

## Marconi Radio Transmitting Station, Waunfawr – Desk Assessment

### Introduction

We have received a double request from **Information redacted**, to list and schedule the Waunfawr long wave transmitter station. **Information redacted** has conducted extensive private research on the early development of wireless radio, some of which is referenced on the HER entries for this site. He has asked us to list the transmitter hall, power-house and residential accommodation for staff and schedule the rest of the site of the radio station.

The Waunfawr or Cefn-du radio station as it was usually known is located mainly on the western slopes of Cefn Du near Waunfawr, stretching across the boundaries of Llanrug and Waunfawr communities. It is just outside the boundary of Snowdonia National Park. It is not under any immediate threat but there have been suggestions in the past that it may be developed as the site of a windfarm.

There is no record in the survey files or photo library that the Waunfawr station was ever considered for listing when we surveyed these two communities. However, it was mentioned in 2014. when we were being asked to list Penrhos, a house a few miles away near Caethro in Waunfawr community which belonged to William Henry Preece, Chief Engineer of the GPO in the 1890s. When Guglielmo Marconi came to Britain in 1896 seeking support for his experimental work in developing wireless radio it was Preece who provided the backing he needed. Marconi carried out some experimental work at Penrhos with Preece who had also been working on wireless radio while at the GPO. It was eventually decided not to list Penrhos and no further information was provided on the wireless station.

In addition to some basic information about the history of the station and its significance to the development of wireless radio, **Information redacted** has submitted a number of photos of the Transmitter Hall, both current and historic. This and others are on the file.



## Historical Background

During the late 1890s Guglielmo Marconi developed equipment for “wireless telegraphy” which led to Marconi’s Wireless Telegraph Company receiving an order from the British Admiralty in 1900 for a number of coastal wireless stations to communicate with shipping and develop a long wave transmitter powerful enough to transmit signals across the Atlantic. The first tests took place at Poldhu Cove in Cornwall in 1900, with stations across the Atlantic at Cape Cod, Massachusetts and Newfoundland, and later at Glace Bay, Ottawa, Canada. In 1902 a message was received from Canada at the Poldhu station.

As trans-Atlantic tests took place it was realised that a long horizontal aerial laid out in an inverted L-shape and aligned on the distant receiving station would create a better signal. The Poldhu site was too restricted to build such an aerial so one was constructed at Clifden in Galway, Ireland in 1905, becoming fully operational in October 1907. London and New York were the main markets for the messages to be transmitted on the new wireless telegraph service but the position of the test stations meant there were very long land telegraph lines linking them to these cities and this was causing technical problems. It was decided therefore to move the stations closer to London and New York and on the British side a site between Llanrug and Waunfawr, near Caernarfon, was chosen for the transmitting station. Signals from transmitting and receiving stations interfered with each other so a separate receiver station was built at Hafod y Bryn, Tywyn. In addition to the technical difficulties already referred to, Clifden saw heavy fighting during the Irish Independence and Civil Wars and the radio station was badly damaged by the IRA in 1922 and finally abandoned.

Located on the western side of Cefndu the transmitter station was officially known as the Caernarfon Station but it was more commonly referred to as the Cefndu or Waunfawr Station. Construction started in 1912 and it was in service by 1914 shortly before war broke out in Europe. In July 1914 the receiver station received its first signals from an American station in New Jersey. On the out-break of war both stations were taken over by the Post Office, and later transferred to the Admiralty, but Marconi Company staff continued to run them, and control of the stations reverted to the company at the end of the war. It was taken over by Imperial and International Communications Ltd in 1929 which in 1934 became Cable and Wireless Ltd. During the First World War both Waunfawr and Tywyn were guarded by local reservist troops.

Continual development of the equipment took place to make it more powerful and efficient and the full extent of aerials was reached by December 1923. In September 1918 the first wireless radio message was sent to Australia and in 1924 the first still pictures were transmitted to the USA. After the war both stations continued to expand their services but eventually short-wave radio took over from long wave for most functions. The transmitting station remained in service as a long wave station until 1928 and was then used as a relief station to cover heavy traffic peaks. The Tywyn station was closed in 1923 when long-wave reception was transferred to Brentwood in Essex.

Waunfawr remained the most important long-wave wireless telegraph station in Britain until the Post Office station at Hillmorton near Rugby opened in January 1926. The development of short-wave wireless in 1927 and radio telephone services in 1930s made Waunfawr increasingly obsolete and it closed in 1939.

### Description of Site

The Waunfawr Transmitting Station is situated on the slopes of Cefn Du between Llanrug and Waunfawr, extending for about 2km up the western slope of the hill, over the summit and down the north-eastern slope for a short distance. The principal station buildings are the main Transmitter Hall which includes an experimental section, the power house building supplied with electricity from the Cwm Deli hydro power station. and a residential block for staff. The Marconi Hall as is known was built in 1914 as a two-story residential block containing 16 bedrooms, a kitchen and dining room. The main range of the Transmitter Hall was built in 1914 and had a smaller building attached to its western side which was replaced at some stage by new three long gable-ended ranges extending from the main building side-by-side. The main range had a slate roof but the new additional ranges have metal sheet roofing

The original aerial was supported on lattice steel masts 300ft high. Remains of the aerial and related structures extend for about 2km up the western slopes of Cefndu and over the summit. Each of the large masts extending directly up the hill from the transmitter house had a concrete foundation onto which the mast was bolted surrounded by stay anchors with concrete blocks used to guy the mast. The aerial masts and supports have gone but there are 70 concrete bases recorded and some of the stay anchors remain. There may be more features including, including possibly the underground earthing system.

A light railway was constructed from the Ceunant to Waunfawr road at the foot of the hill to carry building materials and equipment up the slope and a ring of 10 brick blockhouses built around the site to defend it from attack during WWI including one on the summit of Cefndu. Two small reservoirs also exist within the site that may have been built to provide an emergency water supply for the station and a number of culverts have also been identified, possibly for carrying power-cables.

After the station was closed in 1939 the Transmitter House was used by the War Department, and then as a Catholic hostel. During WWII It was as an evacuation centre. Since the end of that war it has been a storage depot, a boys holiday centre, a nightclub, and an equestrian centre and at one point in the 1990s it had an indoor climbing wall but at the moment it is no longer in use. It has presumably been altered internally to accommodate all these various uses and all the equipment removed but externally it retains almost all original features. In 1975 Marconi Hall was converted into the Chamois Mountaineering Centre and is still in use. Externally it appears to be unchanged and a brief internal inspection by GAT suggested that many original features still survive inside. The Power House is now a private dwelling and has lost some of the features that indicate its original function but the building as a whole is externally largely unchanged.

Photos of all the main structures referred to above are included in the attached Annex. More and maps and plans are in the GAT report on file.

### Assessment

The GAT report (1302) First World War Military Sites: Manufacturing and Research and Development provides a detailed description of this site and its associated structures with photos and location site plan and map. It describes it as being clearly of national if not international importance and recommends the site for scheduling as a matter of priority before the site becomes subject to development. It also recommends that the Transmitter House and Marconi Hall should be listed at grade I though not the Power House. The bungalow accommodation and possibly the receiver house at Tywyn are also recommended for listing at grade II.

I think there can be little argument with GATs conclusions that is a very significant site that needs to be considered for both listing and scheduling as a matter of priority. After Poldu Cove, which has been demolished, it is the oldest surviving wireless radio station in Britain and played a leading role in the development of this technology in the early 20th century. It would also have played a significant part in WWI as nearly all international wireless radio traffic during the war and for several years after would have been transmitted from here and until 1926 the only other station of this kind in Britain.

There is no immediate threat at present but there have been suggestions for wind turbines, on this site and this idea may be revived. I would suggest that the emphasis should be on scheduling as this would be the more appropriate form of designation and there is the potential for buried archaeological remains such as the underground earthing system. The Transmitter Hall, Marconi Hall and possibly the Power House should also be considered for listing though the latter may be too altered and a joint site inspection by Simon and Ashley would be the best way forward.

Information redacted

11 August 2022

### Sources :

Marconi and Wireless Stations in Wales, H.Williams – Gwae Gerreg Gwalch, Llanwrst, 1999.

Kenney, J., Flook, R., Daimond, A. , - First World War Military Sites: Manufacturing and Research and Development. Part 1 Report and Gazeteer, GAT Report1302), March 2016.

Kenney, J., First World War Military Sites: Manufacturing and Research and Development. Part 2 Scheduling and Recommendations – GAT Report 1302, March 2016.

Coflein – Marconi Long Wave Transmitting Station, Waunfawr, Plas-y-Celyn, Cefn Du - nprn58768.

HER – Wireless Transmitting Station, Cefndu – nprn887 (plus numerous entries for individual features.

## ANNEX

### Photos from GAT Report 1302 – First World War Military Sites: Manufacturing and Research and Development - 2016

Post-1914 additions to main transmitter building viewed from the west



Main transmitter building in 2015, with former Power House to left



Main transmitter building in 1914, with Power House to left, before additions to western elevation of transmitter hall added. Western range it replaced visible behind wooden building.



Power House, 1914



Mast base



Stay anchor



Blockhouse



Possible light railway track beds or causeways and blockhouse



Reservoir



