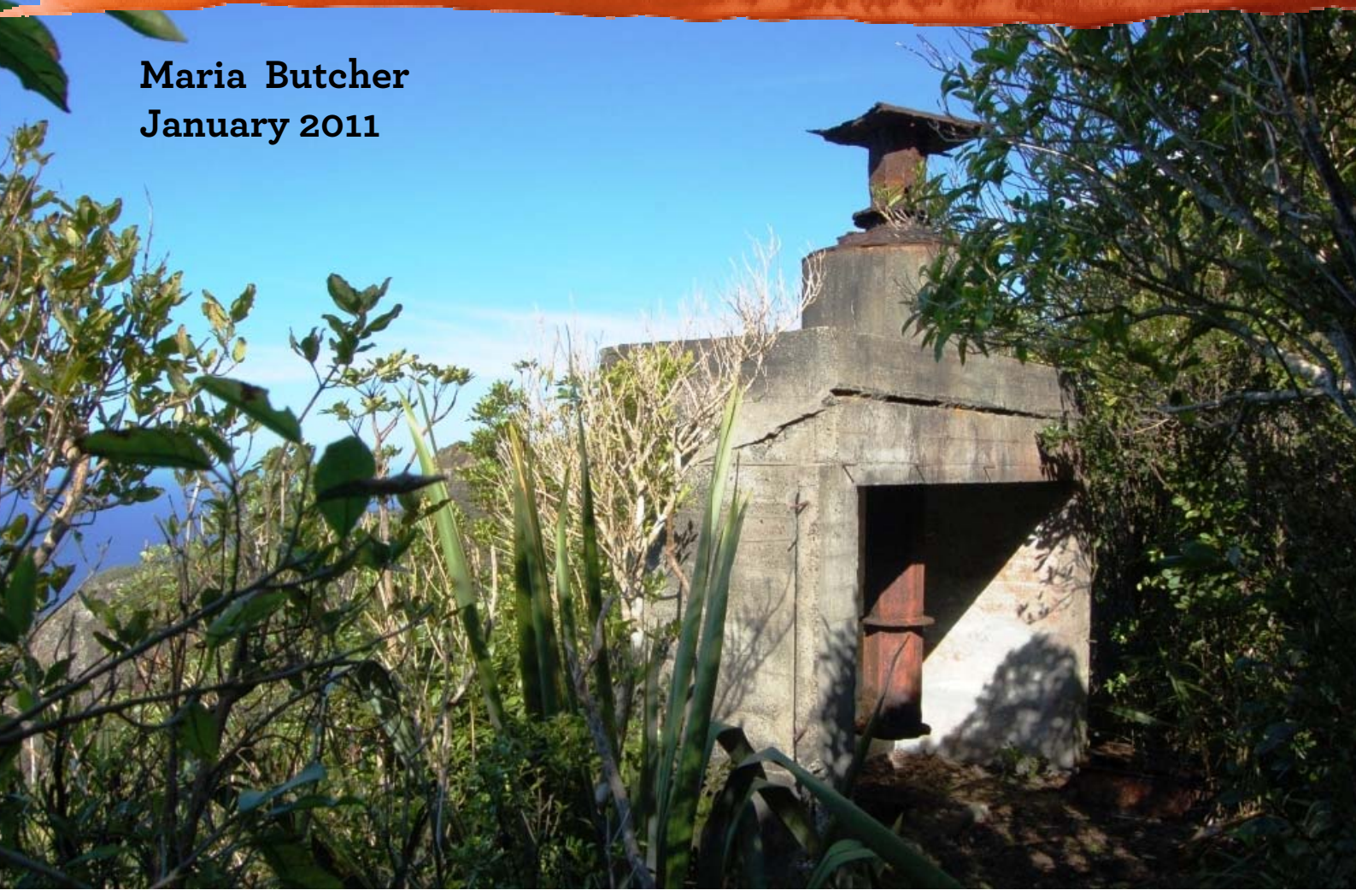
Heritage Assessment:
Gun Battery and Radar Station
Bream Head



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Department of Conservation
Te Papa Atawbai

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Cover image: Radar station radio hut with antenna shaft (Maria Butcher)
Peer-reviewed by: Joan Mainguy

Site Overview

The threat of a Japanese invasion of New Zealand was taken very seriously during World War Two. In response, networks of defences and early warning systems were established around the New Zealand coast. The Whangarei Harbour – although not a major port – was defended by a gun emplacement at the harbour entrance, and a radar station on top of the Bream Head ridge. The site of the former comprises the gun emplacement itself (minus the gun), the engine room, and the Battery Observation Post (BOP). A mural painted inside the BOP is the most notable features of the Whangarei Battery. The radar station is situated about 5 km away from the battery, and nearly 300 meters higher, on the precipitous eastern aspect of Bream Head. There remains a concrete building which housed radar equipment, along with an assortment of concrete foundations and footpaths, and part of a wooden staircase.

The remains of Whangarei's WWII defences are now part of the Bream Head Scenic Reserve, managed by the Department of Conservation (DOC) from the Whangarei Area Office. Both sites are accessible to visitors by way of the Bream Head track system.

History Description: Gun Battery

At the beginning of the war it was decided that the port of Whangarei did not require fixed defences. The natural defence of the harbour were considered sufficient: it was suitable only for coastal vessels, and removing the lights would render it un-navigable. By 1942 that opinion had changed, and Whangarei was deemed a minor port worthy of being defended against shelling or raids by light craft, and works began.

The site was selected with great care to cover the approach to the Whangarei Harbour and so that the enemy could not engage without coming into range of the gun.[1]

Work began on the site in April 1942, and by late July the road and the water supply were in place. Table one is a summary of the works required to develop the site, which included the gun emplacement itself, the Battery Observation Post (B.O.P.), ancillary buildings, accommodation, plumbing, and roading.

Table 1: No. 4. Gun Emplacement, Whangarei Heads. Position as at 22 July 1942.[2]

description of work	total cost to date	approx. expend. still needed	approx. total cost
1.5" gun emplacement with overhead cover; BOP; engine room; reservoir; septic tank		£3 450	£3 450
accommodation buildings		2 100	2 100
accommodation huts		600	600
gun shields		550	550
roading and water supply	850		850
land		200	200
generator unit		250	250

A great deal of effort went into disguising the battery as a farm with a two-story house garages, and sheds. The 'house' was actually the armoury and accommodation for the officers. The gun emplacement itself was disguised with a camouflage net which was

[1] Memorandum for Fortress Commander, Headquarters. Archives NZ Reference: AAYS 8649 AD12/1 25/1/11.

[2] Extracted from Coastal Defences – North Auckland – Position as at 22/7/42. Archives NZ Reference: AATE A1003 305a 7/13.

fastened onto steel loops embedded in the concrete walls. The camouflage net over the cantilevered roof was supposed to make the emplacement look like part of the hillside. The B.O.P. was disguised as a rock; the site was created by blasting a gap into the rear of a very large rock. The building was therefore surrounded by solid rock on three sites, with only a narrow window visible over the front edge. The effect was completed by cementing small rocks onto the concrete roof.

The battery was allocated a US 155mm field gun, which was ordered, but lost at sea when the ship carrying it sank in the Mediterranean.[3] Instead, a 5-inch 51 Calibre US naval gun was installed. The 5-inch guns which ended up in New Zealand were built in 1912/13, as a standard secondary armament for US warships.[4] They were quick firing, designed to counter fast-moving destroyers and torpedo boats.[5] There was a limited supply of 5-inch ammunition available, which is why the emplacement did not have the usual magazine.

In June 1943 there were 73 coast defence guns in operation; there followed a sharp reduction down to 20 operational weapons by September of the same year[6]. The Bream Head emplacement remained operational until November 1943. It only ever fired three shots, none of them directed at an enemy.

History Description: Radar Station

Work on the radar station began in 1941 by a local contractor called O.R. Haigh. The power station and the radio hut (which housed the radar apparatus) were built first, for which Mr Haigh was paid £189[7]. Getting started on the radio hut and the power station was very difficult. The underlying rock was found to be exceptionally hard, and blasting equipment had to be transported to the site[8]. Despite the difficult building site, the radar equipment arrived on site on 16 February 1942, along with a contingent of five naval staff. A physicist by the name of Mr. Melville was responsible for un-packing and installing the equipment[9].

The station was established on the site of an existing army lookout post. The army lookout comprised the watching post itself, three "hutments" (8 feet x 10 feet), a wash-house and ablutions hut, and a cookhouse (8 feet by 20 feet). The army post, built in 1939, was manned by between four and six men of the National Military Reserve[10].

The Public Works Department (P.W.D.) built a 'roughly formed and metalled' access track up to the lookout post[11]. When the radar station was operating, diesel for the generators was hauled up the track by a tractor towing a sledge. Bruce Lovett, a teenager at the time, carried out the occasional diesel delivery. He remembers the task taking an entire day.[12]

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[3] P. Cooke, 2000, p 504; A. Gregory. n.d. *Northern Advocate*.
[4] P. Cooke, 2000, p 302
[5] P. Cooke, 2000, p 302
[6] P. Cooke, 2000, p 286
[7] Letter to the Acting District Engineer, Whangarei, from the Engineer in Chief. Archives New Zealand Reference: W1/801 23/588/3
[8] Memorandum from the Acting District Engineer to The Permanent Head, Public Works Department. 5 January 1942. Wellington.
[9] Letter from the Acting District Engineer, Public Works Department. Archives NZ Reference ACHL W1/801 23/588/3.
[10] Memorandum from Public Works Department to the Naval Secretary, Wellington. Archives New Zealand Reference: ACHL W1/801 23/588/3
[11] Memorandum from L.A. Stokes (Ministry of Works) to the Commandant, Northern Military District. Archives New Zealand Reference: ACHL 19111 W1/783 23/488
[12] Bruce Lovett, pers. com.

The radar station was officially known as 'Naval Post No 7'. The name was deliberately vague, as explained in a memo issued in December 1942:

> *It is advised that in the interests of security the R.D.F.[13] stations will in future be knows as 'Naval Posts No …', there will be no reference whatsoever to the terms radio R.D.F., etc. There will therefore not be the same danger of giving away vital information with reference being made to the actual locality of a Naval post. It is realised that in forwarding the materials and arranging for construction work etc. that the locality must invariably be indicated and it is hoped that he use of the non-committal term now introduced will not endanger the requirements of security. Please see that this instruction is conveyed to all officers in your district who are in any way connected with this work.[14]*

The archives reveal a little about what life was like for the men posted at the radar station. They didn't live in luxury, but they did have hot water, a laundry, and a refrigerator[15]. Accommodation was dormitory style, although there was a single bedroom, presumably for the man in charge[16]. The worst thing was, perhaps, the boredom:

> *The coastwatcher's duty is tedious. He has to spend long hours looking out over the inconstant but unchanging ocean or struggling with his radio, groping for contact with the outside world. He has to endure, perhaps to an exaggerated degree, all the monotony and boredom of service life without the compensation of a multitude of new friendships. It is only near a few main ports that he will have enough to do to keep healthily busy.[17]*

Developing radar in New Zealand was very expensive. In 1942, the navy was allocated £116,450 to build accommodation at the RDF posts, and another £308,235 to upgrade the radar sets. In 1942 the extent of the various radar programmes was scaled back and the War Cabinet imposed an expenditure ceiling. The Bream Head radar station was disestablished in 1944.[18]

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[13] R.D.F. stands for 'Radio Direction Finding'. The word 'radar' ('Radio Detection And Ranging') was coined in 1940 by the US navy, and was not in use in New Zealand when the Bream Head post was built.

[14] Memorandum from the Engineer-in-Chief, Public Words Department, to the Acting District Engineer, Public Words Department, Whangarei. Archives New Zealand Reference: ACHL 19111 W1/783

[15] Erection of Mess and Quarters, Laundry, and Ablutions R.D. Station No. 7. Contract No. 913. Archives NZ Reference: ACHL 19111 W1/783

[16] Memorandum from the Engineer in Chief to the Acting District Engineer, Public Works Department. Archives NZ Reference: ACHL W1/801 23/588/3

[17] D.O.W Hall, 1950. p 3

[18] P. Cooke, 2000. p 669.

Fabric Description: Gun Battery

The gun battery is sited on the western end of Bream Head, facing the northern end of Bream Bay across the harbour. The site is above a rocky coastline, on the sloping ground below the Bream Head ridge.

Four structures of reinforced concrete remain on the site today: the Battery Observation Post (B.O.P), the generator room, a water reservoir, and the gun emplacement itself. The access road is clearly visible running below the DOC track to the gun emplacement. A series of concrete foundations represent the wooden huts and ancillary structures removed from the site after the war.

The B.O.P. is a small rectangular building measuring 8 by 10 feet (2.4 x 3.0m), with a narrow window around three sides of the building. It is sited above and to the south of the gun emplacement. As shown in figure 1, the B.O.P. is set into a rock cut; from the sea-ward side, only the narrow window and the roof of the building project above the rock. Small rocks have been cemented to the roof of the building, to improve the camouflage. Inside the building a mural has been painted onto the concrete wall immediately above the window. The painting is 0.28m high, 2.44m wide on the sides and 3.05m wide at the front of the building. S. Hillary, an art conservator, considers the painting "well-executed".[19] She describes the painting as follows –

> *The subject of the painting is an accurate panorama of the landscape visible through the windows. The painting was measured off in degrees and its purpose was to assist in the quick identification of the location of a sighting. [...] Below the panorama is a green-painted strip with the degree positions painted on it and below that, in the upper window frame are the words APPROXIMATE GUN BEARINGS. Around these words on the front and right sides are flag symbols for letters in the alphabet and numbers to ten. This was no doubt intended as a prompt for semaphore interpretation. On the wall at the back of the room are two painted signs, the one of the left titled RANGES AND BEARINGS/TO DATUM POINTS and the other which is very damaged, titled APPROXIMATE RANGES & BEARINGS.*[20]

The generator room is situated above and slightly to the north of the B.O.P. It is a rectangular building measuring 3.8 x 3.4 metres. There is a wide doorway on the sheltered landward aspect, and three windows measuring 0.64 x 0.8 metres. A fourth smaller window is situated near ground level. Ventilation was clearly important; as well as the windows, there is a pair of circular vents in the ceiling of the building. The generator was mounted on rectangular plinth 0.14 metres high.

The water reservoir – essentially a large concrete box – is sited near the base of the hill, above and behind the rest of the battery buildings. The concrete box around the outlet is broken, exposing the metal outlet pipe.

The remains of the gun emplacement itself comprise an octagonal concrete apron with cantilever roof attached to a thick-walled concrete building. As show in figure 5, the building was accessed through twin sets of heavy steel doors. The doors are no longer present, although metal brackets remain set into the walls. The internal compartment is a dark, cavernous space with two concrete benches (0.76m high) facing each other. The

[19] S. Hillary. 1995, p 5
[20] S. Hillary. 1995, p.5.

space below the benches is divided into six compartments. P.W.D. plans show that the compartments were cupboards for storing shells, and that cartridge racks were installed on the benches above. Evidently, the steel doors and thick concrete walls were thought necessary for the safe storage of the ammunition. The steel loops for attaching the camouflage net remain embedded in the concrete structures.

The accommodation building – which was disguised as a farmhouse – is no longer present. It is, however, depicted in the B.O.P. mural. The mural shows that the 'farmhouse' was sited to the north of the B.O.P. over a low ridge. The building depicted is either 'L' or 'T' shaped, with a rectangular hipped roof and two fireplaces. The site of the building is marked by an *in situ* concrete platform measuring 4.6 m across, displaced concrete slabs, and a set of displaced concrete stairs.

Figure 3 is the site of the accommodation building taken from above. The photo suggests that there has been considerable soil movement since the building was demolished, partially covering the site.

Figure 1: The rear of the B.O.P. Note the rocks cemented to the roof.

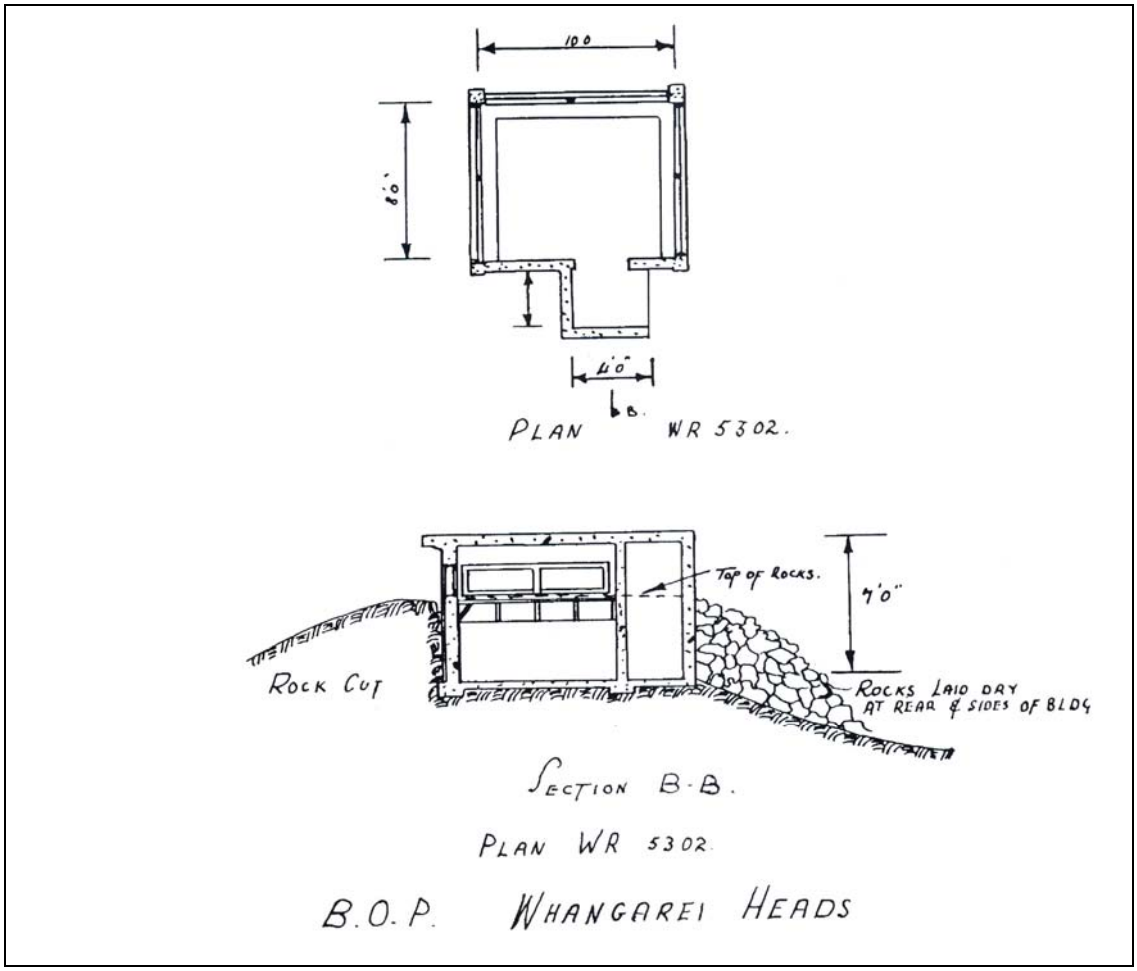

Figure 2: Public Works Department Plan diagram of the B.O.P.

Figure 3: Site of accommodation building. Arrows mark corners of concrete platform.

Figure 4: Part of the B.O.P. mural showing the accommodation building.

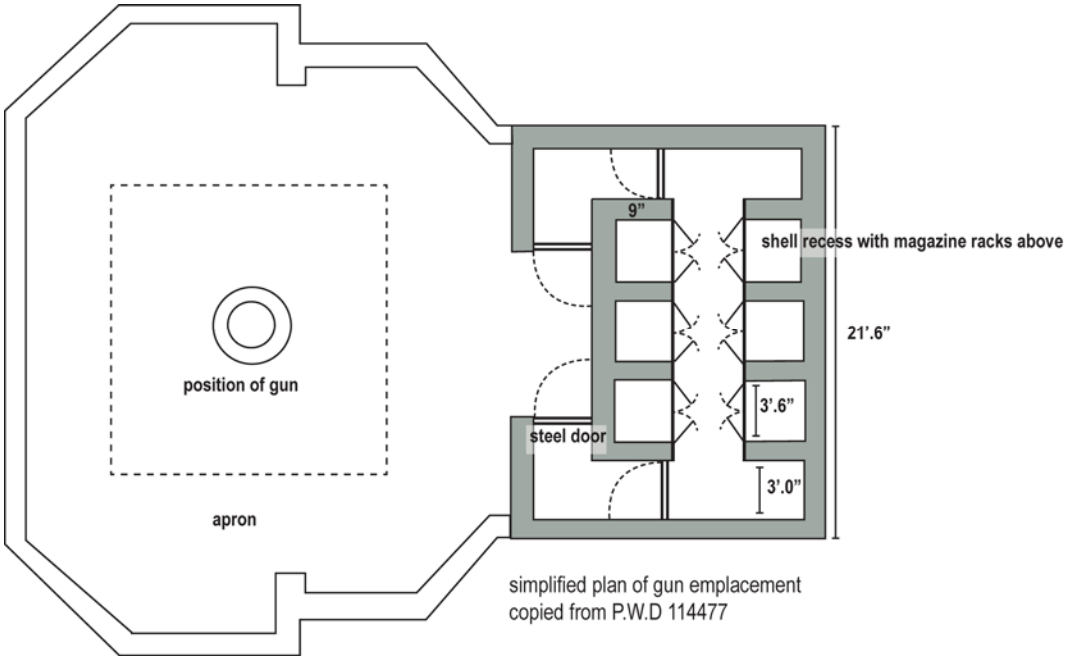

Figure 5: Plan of the gun emplacement. Simplified copy of part of P.W.D. 114477.

Figure 6: Interior of gun emplacement, showing shell recesses and bench for magazine racks above. Metal brackets for attaching shell recess doors are visible.

Fabric Description: Radar Station

The ruins of the radar station are located around a small knoll near the top of a steep ridge. The concrete hut which housed the radar apparatus faces out to sea on the eastern aspect of the knoll, below the skyline. The remains of the power station are tucked into a narrow ledge behind the knoll, and the accommodation, laundry and ablutions were located further south along the ridge. Appendix C is a contemporary plan of the site, showing the small buildings of the original army lookout post, and the buildings planned for the radar station.

The concrete portion of the radio hut which housed the antenna is still standing, with the antenna shaft in place. It is an open-sided structure, measuring 3.35m x 1.5m x 3.2 metres high from the hut floor. There is a small compartment below floor level for access underneath the radar apparatus. Figure 8 is part of PWD 109653, the blueprint for "type C" radio huts. As shown, the concrete tower was attached to a hut measuring 16 x 14 ft, with a bench in the corner. As suggested in the archives, the flat area for the hut looks to have been blasted into the rock face.

The radio hut is connected to the site of the accommodation by a narrow concrete path which curves around the side of the knoll. The path is 0.45m wide and about 40m long. At the end of the path are concrete foundation slabs and a jumble of concrete rubble, shown in figure 10. There are two large concrete slabs measuring 3m x 5.15m and 3m x 3m. The dimensions of the slabs, and the presence of downpipes and drainage pipes, suggest that these are the ruins of the laundry/ablutions block.[21]

Figure 7: Path connecting radio hut to accommodation/laundry site.

There are no traces on the ground surface of the mess and quarters, apart from an artificially flattened area immediately to the south of the laundry block ruins.

On the other side of the knoll is the site of the power station. The four concrete plinths for the stations' diesel generators are present. Each plinth is about 1.0 x 2.0m in plan. Their heights range from 0.65m to 1.0m, depending upon the level of the ground surface. Shown in Appendix B is a plan of the site today, along with the standardised P.W.D plan for the building. The building was designed to house three generators, but in mid-1943 it was altered to house a fourth[22].

[21] The length of the larger concrete slab is 5.15m, which corresponds with the width of the laundry/ablutions block indicated in P.W.D. plans. The ruins are not located at the proposed laundry site shown in WR5098 (Appendix C). It appears that the laundry was in fact built on the sea-ward side of the ridge.

[22] Memo from the Acting District Engineer to The Permanent Head, Public Works, Wellington. Archive NZ reference: ACHL W1/801 23/588/3.

Also at the power station site is the only wooden structure to remain: an external staircase which linked the power station directly to the top of the knoll. One deteriorated wooden stringer is in place, with broken treads hanging off it.

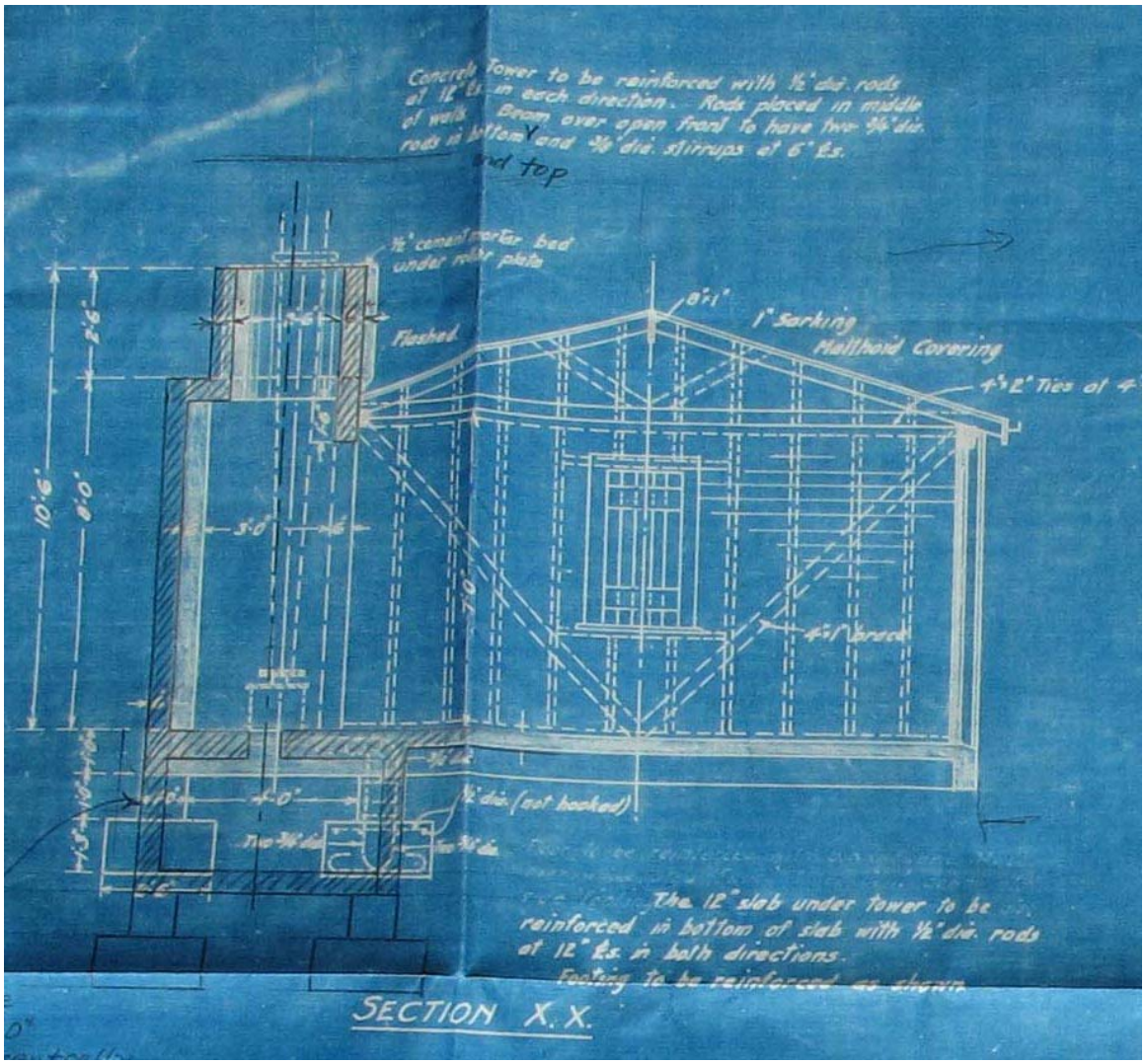

Figure 8: (above) Part of blueprint for type C radio hut (P.W.D. 109653).

Figure 9: (left) The concrete tower and antenna shaft of the type C radio hut at Bream Head.

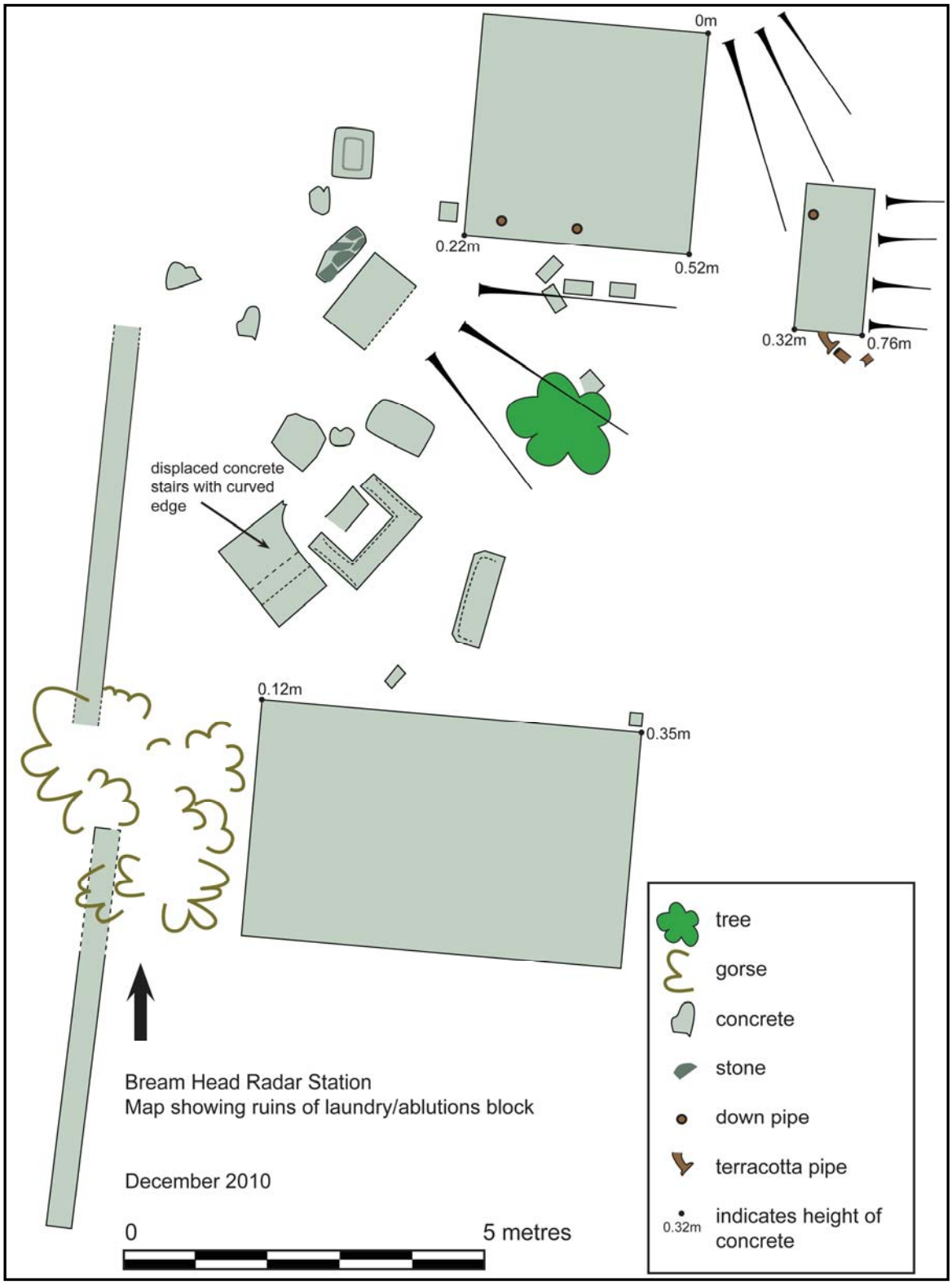

Figure 10: Ruins of laundry/ablutions block.

National Context

New Zealand's isolated position and long coastline meant that enemy submarines, raiders, and perhaps warships were the greatest threat.[23] The radar station and gun battery at Bream Head were part of a comprehensive network of coastal defences.

By 1942 the army and the navy had established networks of more than 40 radar stations.[24] There were two varieties of radar set: 'coast defence' (CD) or 'coast warning' (CW). The purpose of the CD models, which were operated by the army, was to help coastal defence guns hit their targets. The CW stations were for detecting any unseen movement on strategic stretches of waters.

The Bream Head radar station was one of the naval CW stations, of which there were 16 in total. At least seven of these sites are now part of the DOC estate, including three in Auckland and two in Northland. The other RDF station in Northland, at Cape Brett, is in a similar condition to the Bream Head station, although the antenna shaft has been displaced from its concrete tower. At Bluff (Naval Post No. 1) the rotating mechanism, shaft and axel are still present at the site. As at Cape Brett, the antenna shaft is no longer in situ.

P. Cooke lists 40 gun batteries which were operational during WWII. Three quarters of these had multiple guns. Four of the single-gun emplacements, including the one at Bream Head, were armed with the 5-inch BL MkVIII from the US Navy. The Bream Head emplacement had some unique features, such as the disguised officers' quarters, and the embedding of local rock into the B.O.P. roof to break up the outline.

The condition of the WWII batteries varies from completely demolished (e.g. the New Plymouth Battery) to well preserved (e.g. Blumine Battery). The sites of at least 18 of the WWII-era gun batteries are now part of the DOC estate, and a further 4 are situated on council reserves. At these sites, the concrete structures have usually survived rather well. Some have been reused, for instance, an emplacement at the Napier Battery is completely covered by a concrete look-out structure. The B.O.P. at Akaroa – on private land – has been turned into a bach.

Significance

There are many different criteria used to assess the significance of historic sites. It is useful to refer to Section 23(2) of the Historic Places Act, which lists a set of 12 criteria for assessing historic heritage significance.[25] Of relevance are the following:

The extent to which the place reflects important or representative aspects of New Zealand History;

The association of a place with events, persons or ideas of importance in New Zealand history;

The potential of the place for public education;

[23] R.S. Unwin 1992. p. 31
[24] P. Cooke. 2000. p 663
[25] The NZHPT uses these criteria to assign Category I or Category II status to historic places/areas with aesthetic, archaeological, architectural, cultural, historical, scientific, social, spiritual, technological or traditional significance or value.

The technical accomplishment or value, or design of the place;

The importance of identifying rare types of historic places.

At a national level, the radar station and the gun battery are representative of New Zealand's WWII defences. Both sites are directly connected to an important aspect of New Zealand history: World War Two. They are also part of the story of the Whangarei Harbour, modern 'pa' of steel and concrete set within a landscape of older earthen equivalents. The B.O.P. mural depicts a historic landscape which as since been altered by urbanisation and the building of the Marsden Point Oil Refinery. Both sites have potential for public education about New Zealand and the war, and about the local history of Whangarei.

The radar station represents a great technological accomplishment. During WWII radar was cutting-edge technology developed in the greatest secrecy. DSIR[26] scientists – combining ingenuity with a little information and a few crucial components from England – built New Zealand's first radar set in 1939.

An item in the *Evening Post* in 1943 reveals the cutting-edge nature of radar technology, and the level of secrecy surrounding its development. At this time – when radar stations were in operation around the New Zealand coast – the public were barely aware that the technology even existed:

> *AMERICAN RADIO LOCATION*
> *NEW YORK, April 25*
> *Some details of the sensational radio device, known as "Radar" location, with which the approach of enemy shops and aircrafts is detectable, have been released by the War Department. The detector utilises ultra-high frequency waves which are reflected back when they strike an object, and the range is measurable by the time intervals. "Radar" can operate through fog, darkness, and storms.*

Although the gun battery is one of many across the country, the B.O.P. is an outstanding example. It should be counted as a rare historic place because the sighting mural has been preserved. Originally, all Battery Observation Posts had these paintings, which were executed by local soldiers[27]. Today, it is one of the last military murals in the country, and must be considered nationally significant[28]. From S. Hilary (1995):

> *It would appear that this kind of painting is rather rare, a similar painting at the Battery Observation Post at North Head has been painted over, the one at Campbell's Bay is rather poorly executed and in bad condition, and according to Tony Walton, Department of Conservation Archaeologist, there are no examples remaining in Wellington[29].*

[26] Department of Scientific and Industrial Research
[27] According to historian Ron Houton, cited in S. Hillary 1995. p 3
[28] J. Robinson. n.d. DOC file note.
[29] S. Hillary. 1995, p. 5

Management History

GUN BATTERY

pre-WWII - 1969	Farmed by the McGregor family
1942-1943	Battery operational
1969	Purchased by the Golden Bay Cement Company Ltd.
1984	Purchased by the Crown
1985	Gazetted as Scenic Reserve
1987	Department of Conservation created
1995	Remedial and preventive treatments carried out on B.O.P. mural according to recommendations made by S. Hillary, Auckland Art Gallery. Work included – - surface cleaning; - consolidation of paint layer; - toning of paint losses and blanched areas to blend in with surrounding paint; - replacing the windows; - installing a perspex cover over the mural to protect it from graffiti.
1998	B.O.P. windows broken by vandals, and new "unbreakable" polycarbonate windows installed.
2001	Salmond Reed Architects commissioned to prepare report describing the condition of the building and identifying issues for repair. They concluded that - *The three structures, the gun emplacement, observation post, and engine room are in a sound condition [...]. Defects are restricted to some cracking and spalling of concrete, exposed and rusting reinforcing steel, and failure of bituminous roof covering*[30]. Repairs to the gun emplacement were recommended, for an estimated cost of $18 000. The repairs were not carried out.
Mid 90s – early 00s	Other remedial work carried out on B.O.P. including erecting a small fence, stile and new door.
2002	All three B.O.P. windows broken by vandals. Replaced with thicker (6mm) polycarbonate.[31]
2004	Barrier installed across engine room doorway to prevent cattle entering.

[30] Salmond Reed Architects, 2001. Repairs and remedial work to Home Point Gun Emplacement, Bream Head, Whangarei. Unpublished Report Prepared to the Department of Conservation.
[31] Details in J. Robinson. n.d.

Management History

RADAR STATION

1878	Land reserved as Primary School endowment[32]
1939 – 1942	Army Lookout Post in operation
1940	Control vested in the Whangarei Harbour Board[33]
1942 – 1944	Radar Station in operation
1978	Gazetted as a Scenic Reserve under the Lands and Survey Department.
1987	Department of Conservation created.
2010	Old and decaying interpretation sign removed.
	Vegetation clearance.

Management Recommendations

(1) Interpretation for the public

It is a great oversight that neither the gun battery nor radar station is interpreted for the public. Many people walk past the buildings of the gun battery each week, unable to appreciate or understand exactly what they are seeing. The radar station is also immediately adjacent to a popular walking track, but the ruins cannot be seen from the track due to the topography and the vegetation. Most people will walk right past, unaware that the radar station even exists.

The sites are connected thematically, as components of the WWII costal defence network, and physically, by the Bream Head track system. It is recommended that a series of complementary interpretation panels are developed. A minimum of three panels is suggested, one for the radar station, another specifically for the B.O.P., and a third for the gun battery in its entirety.

(2) Remedial work/repair to the gun battery

Fifteen years after restoration, the B.O.P. mural requires some attention. Mason bees have invaded the gap between the mural and its perspex cover, and are building nests directly on the painted surface. The perspex needs to be removed, and the nests removed with great care. NB: Chemicals – such as fly spray – are not be used on the painted surface. It is likely that the perspex cover has reached the end of its life, so a new cover should be manufactured before the old one is removed. A gap must be maintained around the edges of the cover, to prevent moisture accumulating on the surface of the mural.

It is important to remember that the B.O.P. mural is a single component of the gun battery complex. The loss or deterioration of other components diminishes the integrity of the entire complex. Without the gun emplacement, for instance, the meaning of the mural is

[32] New Zealand Gazette 1878, p 1774.
[33] New Zealand Gazette 1940, p 1066

lost. Therefore, it is important that emplacement, engine room, and water tank are preserved into the future.

The report by Salmond Reed Architects (2001) is an expert assessment of the condition of the gun battery. The battery was found to be in fairly good condition, although certain problems were identified, including spalling and cracking concrete. It is important to note that spalling is a serious defect that inevitably worsens, often rapidly.

Ideally, the defects should be repaired according to the recommendations in the 2001 report. This will ensure the long-term survival of the concrete structures at the gun battery site. In the meantime, the problem areas should be monitored to determine the speed of the deterioration, and therefore the urgency of the repairs.

(3) Repairs to the Radar Station

Like the gun emplacement, the concrete radio hut has defects which include cracking and spalling. At present, the spalling is not severe. However, there is a wide crack with some displacement penetrating the width of the building.

It would be preferable for the defects to be stabilised or repaired. As with the gun emplacement, monitoring of the problems areas is recommended to determine the rate of deterioration.

(4) Maintenance of the Gun Battery

At present, very little regular maintenance is carried out at the gun battery site. As a result, the structures are somewhat messy. The following is recommended:

- remove swallows nests from the walls of the engine room
- remove rubbish from all structures and install rubbish bin near picnic table
- sweep interior of all structures
- remove the worst of the graffiti inside the gun emplacement
- remove matted kikuyu grass from concrete foundations of ancillary buildings (to enable the public to see the extent of the site)

(5) Maintenance of the Radar Station

Due to the less accessible location, the radar station has not been vandalised or littered like the gun battery. On-going vegetation clearance is required, so that the ruins of the power station and laundry/ablutions block remain visible. The metal antenna shaft in the radio hut is badly rusted, and should be treated with a rust-inhibiting product such as Wattyl Fishoilene.

Summary

The threat of a Japanese invasion during WWII prompted the building of coastal defences and early-warning systems at strategic points around the New Zealand coast. The remains of the gun battery and radar station at Bream Head are representative of the coastal defences of that era. The gun battery has national significance because it contains one of the few surviving military murals in the country.

The gun battery and radar station represent an important 'moment' in New Zealand's history. There are other examples of the same types of structure; however, the landscape depicted in the B.O.P. mural anchors the battery within its Whangarei Harbour setting. The battery and radar station are part of the on-going story of the Whangarei Harbour.

Sources Consulted

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Defence World and Buildings – Radio Development – Navy – Whangarei. Archives New Zealand reference: ACHL 19111 W1/801 23/588/3

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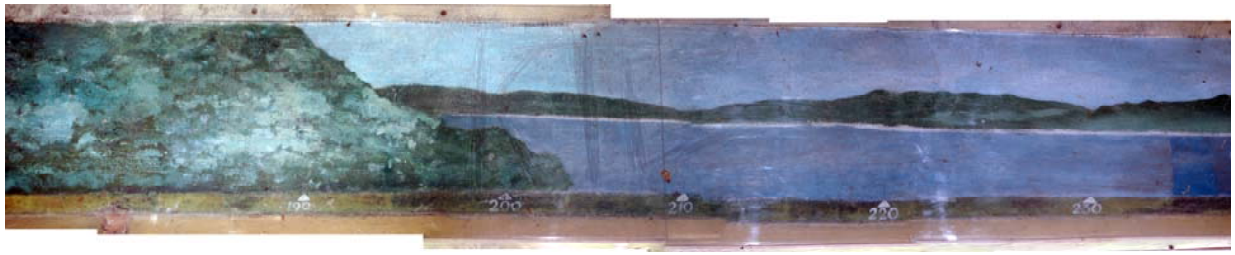
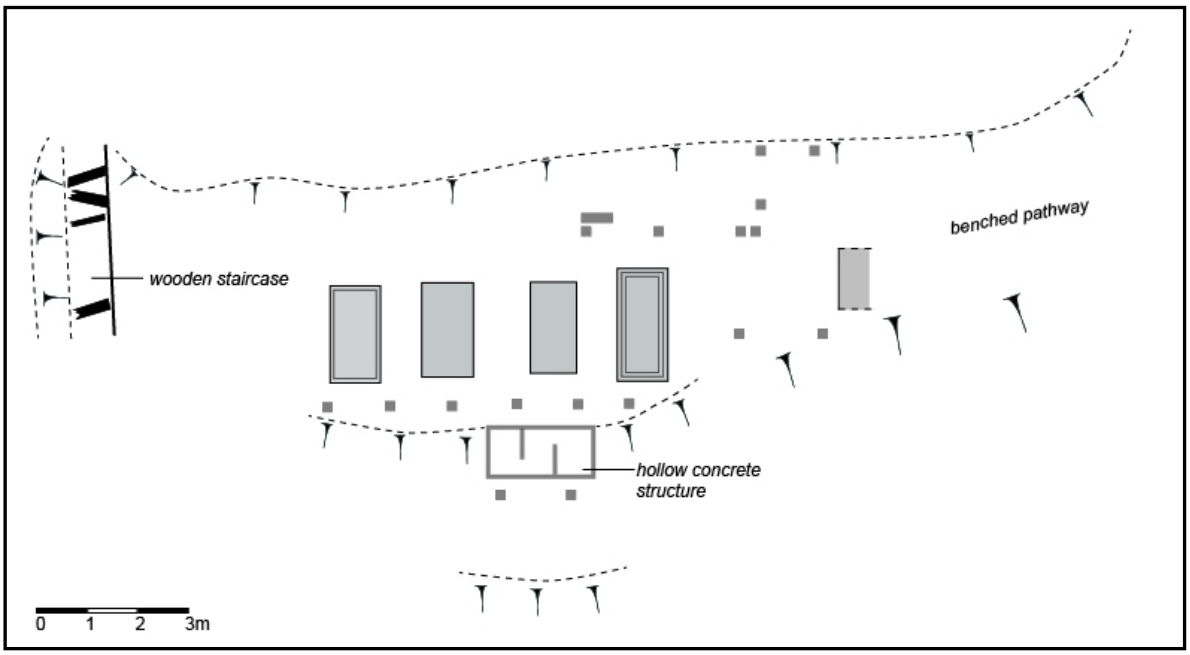
Appendix A: Panorama of B.O.P mural.

From top: looking north (side window), looking west (front window), looking south (side window)



Appendix B: Plan and photograph of power house site. Compare with contemporary plans for power house in Appendix D.



Appendix C: Contemporary plan of Radar Station site.