the many ‘opponents’ over whom - his supporters inform - Fisk had had to triumph in achieving the Beam Wireless system.) Brennan favoured a full government enterprise rather than have the public purse subsidise overseas ‘capitalists’. The nexus with AWA would favour ‘pecuniary gain rather than national service’. He was also concerned that the long-distance wireless scheme had not yet been shown to be practicable, and that it would be in Australia’s best interest to take a minor role in the current international research, and develop a scheme at the best price when the technology was achieved. ‘It is not courage but recklessness for a young and sparsely-peopled country to entangle itself with agreements as though the results of these experiments were already established facts’, he argued.<sup>34</sup>

Both Fisk and Brennan appear to have been correct in different respects. Fisk and Hughes had pushed Australia to the forefront - in a minor way leading the pack - of long-distance wireless telegraphy.<sup>35</sup> And their vision had played a significant role in shaping the Imperial wireless system in the pre WW2 era. Fisk’s faith in the developing technology of wireless was rewarded as the momentous development of short-wave, very high frequency, and low-powered ‘beam’ wireless transmission in the mid-1920s made the long-distance ‘direct contact’ scheme not only feasible but exceedingly cost-effective. On the other hand Brennan was right in that Fisk’s scheme was unsubstantiated and pre-emptive. The same technological developments that would make the scheme so cost-effective also made much of the 1922 agreement redundant. The system was supposed to be operating by 1924, but the technical changes meant that designs had to be altered mid-stream, and it was 1927 before AWA’s Ballan and Rockbank beam stations commenced operation. And Brennan’s argument for full government ownership was validated when immediately after the war the British Empire decided to nationalise its international wireless systems; in Australia the government established the Overseas

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<sup>31</sup> Select Committee, *op cit*, p.16

<sup>32</sup> Select Committee, *passim*. The Australian stations were those built at Rockbank and Ballan 1926-27.

<sup>33</sup> Ryan, K, ‘Francis Brennan’, in Nairn, B & Serle, G, *Australian Dictionary of Biography*, Vol.7 (MUP, 1979), pp.400-402

<sup>34</sup> Select Committee, *op cit*, pp.13-15. Frank Brennan, ‘Amalgamated Wireless Ltd and the Commonwealth’, 26<sup>th</sup> June 1922 (pp.13-15)

<sup>35</sup> Eg, Guglielmo Marconi, ‘My Early Experiments’, in *Radio*, May 1927, pp.6-11; also Larkin, FW, ‘Australia’s Effort to Keep Step with World Progress’, in *Radio*, May 1927, p.75

Telecommunications Commission (OTC) which acquired AWA's overseas interests including the Rockbank and Ballan stations in 1947. Even the Fisk-Hughes philosophy of direct wireless communication with London as indispensable for defence purposes seems to have had a limited lifespan: in the late 1940s Empire defence communication was via an Army Wireless Chain,<sup>36</sup> relayed through the various dominions; and developments in communications technology saw the resurgence of cable in the post-war era.

### ***Establishment of the Rockbank Beam Wireless Station***

The initial Australian government agreement with AWA for the 'Imperial Wireless Service'<sup>37</sup> was modified in two ways. Firstly, the British Government assumed responsibility for the UK terminal, freeing Australia from this commitment; similarly AWA was not required to build the Canadian stations.

Secondly, research and development was proceeding at breakneck speed:- in 1924 Marconi culminated his research into high frequency short-waves (which were much less affected by sunlight, land masses and atmospherics) by successfully conducting a series of telegraphy and telephony trials with AWA Sydney; and in the same year Edward Victor Appleton began experiments proving the existence of the ionosphere (Appleton layer). Combined with Charles Samuel Franklin's recent directional antenna arrays, which required much less power (and cost), these developments revolutionised the possibilities for long distance radio communication. Promised that a high frequency short wave service would operate with 1/50<sup>th</sup> the power, three times the speed, and 1/20<sup>th</sup> of the cost of the long-wave high frequency service originally envisaged, agreements were redrafted and the super-power long-wave stations discarded. The government's new agreement with AWA to provide radio communication with Britain and Canada would now cost £119,000, compared to the £500,000 set aside for long wave stations.<sup>38</sup>

The first leg of the Imperial Wireless Service (the so-called 'Beam Wireless') which opened in October 1926 between Britain and Canada marked the end of the development of high power low frequency transmitting stations, and was a 'turning point in wireless history'.<sup>39</sup>

There appear to have been numerous reasons for the selection of Rockbank as the site for the reception station. Transmission and reception tests had been made at several locations to determine local atmospheric and other conditions and select the most suitable sites.<sup>40</sup> AWA used a Ford van with aerial attached, and equipped as a mobile laboratory, for this work.<sup>41</sup> A later Army report, explaining the reasons for its selection of its Rockbank and Diggers Rest sites, confirmed the suitability of the local 'atmospherics' and other transmission conditions. The Rockbank and Diggers Rest sites were selected, it said, 'after a most exhaustive survey of the whole of Victoria for suitable areas for the installation of short wave transmitting and receiving centres which could provide communications on a world wide basis.' The report also noted that:- 'the Beam Wireless network operated by Amalgamated Wireless was also due to

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<sup>36</sup> National Archives of Australia, MP742/1 (217/1/226), 'Signals Installations at Diggers Rest and Rockbank: Review of Existing Commitments and Future Plans', 11/8/1949

<sup>37</sup> Chairman Sir George Mason Allard, at AWA Annual General Meeting, 29/10/1926 (National Australian Archives, MP 341/1/0, 1938/5723, Box 553)

<sup>38</sup> McLean, *op cit*, pp.6-8; also 'Imperial Wireless Communication', *Radio*, 8<sup>th</sup> December 1926, pp.23-26; also *Radio*, 22<sup>nd</sup> December 1926, p.1

<sup>39</sup> *ibid*, p.8; Mason Allard, *op cit*.

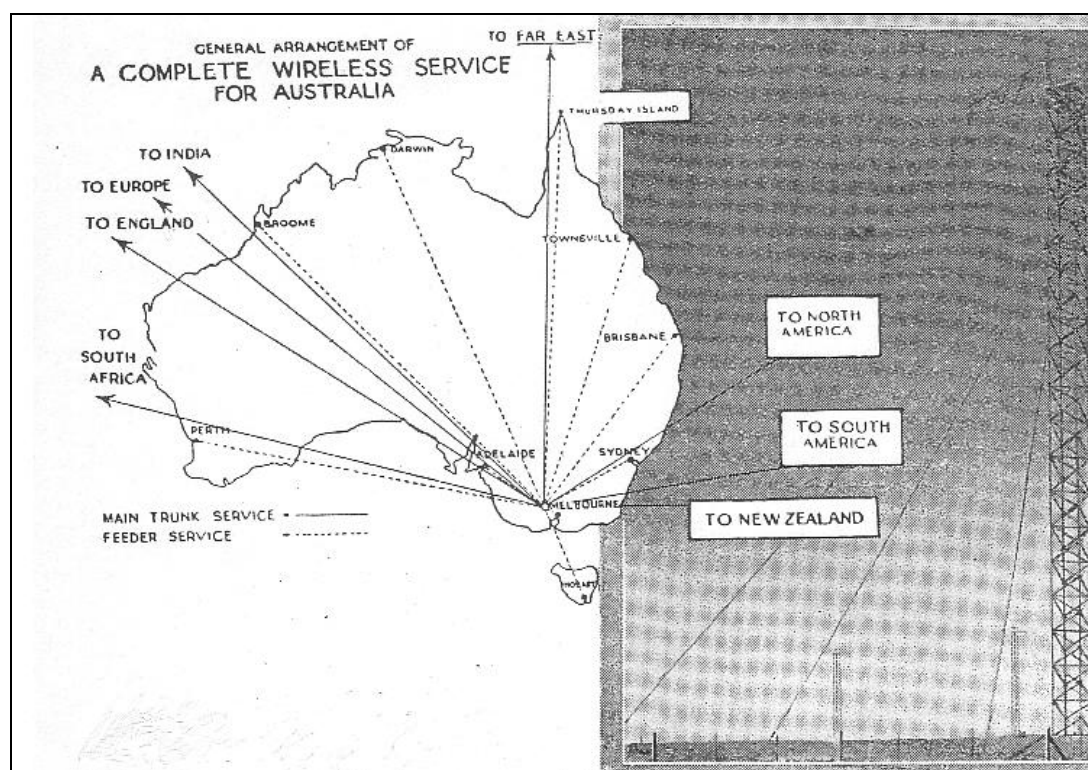
<sup>40</sup> McLean, *op cit*, p.8;

<sup>41</sup> Miller, *op cit*, pp.5-6

the excellent noise free conditions that exist for the reception of long range wireless signals in that locality'.<sup>42</sup>

At the time of the April 1927 Beam Wireless opening an AWA engineer explained that Ballan, high above sea-level, had been chosen not only for technical purposes, but 'to render the station reasonably safe from attack in war time'.<sup>43</sup> Ballan and Rockbank were also close to Melbourne, allowing easy management. Plans of the system show that Rockbank was situated on the direct line between Ballan and the Melbourne control centre, which presumably reduced construction costs on the land-line between the three centres (the cost of the line later became subject of dispute between AWA and the PMG).

Another reason for the selection of Melton Shire sites also became apparent a few years later when the Army decided to relocate its Park Orchards and Coldstream radio facilities to Diggers Rest and Rockbank. The flat topography and space at Rockbank permitted the arrays (antennas) necessary for international connection that were impossible in most more elevated localities.<sup>44</sup>



In 1927 the proposed 'General Arrangement of a Complete Wireless Service for Australia' focuses on the Ballan and Rockbank Beam Stations. (*Radio*, May 1927, p.18) A 1939 map reveals that the shorter of these overseas links were in fact operated from different capitals, primarily Sydney, with only the longer distance (North America and England) communications conducted through 'Fiskville' and Rockbank. (*Radio Waves*, July 2004, p.8)

Under its 1922 agreement with the Federal government AWA was to construct and operate the Australian Beam Wireless stations, but a previous agreement between AWA and the English

<sup>42</sup> National Archives of Australia, MP927/1 (A259/18/442), AMF Minute Paper, February 1946.

<sup>43</sup> *The Argus*, 16<sup>th</sup> March 1927, p.25

<sup>44</sup> National Archives of Australia, Department of Army, A259/18/442 (12<sup>th</sup> January 1943).

Marconi company meant that the Marconi company would be the sole contractor to the Australian stations, and AWA would act as the operating company.<sup>45</sup>

In mid or late 1925 the ‘Amalgamated Wireless Co., of 167 Queen Street Melbourne’ purchased 1766 acres, 2 roods and 35 perches of land, being Sections 13 & 14, and Allotments 2 & 3 Section 17, Parish of Pywheitjorrk (which had originally been part of the Clarke family’s vast *Rockbank* estate).<sup>46</sup> Instead of importing new staff to operate the Beam Wireless, in 1925 AWA sent select Australian staff to England for training, where they were reported to have impressed with their competence and attitude.<sup>47</sup> Construction of the ‘Imperial Wireless Communication’ stations, in England, Canada, South Africa and India, commenced in April 1925, but took longer than anticipated due to the major changes made as a result of research into short-wave during this period.<sup>48</sup>

On the 16<sup>th</sup> November 1925 AWA requested the Post Masters General department to supply the private landlines between Queen Street, Rockbank and Ballan. (The installation of this link would create all sorts of technical difficulties and tensions between AWA and the PMG, including the possibility of a delayed opening of the international project.<sup>49</sup>)

In November 1926 it was reported that the Rockbank station, corresponding to the Ballan station, and including ‘a number of bungalows and a club house’, had been erected. The operation of the stations would occur via landlines from AWA’s Central Telegraph Office in Queen Street Melbourne.<sup>50</sup> In the same year the Melton Shire ratebooks reported that ‘Staff Quarters and Beam Station’ had been erected on the AWA site.<sup>51</sup> A few years later the Melton rate collector described the AWA complex as comprising ‘Beam Station and Power House’, and ‘Staff Quarters’. The buildings had increased the valuation of the property by £840 to a total of £1377.<sup>52</sup>

From late 1926 the opening of the service was keenly anticipated in the daily press (curried by press releases from AWA), which reported the delays by English Marconi engineers in testing the stations, and provided rather detailed and technical descriptions of the Ballan and Rockbank stations, their power plants, giant wireless valves, and high lattice steel masts and aerial systems. The media interest appears to have been enhanced by anticipation within the radio community that the Beam Wireless would be able to provide more than the simple telegraphy originally anticipated, including ‘picturevision’, and telephony within a matter of months.<sup>53</sup> There was also great public interest in the news that the Beam Wireless would now not only provide ‘instantaneous’ service (as distinct from the delays involved in cable relays), but also reduce the cable telegraphy rates by one third. The opening would be an ‘historic’ event, being the ‘longest direct telegraph service in the world’, and establishing the first direct line of

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<sup>45</sup> McLean, April 2004, *op cit*, p.6

<sup>46</sup> Ratebooks 1925-26 & 1929-30, Shire of Melton.

<sup>47</sup> *Radio*, 1<sup>st</sup> September 1926, p.29

<sup>48</sup> *Radio*, 8<sup>th</sup> December 1926, p.23

<sup>49</sup> National Australian Archives, MP 341/1/0, 1938/5723, Box 553. (There were obviously still problems with the PMG after the opening, as on 16<sup>th</sup> April 1927 *The Bacchus Marsh and Melton Express* reported a curious incident in which the Ballan station, having lost communication with Rockbank via the landline, was forced to ‘wireless’ the Beam station in England which in turn contacted Rockbank, who received the message ‘almost immediately’.)

<sup>50</sup> ‘Australian Beam Stations nearing completion’, in *Radio*, 23 June 1926, p.33.

<sup>51</sup> Ratebooks, 1926-27, Shire of Melton (‘part year only’)

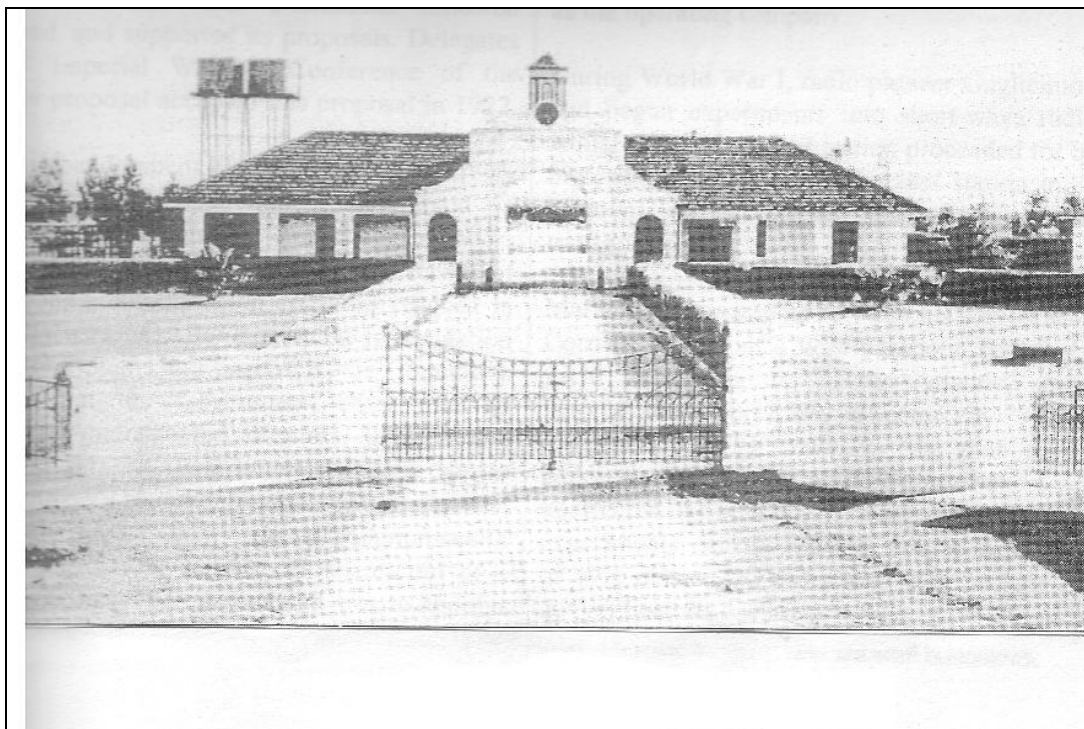
<sup>52</sup> Ratebooks, 1929-30, Shire of Melton.

<sup>53</sup> Eg, *The Argus*, 16<sup>th</sup> March 1927, p.25; *The Argus*, 6<sup>th</sup> April 1927, p.23.

communication between Australia and ‘the heart of the Empire’.<sup>54</sup> Prime Minister Bruce expressed his gratification with the impending opening of the system whose ‘introduction he has been closely associated’.<sup>55</sup>

In the lead-up to the opening it was noted that the beam stations would soon also provide a direct link to Montreal, and from there connect Australia with the United States and South America. Post offices around Australia would receive telegrams to go ‘via Beam’, and feeder wireless stations would connect capitals with Ballan and Rockbank. The messages would be controlled from AWA’s Queen Street offices, while the Melbourne office for sending and receiving telegrams would be Collins House, Collins Street. These were connected to Ballan and Rockbank by landline.

The opening on Friday 8<sup>th</sup> April 1927 at the Queen Street office, attended by a throng of dignitaries including Prime Minister SM Bruce, the Governor General, and future Prime Minister RG Menzies (with former Prime Minister WM Hughes at the Sydney feeder station), elicited press headlines of ‘Wireless Magic’, and expressions of amazement by the dignitaries. Hughes ‘spirit seemed to dominate the occasion’, for it was recalled that ‘he was the first to say that Australia must have direct wireless communication with England by means of the all British system’.<sup>56</sup> (Fisk later described Hughes as ‘*the great pioneer of Australian communication ... whose work in bringing this great thing to Australia is well known and will never be forgotten.*’<sup>57</sup>) The first of a new level of ‘inter-Imperial communications’ had arrived.<sup>58</sup> A few days later King George himself duly responded that he had been ‘touched and gratified’ at the expression of loyalty that had arrived by wireless from Australia.<sup>59</sup>



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<sup>54</sup> *The Herald*, 5<sup>th</sup> April 1927; *The Argus*, 6<sup>th</sup> April 1927

<sup>55</sup> *The Argus*, 6<sup>th</sup> April 1927. Bruce appears to have chaired the 1922 Select Committee.

<sup>56</sup> *The Herald*, 8<sup>th</sup> April 1927, p.1; *The Argus*, 8<sup>th</sup> April 1927, p.20.

<sup>57</sup> *Radio Review of Australia*, January 1937, p.19

<sup>58</sup> *The Herald*, 8<sup>th</sup> April 1927, p.1; *The Argus*, 8<sup>th</sup> April 1927, p.20.

<sup>59</sup> *The Argus*, 11<sup>th</sup> April 1927, p.16

Early photograph of the Beam Wireless receiving station at Rockbank, Victoria. The front fence, gate, main building, and bungalows at the side (not shown) remain, together with the Canary Island Palm trees; only the hedge and watertanks are missing. (*Radio Waves*, April 2004, p.5)

The technical journal *Radio* described the much-heralded opening as a ‘great step forward in the history of radio’.<sup>60</sup> A few days later readers of the *Argus* learnt more of the technicalities of the system, which 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 *Victorian Railway Magazine* carried a five page article entitled ‘The Wonders of Beam Wireless’, with photos of the plant, aerials and central Melbourne office. It explained that the reflectors on antennas could be moved to enable connection with the UK or Canada in either direction around the globe, via either of the great circle routes, depending on the atmospheric conditions (signals carrying better by night).<sup>61</sup> Professional journals also published extensive features on the technical details of ‘The Australian Beam Wireless Stations’, again liberally interspersed with photos of buildings (including residential quarters) and plant.<sup>62</sup>

A few months later, in September 1927, the Ballan and Rockbank stations provided the international connections for the ‘Empire Broadcast’, a link-up of stations in all British dominions. This was presented as something ‘that would go down in history,’ apparently a symbol of the hope that radio might strengthen the bonds of Empire. The Australian segment, ‘one of the most remarkable experiments in the history of broadcasting’, included musical items and Prime Minister Bruce speaking from Melbourne.<sup>63</sup>

The Beam telegraphy service to Montreal Canada, and via it to all the Americas, commenced on 16<sup>th</sup> June 1928.<sup>64</sup> Despite the predictions of the many skeptics, the Beam Wireless service proved to be a resounding success. It undercut the prices of cable telegraph substantially, and within a few months of opening was carrying almost half the UK - Australia telegraphic traffic.<sup>65</sup> Subsequently it said to have carried 80% of this traffic (which also linked Australia to the Continent), a total of about 15 million words per year.<sup>66</sup> AWA described its Beam service as ‘the greatest long-distance telegraph service in the world’.<sup>67</sup>

On 30<sup>th</sup> April 1930 AWA commenced an international ‘Radiophone’ - a public radio telephone service - inaugurated in conversations between Australia’s Prime Minister J Scullin and former Prime Minister WM Hughes and their counterparts in Britain. (A future Prime Minister - JA Lyons - was also in attendance.<sup>68</sup>) This was the first wireless telephone service between Great Britain and a Dominion, and ‘the longest telephone service in the world’. This service appears to have operated through the Ballan and Rockbank Beam Wireless stations, although this is not

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<sup>60</sup> *Radio*, May 1927, p.12

<sup>61</sup> AWA, ‘The Wonders of Beam Wireless’, in *The Victorian Railway Magazine*, June 1927, pp.18-21, 78-79

<sup>62</sup> ‘The Australian Beam Wireless Stations’ (Part One), in *The Electrical Engineer*, May 16<sup>th</sup>, 1927, pp.53-56

<sup>63</sup> Jones, C, *Something in the Air: A History of Radio in Australia* (Kangaroo Press, Kenthurst NSW, 1995), p.33

<sup>64</sup> McLean, April 2004, *op cit*, p.8

<sup>65</sup> Miller, *op cit*, p.12

<sup>66</sup> McLean ([www.angelfire.com/de/vk3kcm/Fiskville.html](http://www.angelfire.com/de/vk3kcm/Fiskville.html))

<sup>67</sup> AWA (1930), *op cit*.

<sup>68</sup> Miller, *op cit*, p.6

verified by documentary sources at present. AWA's Sydney 'Radio Centre' at Pennant Hills also had a significant role, but perhaps only as a feeder wireless station or operating centre.<sup>69</sup>

Even before its opening it was keenly anticipated that the Beam Wireless would be used for 'radiovision' - transmitting pictures between continents - 'probably within the next year'.<sup>70</sup> This occurred first in 1929, but development of a regular service over such a long distance took longer than first anticipated. Nevertheless, when the world's longest 'radio-picturegram' or 'phototelegram' service opened between London and Melbourne (Rockbank) in 1934 it was hailed as an immediate success by members of press and public alike.<sup>71</sup> *The Age* described it as 'the latest remarkable advance that has been made in the field of wireless achievement'.<sup>72</sup>

One of the claimants to the honour of being the first scanned 'radio picture' received from England was a photograph of dashing young Adelaide aviator CJ Melrose beside his plane preparing for the Centenary Air Race.<sup>73</sup> The picturegrams were used mainly by Australian newspapers.

In 1946 the first colour picturegram was transmitted from England to Rockbank. By this time the photographs were automatically relayed from Melbourne to New Zealand by radio, and from Melbourne to Sydney by telephone line.<sup>74</sup>

Although there was still a role for cable, by 1946 AWA believed its efficient and inexpensive method of communication had saved the country hundreds of thousands of pounds. The Beam Wireless service, seen by some as a reckless gamble, 'had proved itself, beyond doubt, as the communications miracle of the age'.<sup>75</sup>

Radio, with aviation, was the marvel of the early twentieth century. Historian Geoffrey Blainey claims that the opening of a direct beam wireless which sent 'radiograms swiftly and cheaply between Australia and both sides of the Atlantic', and the subsequent opening of wireless telephone links between Australia and England, 'snatched away' some of the excitement generated by the contemporary pioneering feats of international air travel.<sup>76</sup> Another prominent historian also reminds us of how exciting the beginnings of 'wireless' were, both to amateur

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<sup>69</sup> AWA (1930), *op cit*; also McLean, April 2004, *loc cit*; also Caslon Analytics, Historical Profile of Australasian Telecoms ([www.caslon.com.au/austelecomsprofile1.htm](http://www.caslon.com.au/austelecomsprofile1.htm)); also G Marconi, 'My Early Experiments', in *Radio*, May 1927, p.11 (re beam wireless and telephony).

<sup>70</sup> *Radio*: 29<sup>th</sup> September 1926, p.8; 5<sup>th</sup> January 1927, p.1

<sup>71</sup> Ian McLean, 'Rockbank, Fiskville and the Beam Wireless, Part 2', in HRSA *Radio Waves*, July 2004, pp.12-13; also Miller, *op cit*, pp.16-17; also Caslon, Australasian Telecommunications Profile: History (Caslon) [www.caslon.com.au/austelecomsprofile1.htm](http://www.caslon.com.au/austelecomsprofile1.htm)

<sup>72</sup> *The Age*, 17<sup>th</sup> October 1934, enthused that 'the new photogram service brings an entirely new and speedy facility to the Australian businessman, saving at least a month in the delivery of rush documents and pictures, and enables transactions in which photographs, drawings, plans or signatures are concerned to be carried out with telegraphic despatch' ... fashions, music, cheques, balance sheets, legal documents, contracts, birth and marriage certificates could all be transmitted without delay. The story was reproduced in *The Age: 150 years since 1854*

<sup>73</sup> *ibid*. Melrose later lost his life when his plane crashed on the outskirts of Melton township after taking off from Essendon airport. He might be said to (tragically) symbolise the significance of the Keilor-Werribee plains in the Australian history of two great early twentieth century technological developments:- aviation and radio. (Miller, *op cit*, states that the assassination of King Alexander of Yugoslavia in Marseilles was the first picturegram, published 17<sup>th</sup> October 1934.)

<sup>74</sup> Miller, *op cit*, p.16

<sup>75</sup> *ibid*, p.12

<sup>76</sup> Blainey, G, *The Tyranny of Distance: How Distance Shaped Australia's History* (revised edition, Macmillan, Melbourne, 1988), pp.300.

experimenters and ‘listeners-in’, for whom it was ‘just as remarkable as powered flight, and more mysterious’. Radio offered a prospect of the ‘antipodes united.’<sup>77</sup> For many in the pioneering decades of the 1920s and 30s, radio represented a hope of helping nations to communicate and of bringing the world closer together.

#### *Subsequent History and Development of the Rockbank Beam Station*

At the Beam services expanded, so did the receiving facilities at Rockbank. Between 1935 and 1947 several new arrays of aerials were erected for communication with Montreal, Port Moresby, San Francisco, and the new relay stations at Perth, Colombo and Bombay.<sup>78</sup>

At the Empire Telecommunications Conference held in London in 1945 it was agreed that British Commonwealth cable and radio services would be amalgamated and transferred to public ownership. The Overseas Telecommunications Commission (Australia) was formed by Act of Parliament in 1946, its responsibility being for the maintenance and operation of Australia’s overseas telecommunications services as well as maritime communication. Acquisition began of the communication assets of AWA which had operated the overseas telegraph facilities, as well as Cable and Wireless (C&W) overseas telegraph facilities.<sup>79</sup> Ownership of Rockbank (and Ballan) was transferred to OTC, which assumed operation of the beam stations in February 1947. As occurred at Ballan, there were no doubt changes to buildings at Rockbank after OTC assumed ownership.<sup>80</sup>

Sunspot activity in the early 1950s disrupted the international radio circuits, and the Australia was virtually isolated for a period of a few days (the cable networks proved inadequate). OTC built two new international radio stations at Doonside and Bringelly, near Sydney, equipped with the latest technology to deal with periods of high sunspot activity. The Fiskville and Rockbank stations were also upgraded with more modern equipment, and to cope with rapidly increasing demand.<sup>81</sup>

When Melbourne was selected as host city for the Olympic Games, it was estimated that the volume of international radio traffic would triple. A series of telecommunications projects was accelerated. One of the emergency measures was the use of defence force transmitters and receivers (including the Army stations at Diggers Rest and Rockbank). One of the major technical advances related to the antenna systems. State-of-the-art rhombics represented a considerable improvement over the Franklin antennas that had originally been employed at the Rockbank Beam Wireless receiving station and other Victorian stations. Based on the pioneering work of Dr Wilbur Christiansen and W Jenvey of AWA Laboratories (1946), OTC designed the rhombics in a circular pattern for maximum flexibility in geographic and frequency coverage. Jenvey later became Chief Engineer of OTC. OTC engineers also designed high performance transmitting and receiving equipment for the Olympic event (which was successfully manufactured by AWA in Sydney).<sup>82</sup>

A major post-war development was the new multi-channel telephone cable. It came to play a major role in international communications from the 1950s.<sup>83</sup> In September 1956 the first

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<sup>77</sup> Inglis, KS, ‘The Beginnings of Radio in Australia’, Stirling Memorial Lecture 1980.

<sup>78</sup> Miller, *op cit*, p.11

<sup>79</sup> *Technology in Australia 1788-1988*, p.553 (Chapter 8). In 1989 the Australian Telecommunications Commission was restructured as the Australian Telecommunications Corporation. OTC merged with Telecom in 1992.

<sup>80</sup> McLean, July 2004, *op cit*, p.13

<sup>81</sup> Miller, *op cit*, p.18

<sup>82</sup> *ibid*

<sup>83</sup> McLean, July 2004, *op cit*, p.13



trans-Atlantic coaxial cable came into operation. In 1959 OTC hosted a meeting which laid plans for the first Commonwealth cable scheme, a trans-Pacific coaxial cable known as Compac. In 1961 OTC met with south-east Asian heads of government to plan the Seacom cable, an extension of Compac.<sup>84</sup>

In October 1957 signals from the first man-made satellite in orbit were detected by Rockbank and Bringelly. In 1964 OTC was one of 11 founding members of the International Telecommunications Satellite consortium whose aim was to develop a global communications satellite system. In 1966 it opened Australia's first satellite earth station at Carnarvon in Western Australia, followed by others in Moree (1968), and Ceduna (1969). International communication could now be sent not only by radio, but by coaxial cable or satellite.<sup>85</sup> Other major technical developments included the computerising of automatic relay systems.

Modern technology had superseded the Beam Service. Although some minor new international radio circuits were maintained, a new era had begun. Ballan and Rockbank continued to send and receive high-speed telegraphy until their closure in May 1969.<sup>86</sup> The Rockbank station had been jointly used by the military for some time prior to its closure.<sup>87</sup>

A former 'Beamer' (as the operators at Ballan and Rockbank were known) left his impressions of the Rockbank receiving station:

'no bluster of shrilling machines as at Ballan, no noisy powerhouse, no atmosphere of unleashed, untold energy. Here is a purposeful silence - a sense of listening; even the building crouching at the feet of the mighty aerial masts seems to be huddling there with its finger on its lips.'<sup>88</sup>

In 1959 scenes for Stanley Kramer Production film 'On the Beach' were shot at the Rockbank Beam Wireless station.<sup>89</sup>

### ***Contextual Architectural Background & Comparative Analysis***

Rockbank Park appears to have been designed in the "Garden Town" idiom espoused by the Chief Architect and Director-General of the Commonwealth Department of Works and Railways, John Smith Murdoch. The "Garden Town" ideal largely resulted from a similar approach to the development of Canberra by the Federal Capital Advisory Committee (later known as the Federal Capital Commission) in the 1920s. All Commonwealth works throughout the early 20<sup>th</sup> century fell under the control of the Central Office of the Department. Although possibly designed by one of Murdoch's officers such as H.J. Mackennal or Edwin Henderson, ultimate design control rested with J.S. Murdoch and the landscaped setting and the general design scheme for Rockbank Park is largely reflective of his architectural idiom.<sup>90</sup>

An important architectural genre of the Murdoch era was the establishment of a modern Renaissance Commonwealth Departmental style between 1913 and 1920, and which reached

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<sup>84</sup> Miller, *op cit*, pp.18-19

<sup>85</sup> *ibid*

<sup>86</sup> *ibid*

<sup>87</sup> Bob Padula, 'A Visit to the Ballan Wireless Station', *APC News*, 17/4/2002

<sup>88</sup> McLean, July 2004, *op cit*, p.10

<sup>89</sup> Miller *op cit*, p.12

<sup>90</sup> For further details on Murdoch's architecture, see D. Rowe, 'Building a National Image: The Architecture of John Smith Murdoch, Australia's First Commonwealth Government Architect', PhD (Architecture) Thesis, Deakin University, 1997.

maturity in the 1920s. It was a style developed by J.S. Murdoch that was fully expressed through exterior economy. The superimposition of spatial masses, rectilinear articulation of wall planes, openings and structural and aesthetic details – all often within a Classical composition – were the general features of the style. It was a design philosophy mainly suited to public buildings, but several characteristics were carried through to industrial, defence and other designs. In 1923, Murdoch argued that this style was restful and reposeful, providing for suitable, simple buildings of straight square lines, rather than lavish old fashioned ideas: ‘The style is modern Renaissance, to which British and Americans are now working. It is a style which depends on proportions and lines rather than on details.’<sup>91</sup>

The “modern” (as opposed to “Modern/avant-garde”) aspect of this style involved the stripping away of extraneous Classical details (such as Classical capitals, entablatures and similar detailing). For “official” modern Renaissance buildings, Classical columns were distilled into abstract rectangular forms, ornamental detailing was reduced to simple lines, and geometric rectangular moulds. For both “official”, “industrial” and “domestic” modern buildings, modern Renaissance design meant the incorporation of incised panels or rectangular openings (replacing Classical colonnades), wide overhangs (for industrial and domestic buildings) and basic subtle detailing was expressed through the articulation of brick or rendered wall construction (mainly in the utilisation of brick soldier courses and regularly arranged rectilinear openings). By utilising these features, there was the belief that the Commonwealth Government was providing an outward architectural expression of “modern conditions”. For example, Murdoch claimed that it was ‘our duty to accept modern conditions and apply our expressional architecture to those conditions rather than lavish old-fashioned ideas upon our buildings.’<sup>92</sup>

The “official” version of the modern Renaissance included flat roofs, projecting crowning parapets, emphasis on horizontality, rendered wall finishes and distilled Classical proportions and details. Murdoch’s most well-known “official” modern Renaissance exemplars are Old Parliament House, Canberra, 1922-27, Provisional East and West Secretariat Blocks, Canberra, 1922-27, and the former High Court building, Melbourne, 1925-28, 1935,<sup>93</sup> which encapsulate most of the above details. Variations of the modern Renaissance eclecticism are also found in Hotel Canberra.

The more specific modern Renaissance qualities for domestic, industrial and other Commonwealth buildings included exposed plain red brick walls or rendered walls with hipped roofs having terra cotta tiles or galvanised corrugated iron, wide eaves overhangs (mainly without exposed timber rafters), rectangular and predominantly low scale forms, regularly arranged fenestration and sheltering verandahs and porches.

The modern Renaissance style employed by the Commonwealth Department based on a number of influences. The stripped Classicism (mainly for official buildings but also evident in some defence and industrial structures) was influence, as Murdoch stated, from British and American examples. These included buildings like Sir Edwin Cooper’s St. Marylebone Town Hall,

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<sup>91</sup> J.S. Murdoch, ‘Minutes of Evidence – Secretariat Building, Canberra’, Commonwealth Parliamentary Papers, vol.4, 1923-24, p.802.

<sup>92</sup> *Ibid.*

<sup>93</sup> See Rowe, *op.cit.*

London, 1911-18,<sup>94</sup> and Bertram Goodhue's State Capitol Building, Nebraska, U.S.A., 1920-31.<sup>95</sup>

The Revival of Georgian and Regency architecture by Hardy Wilson from c.1910 was another influence. Georgian beauty of restraint, restful repose of forms, honest expression, formal symmetry, considered proportions, low horizontal hipped roof forms and light coloured rendered walls were design philosophies that were in accord with Murdoch's utilitarian tastes. Buildings like Wilson's Purulia, N.S.W., 1912<sup>96</sup> appear to have provided Georgian Revival stimulation, as these stylistic qualities were a notable part of Murdoch's A Block building at HMAS Cerberus, Hastings, Victoria, of 1926.<sup>97</sup> In 1919, Wilson exhibited several drawings of Australian Colonial Georgian architecture and had produced a publication in the Royal Victorian Institute of Architects Journal entitled 'Late Georgian Architecture in New South Wales and Tasmania.'<sup>98</sup>

The English Garden City Movement in Britain also brought about a quest to relate buildings to their landscapes, as expressed in the roughcast Arts and Crafts Free style cottage designs by Parker and Unwin, Letchworth, in 1904.<sup>99</sup> Courtyards, terraced gardens and garden pavilion designs (whereby small building masses were linked by open corridors or encircling verandahs) were all features of the Commonwealth modern Renaissance style. For some domestic and defence buildings, there was also an affinity with Arts and Crafts design qualities, as especially noted in some of the buildings at HMAS Creswell, Jervis Bay, A.C.T. The Garden City movement had a powerful impact on Murdoch's design approach through the "Garden Town" ideals established by the Federal Capital Advisory Committee from 1920. This committee was responsible for the development of the Federal Capital, Canberra, to which Murdoch was largely involved in the designing of the early buildings.<sup>100</sup>

Another influence on the style partially relevant to the Rockbank Park site was architecture in the U.S.A. Murdoch had visited Santa Barbara in California in 1913 and was particularly taken by the garden pavilion hotel designs, often in eclectic Mission Revival styles.<sup>101</sup> He also appears to have been influenced by the American architect, Walter Burley Griffin. He was the Department's Australian link to the Prairie movement that also engendered the importance of a climate and landscape responsive architecture. Griffin had designed some cottages for Canberra between 1916 and 1920, and the Captain's Quarters for the Royal Military College, Duntroon in 1920,<sup>102</sup> and although they were not built, the designs were submitted to the Department of Works and Railways. The specific features by Griffin later revealed in Murdoch's work – most noticeably at Hotel Canberra – were the rectilinear massing, overhanging gable ends (often detailed with Californian Bungalow features) or low-pitched hipped roofs with wide overhangs (without exposed rafters).

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<sup>94</sup> A. Service, *Edwardian Architecture: a Handbook to Building Design in Britain 1890-1914*, Thames & Hudson, London, 1977, p.56, p.186.

<sup>95</sup> W.C. Kidney, *The Architecture of Choice: Eclecticism in America 1880-1930*, George Braziller, New York, 1974.

<sup>96</sup> C. Pearl, *Hardy Wilson and his old Colonial Architecture*, Thomas Nelson, Melbourne, 1970, p.13.

<sup>97</sup> I. Nelsen, P. Miller & T. Sawyer (Australian Construction Services), 'HMAS Cerberus, Western Port, Victoria, Conservation Management Plan', prepared for the Department of Defence – Navy, Melbourne, March 1993, vol.1.

<sup>98</sup> Rowe, op.cit., p.181.

<sup>99</sup> P. Davey, *Architecture of the Arts and Crafts Movement*, Rizzoli, New York, 1980, p.178.

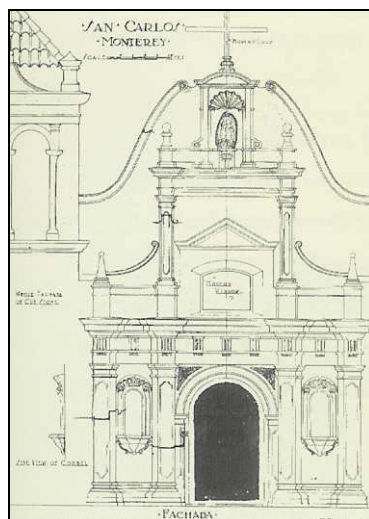
<sup>100</sup> Rowe, op.cit., pp.155-56.

<sup>101</sup> Murdoch's design for Hotel Canberra between 1921 and 1924 was apparently based on a garden pavilion hotel he had seen in Santa Barbara, California. See Rowe, op.cit., for further details.

<sup>102</sup> P. Freeman (ed.), *The Early Canberra House: Living in Canberra 1911-1933*, The Federal Capital Press of Australia, Fyshwick, 1996, p.60.

The climate-responsive Spanish approach by Professor Leslie Wilkinson was also influential for Australian architects including Murdoch and the Commonwealth Department in the 1920s. In 1919, his views were made clear in his article ‘Domestic Architecture’ in a special edition of *Art in Australia*.<sup>103</sup> Wilkinson’s Greenway house, Vaucluse, N.S.W., 1923, testifies to his ideals. Its garden courtyards, roughcast massing and unbroken stringcourse supporting simple pilasters, together with its arcaded garden walls, spoke of the Spanish Mission in an Australian context. Other variations to the Mission Revival, such as the Dutch Colonial houses in South Africa were also important influences on the Department and architects in Australia more generally, as evidenced in some of the Federal Capital Commission houses by Departmental officers, Stephenson and Meldrum, Oakley and Parkes and others.

Although the elaborate carriageway and portico at Rockbank Park is particularly unique and possibly drawn from the drawing of the San Carlos Church, Monterey, U.S.A. that was published in *The Western Architect* in March 1921,<sup>104</sup> there are other Commonwealth buildings of the 1920s which share a familiar eclectic Mission and Georgian Revival expression with the less official version of the “Commonwealth Departmental style”. The use of central ventilator turrets in some of the Commonwealth architecture for the period, including Rockbank Park, may have its origins in Murdoch’s Queensland works such as the Edwardian Baroque ventilating turrets evident on the Charleville Court House (1899), Roma Court House (1900) and the Bundaberg and Mackay Custom Houses (1901).<sup>105</sup>



Drawing of San Carlos Church, Monterey, U.S.A. in *The Western Architect*, 1921.

Source: M. Freeman, *The Early Canberra House, Living in Canberra 1911-1933*, The Federal Capital Press of Australia, Fyshwick, 1996, p.97.

Other examples of the eclectic Commonwealth Departmental style that draw on Georgian and Mission Revival architecture (and other influences as previously described) in different ways include the following:<sup>106</sup>

- Mount Stromlo Observatory, Mt. Stromlo, A.C.T., c.1927 (destroyed by fire in 2003);
- Hyatt Hotel (formerly Hotel Canberra), Canberra, 1921-24;
- Telopea Park School, Canberra, 1922-23;

<sup>103</sup> *Ibid.*, p.97.

<sup>104</sup> *Ibid.*

<sup>105</sup> See Rowe, *op.cit.*

<sup>106</sup> *ibid.* & Freeman, *op.cit.*

- Former Hotel Kurrajong, Canberra, 1925,
- Various early 20th century cottages in Canberra (specific Federal Capital Commission types), 19231-1926;

The modest interwar Bungalows also have a familiarity with other simple similarly-designed dwellings within a “Garden Town” context including those at the former Lithgow Small Arms Factory, N.S.W., 1919 and particularly the rendered brick cottages in Canberra with terra cotta tiled roofs having a Georgian and Mission Revival design idiom.

*Possible Architect: John Smith Murdoch.*<sup>107</sup>

John Smith Murdoch (1862-1945) was Australia’s first Commonwealth Government Architect. Having emigrated from Scotland in 1885, he worked for a brief period with the eminent Melbourne architectural firm of Reed, Henderson and Smart. Six months later, Murdoch had been induced by John James Clark, Colonial Architect of the Queensland Public Works Department to take up a drafting position in Brisbane.

Apart from a brief period in private practice, Murdoch remained with the Queensland Public Works Department until 1904. During that time he progressed up the Departmental ladder, rising to the position of Second Assistant Architect. His most recognized Queensland work included the Federation Free style designs for the various custom houses, post offices and court houses in rural townships such as Stanthorpe, Bundaberg, Mackay, Maryborough and Roma around 1900.

Murdoch joined the fledgling Commonwealth Department of Home Affairs in Melbourne in 1904. For the next 6 years he was heavily involved with establishing Public Works Regulations and organizing the transfer of Public Works Department responsibilities from the States to the postal, customs and other Commonwealth-related departments. In 1910, he designed the first purpose-built official home of the Commonwealth Departments, Treasury and Cabinet, the Edwardian Baroque-styled Commonwealth Offices building in Treasury Place, Melbourne.

An official overseas tour in 1912-13 provided Murdoch with the opportunity to gain an understanding of the latest Government architectural trends, postal systems and other infrastructure through Europe, Britain, Canada and the U.S.A. Importantly, he spent two days in Chicago where he met with Walter Burley Griffin, recent winner of Australia’s Federal Capital Competition for Canberra. The meeting resulted in Murdoch encouraging the Commonwealth Government to invite Griffin to Australia.

Returning home in 1913, Murdoch immediately developed a Beaux-Arts modern French Renaissance style for the designs of the monumental Perth General Post Office, and the Spencer Street Parcels Post Building, Melbourne. It was from this period and into the 1920s when Murdoch was also ultimately responsible for designing the buildings and/or layouts of several military installations around the country.

In 1914, Murdoch was officially promoted to the title of Commonwealth Architect and in 1919 he became Chief Architect.

From the 1910s, Murdoch had also worked towards the establishment of a national architectural image for the Commonwealth Government that reached maturity in the 1920s. His streamlined Classical modern Renaissance idiom – employed for his design for Old Parliament House and the Secretariat Buildings, Canberra, and numerous other buildings throughout the country –

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<sup>107</sup> For full biographical details of J.S. Murdoch, see Rowe, *op.cit.*

became Murdoch's enduring legacy. He had been promoted to the ultimate position of Chief Architect and Director-General of Works and Railways in 1925. After retiring from this position in 1929, he took up a temporary posting in Canberra as a Commissioner to the Federal Capital Commission. He also acted as a consultant to the Commonwealth Government.

By the end of his career, Murdoch had been responsible for the design of numerous buildings throughout the country. The extent of his architectural contribution in Australia is highlighted by Murdoch himself in 1928:

As Designer or Supervisor, or both, the buildings engaged upon number very many hundreds of every kind, and in value from a quarter of a million pounds downwards. Due to my position in the Department, probably no person has had a wider experience of buildings in Australia including its tropics ... [I have had] a leading connection with the design of practically all Commonwealth building works during the above period [1904-28].

After a long and distinguished career, Murdoch died in Melbourne in 1945.

### **Thematic Context / Comparative Analysis:**

*Melton Historical Themes:* 'Developing Communications'

*Known Comparable Examples in Victoria:*

The only comparable known radio complex is the Ballan Beam Wireless Transmitting Station, constructed at the same time as its sister, the Rockbank Beam Wireless Receiving complex. The two worked in unison. The arrangement and design of the accommodation precincts and buildings of the two stations were virtually identical. As the public came to anticipate the opening of the Beam Wireless service and the technical details of the plants found their way into journals and newspapers, Ballan received more publicity. It was the larger and more technically interesting of the plants, requiring a very large generating plant to power its distinctive valves and other transmission equipment. It had a substantial workshop, and employed more personnel, so its staff quarters were larger (a total of eleven cottages for married staff, compared to Rockbank's four).<sup>108</sup> In 1933 its name was changed to Fiskville, in honour of the visionary behind the Beam Wireless scheme, and a school, built to take 32 pupils, was opened.

After the initial publicity, the few subsequent reports of developments (such as addition of picture and telephone transmission within a few years) were limited to noting the purpose of both stations, reported equally.

Very little remains today of the huge Ballan radio buildings or transmitting aerials. There is only the original transmitter hall, without any equipment, and the protruding remains of the concrete blocks that were used to anchor the guy wires for the 75 metre high original lattice steel masts. Some of the original architecturally distinctive accommodation buildings remain, and are now operated by the Country Fire Authority for training and hospitality purposes.

Only the accommodation portions of the two sites remain. These are virtually identical, and both worthy of consideration for inclusion in the Victorian Heritage Register.

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<sup>108</sup> McLean, July 2004, *op cit*, pp.9-10.

The Melbourne control centre for the stations at ‘Wireless House’, 167-169 Queen Street, no longer survives.<sup>109</sup>

*Known Comparable Examples in Melton Shire:*

The comparable places in the Shire of Melton are the non-functional buildings associated with the Army receiving (Rockbank) and transmitting (Diggers Rest) stations.



The accommodation quarters of the Ballan Beam Wireless Station (known as Fiskville). The central staff building is flanked by six cottages here, whereas there are four at Rockbank. ([www.angelfire.com/de/vk3kcm/Fiskville3.html](http://www.angelfire.com/de/vk3kcm/Fiskville3.html))

The Rockbank Beam Wireless reception facility was among the first of the numerous wireless reception/transmission facilities that were established in the area, making Melbourne’s western and north-western plains a major centre of early radio in Australia. These other stations included AWA’s Melbourne ‘Radio Centre’ at Braybrook (which was co-located with Melbourne’s first broadcaster 3LO, the high frequency Beam ‘feeder’ service transmitters to Perth, Adelaide and Brisbane, and the coastal service transmitter)<sup>110</sup>; the Australian Army reception station at Rockbank, and its transmission station at Diggers Rest; the Airforce’s major radio station at Werribee, where a large receiving station, with a complex of 31 antennas was established<sup>111</sup>; and the former secret wartime Dutch East Indies radio station at Craigieburn (later taken over by the Civil Aviation Authority).<sup>112</sup>

The airforce radio station is the only one of these still in operation. There is a small Spanish Mission style building which is all that remains of the early ABC transmitter at Braybrook (in Radio Street). The later 1940s-50s 3LO transmitters (acquired by the government during WW2) are intact with a deco building near Sydenham.<sup>113</sup>

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<sup>109</sup> AWA, 1930, *op cit.*

<sup>110</sup> AWA, 1930, *op cit.*

<sup>111</sup> Technology in Australia, *op cit.*, p.543

<sup>112</sup> David Moloney, ‘City of Hume Heritage Study Review 2004’.

<sup>113</sup> Olwen Ford, Gary Vines, ‘Brimbank Heritage Study’; Bob Padua, ‘Beam Wireless Anniversary’, in APC (Moorabbin and District Radio Club Weekly), c.2002

**Condition:**

Good

**Integrity:**

- The original accommodation-related buildings and their exceptional site layout appear to be substantially intact.
- The distinctive inter-war period garden appears to be intact, although some large trees have died during the recent drought.
- All radio buildings have been removed.
- All arrays have been removed, but there are some concrete block anchors for the antennae guy cables, on this, and adjoining properties.
- Other features include the front fence and gate.

**Recommendations:**

Recommended for inclusion in the Victorian Heritage Register.

Recommended for inclusion in the Melton Planning Scheme Heritage Overlay.

Recommended Heritage Overlay Schedule Controls:

External Paint Controls:	<i>Yes</i>
Internal Alteration Controls:	<i>No</i>
Tree Controls:	<i>Yes</i> – Canary Island Palms & Cypresses in windbreaks round the property.
Outbuildings and/or Fences:	<i>Yes</i> – four interwar Bungalow cottages

**Other Recommendations:**

- It is recommended that a Conservation Management Plan be prepared for this site prior to any significant redevelopment proposal.