

Archaeology Wales

Land Adjacent to Imble Lane, Pembroke Dock, Pembrokeshire

Archaeological Watching Brief



By
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Report No. 1335



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Summary

An Archaeological Watching Brief was carried by Archaeology Wales on behalf of Pembrokeshire Housing Association during groundworks for the construction of 83 affordable homes on land adjacent to Imble Lane, Pembroke Dock. The work followed the completion of a Desk-Based Assessment, Geophysical Survey and Evaluation, carried out by Archaeology Wales in 2012 and 2013. The work was carried out as a condition of the planning consent. The planning application number is 12/0708/PA and the local planning authority is Pembrokeshire County Council.

The initial phases of archaeological investigation had revealed that the site is located within a landscape of archaeological and historic significance, with evidence of occupation dating from the Mesolithic period onwards. The site itself had been used as an RAF radio station during WW2, and remains of associated infrastructure had been identified during the geophysical survey and evaluation. These remains comprised sets of four square concrete tower bases, onto which wooden radio towers would have been constructed. According to a military map dated to the 1940s, there were eight towers in use in the radio station during the war, two of which were located within the development area. One of these tower bases, plus an additional base that is not included on maps of the station, were identified during the evaluation. Lengths of copper and steel wire, which were also identified during the evaluation, relate to the use of the radio station, providing feeds and earthing for the arrays.

The watching brief was carried out during all ground reduction works on the site, including ground levelling and the excavation of foundations trenches. Evidence for the wartime use of the site was found, comprising the concrete bases of three radio towers (the two already identified plus an additional one) and additional lengths of copper and steel wire. The concrete base of a small building was also identified, adjacent to one of the tower bases. Evidence for the earlier use of the site came from a large dump of bottles and other nineteenth century rubbish found on the eastern side of the site, and a small number of drainage gullies of probable post-medieval date. A small assemblage of post-medieval pottery was recovered from the subsoil.

1. Introduction

In April 2014, Archaeology Wales was commissioned by Pembrokeshire Housing Association to undertake an archaeological watching brief on land adjacent Imble Lane, Pembroke Dock, Pembrokeshire (NGR: SM 9712 0278; fig. 1; AW project number 2053). The archaeological work was undertaken during the groundworks for the construction of 83 affordable houses. Planning permission was granted in November 2012. The local planning authority is Pembrokeshire County Council, and the planning application number is 12/0708/PA.

The requirement for an archaeological watching brief followed a programme of archaeological investigation on the site comprising a desk-based assessment (AW report no.1063), a geophysical survey (AW report no. 1184) and an archaeological evaluation (AW report no. 1184a). This programme of work revealed that the site had been the focus for activity during World War II, with the bases of two radio towers and lengths of copper and steel wire identified together with other evidence for relatively modern activity. As a result, Dyfed Archaeological Trust – Heritage Management (DAT-HM), in their capacity as archaeological advisor to the

local authority requested that an archaeological watching brief was carried out during all groundworks associated with the development.

A Specification (Archaeology Wales 2014) detailing the evaluation methodology was prepared in accordance with the Institute for Archaeologist's *Standards and Guidance for Archaeological Watching Briefs* (IfA 2011) and was submitted to the DAT-HM for comment and approval.

The archaeological watching brief was carried out by Jerry Bond between May and November 2014.

2. Site Description

2.1 Location, Geology and Topography

The site lies on gently sloping south-facing ground 1km to the south-east of the centre of Pembroke Dock, at around 47m AOD. The site is bounded to the south and west by Imble Lane, to the north by a cricket ground and to the east by hedgerows separating it from adjacent fields. The site was under pasture prior to the commencement of the development.

The south-eastern side of the site lies on Devonian Conglomerate whilst the north-western side lies on Silurian Sandstone.

2.2 Historical and Archaeological Background

The development site lies within a historically and archaeologically significant area of Pembrokeshire. Sites dating from the prehistoric period to the modern day are recorded within 2km, including several Scheduled Ancient Monuments and a large number of Listed Buildings. Pembroke Castle, the most significant of the monuments within the local area, is clearly visible from the development site.

The Naval Dockyard at Pembroke Dock, located 1km to the north-west of the development area, operated for around 120 years, from the early nineteenth century until its closure in 1926. Following the closure, the dockyard was taken over by the RAF and became home to 210 Squadron. It operated as an RAF base from the early 1930s to the 1960s and was the operational base for the flying boats, both Southampton's and Sunderland's. During World War II Pembroke Dock became the largest operational flying boat base in the world. Associated with the RAF base were a number of military sites in the town, including a radio station located on the site of the proposed development and the cricket club immediately to the north. The modern cricket club building is located within the original transmitter and receiver building.

The radio station operated both UHF and VHF radio transmitters and receivers which supported the flying boat squadrons at Pembroke Dock. A map from October 1944, depicting the military infrastructure in Pembroke Dock, shows the layout of the radio station (fig. 2). It reveals that there were eight radio towers (W/T masts 189-196) on the site, six on the eastern side of the area and two at the northern end adjacent to the road. Two of the towers are located within the development area. The site also contained a number of buildings including the W/T transmitter building, barrack blocks, a recreational hut and a bomb shelter. An aerial photograph of the site, taken in 1945, shows the layout of the radio station at the end of the war (fig. 3). A further image, taken by Group Captain G.A. Bolland at the Empire Air Day in 1939 has a view across the town of Pembroke Dock towards the hill on which the radio station was located (fig. 4). The four radio towers can be seen protruding above the hill, together with a further three larger

towers. An aerial photograph from the 1950s reveals that the site remained operational, with all the radio towers still present, however by 1960 the towers had been dismantled.

The concrete settings that form the bases for two towers were identified during the evaluation (see fig. 5), together with lengths of steel and copper wire. It was anticipated, therefore, that further evidence for the use of the site during the War would be found during the watching brief.

3. Fieldwork Methodology

The aim of the watching brief was to locate and describe, by means of an intensive watching brief all archaeological features that may be present within the development area.

The archaeological watching brief was carried out during all ground breaking works that impacted on the topsoil, subsoil and natural horizons on the site, with the exception of the compound location which had been stripped prior to the arrival of the site archaeologist.

4. Results of the Watching Brief

The topsoil and subsoil strip on the site was undertaken in four phases, corresponding to the different areas of houses (fig. 5).

The work revealed that the topsoil, subsoil and natural were consistent across the site. The topsoil comprised a mid-red brown silty loam (100), up to 0.2m thick. This overlay a mid-red brown silty clay subsoil (101), which contained patches of grey clay and numerous small angular stones. The subsoil was up to 0.3m deep and overlay the natural, which comprised sandstone bedrock except for an area of red glacial clay at the southern end of the site.

Lengths of copper and steel wire, laid on to the surface of the subsoil, orientated north/south, were identified in places on the site during the mechanical stripping.

4.1 Strip 1

Strip 1 was carried out along the northern end of the site, along the fence line separating the development area from the cricket ground and slightly down the western side of the field. It encompassed the western end of evaluation trench 1.

A single feature, comprising an irregular meandering gully [103] 1.8m wide and 0.8m deep was identified running approximately north/south across the western end of the strip area (fig. 5 and 6). This gully contained a single fill of homogenous grey brown clay silt (104) with a high concentration of manganese and iron panning on the interface with the natural. This feature contained no anthropogenic material and is thought to be geological.

On the southern edge of the strip area, adjacent to the western end of evaluation trench 1, four concrete pads associated with a WWII radio tower were revealed, (106), (107), (108), (109). These had been identified during the geophysical survey and the evaluation. The pads measured 2m by 2m and were 1.8m deep, and appear to have been formed by pouring concrete into a prepared hole in the ground (fig. 7). The top of each of the pads was chamfered and had a square depression positioned centrally. Three or four metal bolts had been set into the concrete within the central depression which were presumable used to fix the tower structure to the

concrete base. The pads were positioned 2m apart, east/west and 3m apart, north/south. The eastern two pads were removed during the construction process.

Around 4m to the west of the setting of pads were the remains of a rectangular concrete floor (110). This was not fully investigated as it lay outside the development area, but measured 3.5m east/west and 3m north/south (fig. 8). On the north/east corner of the structure was a concrete step, presumably indicating the location of the entrance. Some traces of wood were found around the outside of the concrete pad, which are thought to be the remains of the walls of the structure. The floor pad is thought to be the remains of a small hut associated with the adjacent radio mast.

No further features of archaeological interest were identified within the area of strip 1.

4.2 Strip 2

Strip 2 covered the ground along the south-western edge of the field, immediately inside the boundary hedge along Imble Lane.

A linear gully, [120], was identified running eastwards from the inner edge of the hedge (figs. 9 and 10). It was revealed for a total length of 5m but probably continued further to the east. The gully was V-shaped in profile, 0.48m wide and 0.25m deep and contained a single grey/brown silty clay fill (119). This gully was cut by a north/south orientated linear gully, [122], located on the western side of the strip area, close to the inner edge of the hedge (figs. 9 and 10). Linear gully [122] was revealed for 12m but is likely to extend further to both the north and the south. The gully was U-shaped in plan and measured 0.3m wide and 0.12m deep, and contained a single yellow/brown silty clay fill (121). Both gullies are thought to be related to drainage, probable field drains. No dating evidence was found in either gully, but they are thought to be possibly medieval in date as they were overlain by a subsoil containing post-medieval and modern pottery (not retained).

No further features of archaeological significance were identified within the strip area.

4.3 Strip 3

Strip 3 covered ground on the south-eastern and eastern side of the site, immediately inside the field boundaries. It was located immediately to the south of an area of boggy ground.

Two field drains, [124] and [126], were identified at the southern end of the site, to the south of the area of boggy ground. The field drains were parallel to each other, orientated roughly north/south and positioned 3.5m apart (figs. 5 and 11). Field drain [124] was 0.6m wide and revealed for a total length of 7m. It contained a single stone fill, (123), the upper surface of which produced a sherd of green glazed post-medieval pottery. The drain was not fully excavated. Field drain [126] was V-shaped in profile, 0.5m wide and 0.5m deep, and was revealed for a total length of 7m (fig. 12). The drain contained a single grey/brown silty clay with occasional stones, (125). Both drains are thought to be fairly modern, dug to drain the boggy area in the central southern part of the site. The sherd of post-medieval pottery is residual, probably deriving from the overlying subsoil from which further post-medieval pot sherds were recovered during the watching brief.

On the western side of the strip area, on the eastern edge of the field, a further four concrete pads associated with a WWII radio mast were identified, (115), (116), (117), (118). This set of pads had not been identified in either the geophysical survey or the evaluation. The pads were smaller than those found in strip 1, measuring 1m by 1m, and set 2.5m apart (fig. 13). They all had a similar chamfered top, and three of the four pads retained fittings for the radio mast, comprising two steel L-shaped braces set into the concrete. These fitted around a square wooden post that is thought to be part of the main mast structure. The pads were not fully investigated as they were not disturbed during the development.

An extensive area of dumped waste, including a number of bottles, was identified on the eastern side of the site (figs. 5 and 14). The dump comprised a thick layer of black organic soil, up to 1m deep, which had been covered by re-deposited natural and topsoil. The ground was considered to be contaminated and consequently the materials were not examined in detail before being removed from site, however some bottle fragments were examined and found to derive from a mix of beer bottles and, probably, medicine bottles of late nineteenth early/twentieth century date (fig. 15).

No further features of archaeological significance were identified within the strip area.

4.4 Strip 4

Strip 4 covered much of the central part of the site and included the areas covered by evaluation trenches 2, 3 and 5.

In the south-western corner of the strip area, adjacent to the southern end of evaluation trench 2, the four WWII radio mast concrete pads identified during the geophysical survey and the evaluation were revealed, (111), (112), (113), (114). The pads measured 1.1m by 1.1m, were 0.6m deep and were set 2.5m apart (fig. 16). The tops of the pads were chamfered and had the remains of fittings associated with the radio mast set into the centre of the pad. These comprised two L-shaped metal brackets, set to form a near complete square. The pads were not fully investigated as they were not disturbed during the development.

The ground surrounding the setting of pads contained large quantities of copper wire laid on the surface of the subsoil. This was also identified during the evaluation and is connected with the use of the site as a radio station.

No further features of archaeological significance were revealed in the strip area.

5. Discussion and Conclusions

The watching brief was undertaken after a detailed programme of investigation and evaluation, which revealed that the site was located within a landscape of recorded archaeological significance, and had been used as part of a radio station during the Second World War. The geophysical survey and evaluation had identified the concrete bases for two WWII radio towers, both of which were fully revealed during the stripping of topsoil and subsoil from the site, together with a third, previously unrecognised base. The bases conformed to roughly the same design, comprising four square concrete pads with chamfered tops and the remains of

fixings for the radio tower, set in a square. The largest of the bases, identified in strip 1, was located adjacent to the remains of a concrete and wood structure, thought to be a small hut associated with the radio tower. The base pads revealed in strip 3 retained sizable portions of the fixings that would have held the radio tower in place. These comprised metal L-shaped brackets that were set into the concrete of the pads, onto which were fixed wooden posts. The pads identified in strip 4 had evidence for similar fixings, however the pads from strip 1 had different fixings, comprising an arrangement of three bolts set in a square depression in the top of each pad. The similarities in the arrangements of concrete pads suggests that they were built to serve the same function, namely supporting radio towers associated with the radio station located on the site of the modern cricket ground.

The differences noted in the pads could reflect the presence of different types of towers, or indicate that they were built at different times. Indeed, the cartographic and aerial photographic evidence suggests that the arrangement of towers was different in the pre-war period. The tower that would have sat on tower base 1 is depicted in the 1939 photograph from the Empire Air Day, but not on either the 1945 aerial photograph or the map of the wartime military infrastructure in Pembroke Dock, suggesting that it had ceased to function and been removed in the early 1940s. The 1944 map of the radio station shows that tower bases 2 and 3 were part of a set of 8 W/T masts within the radio station (no's 195 and 196). The bases would have held wooden towers, fastened to the concrete by metal bracings. All of the tower bases were constructed in the same way, with concrete poured into prepared holes dug into the ground.

The lengths of copper and steel wire laid within the topsoil, on a north/south orientation across the site, also relate to the use of the site as a radio station. The copper wires would have functioned as feeds for the arrays, while the steel wires were earths for the equipment (Roger Thomas *pers. comm*).

Evidence for the earlier use of the site was identified in strip area 2, where two linear gullies were identified. Both are thought to be related to drainage on the site. The north/south orientated gully cut the east/west orientated one, demonstrating two episodes of drainage activities on the site. Neither gully produced any dating evidence, however both are thought to be of possible medieval date as they are overlain by a subsoil containing post-medieval and modern pottery.

6. Acknowledgements

Thanks to Jerry Bond for undertaking the watching brief and to the groundworks contractors for their assistance during the site works. Thanks also to Jonathan Cole at Pembrokeshire Housing Association for his assistance throughout the project. Particular thanks to Roger Thomas (English Heritage) and Jonathan Berry (Cadw) for taking the time to talk me through the particulars of wartime radio stations and for providing details about the infrastructure.

7. Sources

- All M-Series Aerial photographs for Pembroke Dock held by the Central Register of Air Photographs for Wales.
- 1944 Record Site Plan, Pembroke Dock (Ref: HDX/945/2). Held at Pembrokeshire Archives

- The Sunderland Trust - <http://www.sunderlandtrust.com/> (accessed 18th March 2015)
- British Geological Survey - <http://www.bgs.ac.uk/> - (accessed 18th March 2015)

APPENDIX 1

Context Register

Context Number	Context Type	Description
100	Deposit	Topsoil
101	Deposit	Subsoil. Mid red/brown silty clay
103	Cut	V-shaped gully, 1.8m wide, 0.8m deep, orientated N/S
104	Deposit	Grey brown clay silt with manganese and iron pan at edges. Single fill of [104]
106-109	Structure	Concrete bases of radio tower 1.
110	Structure	Concrete floor of small building measuring 3.5m by 3m.
111-114	Structure	Concrete bases of radio tower 2.
115-118	Structure	Concrete bases of radio tower 3.
119	Deposit	Grey brown silty clay. Single fill of [120]
120	Cut	V-shaped linear gully, 0.48m wide, 0.25m deep, orientated E/W
121	Deposit	Yellow brown silty clay. Single fill of [122]
122	Cut	U-shape linear gully, 0.3m wide and 0.12m deep, orientated N/S
123	Deposit	Modern stone fill of [124]. Sherd of PM pottery found in upper fill.
124	Cut	Linear field drain, 0.6m wide
125	Deposit	Grey brown silty clay with occasional stones. Single fill of [126]
126	Cut	V-shaped modern field drain, 0.5m wide and 0.5m deep

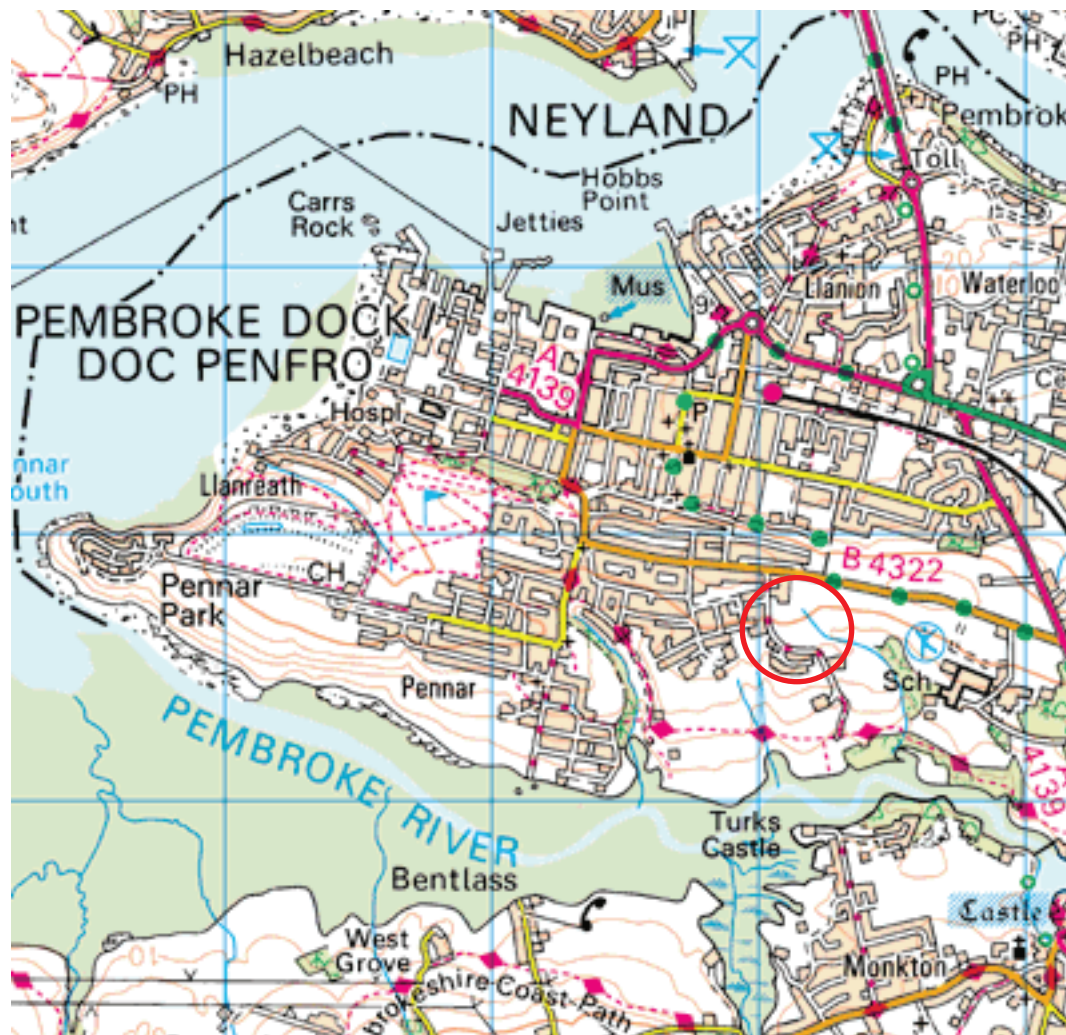
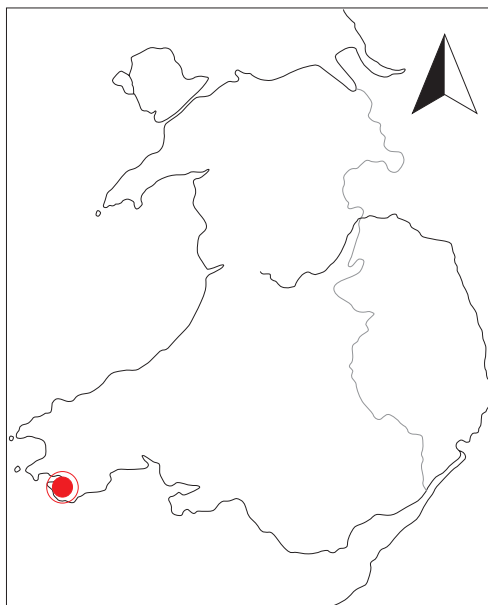



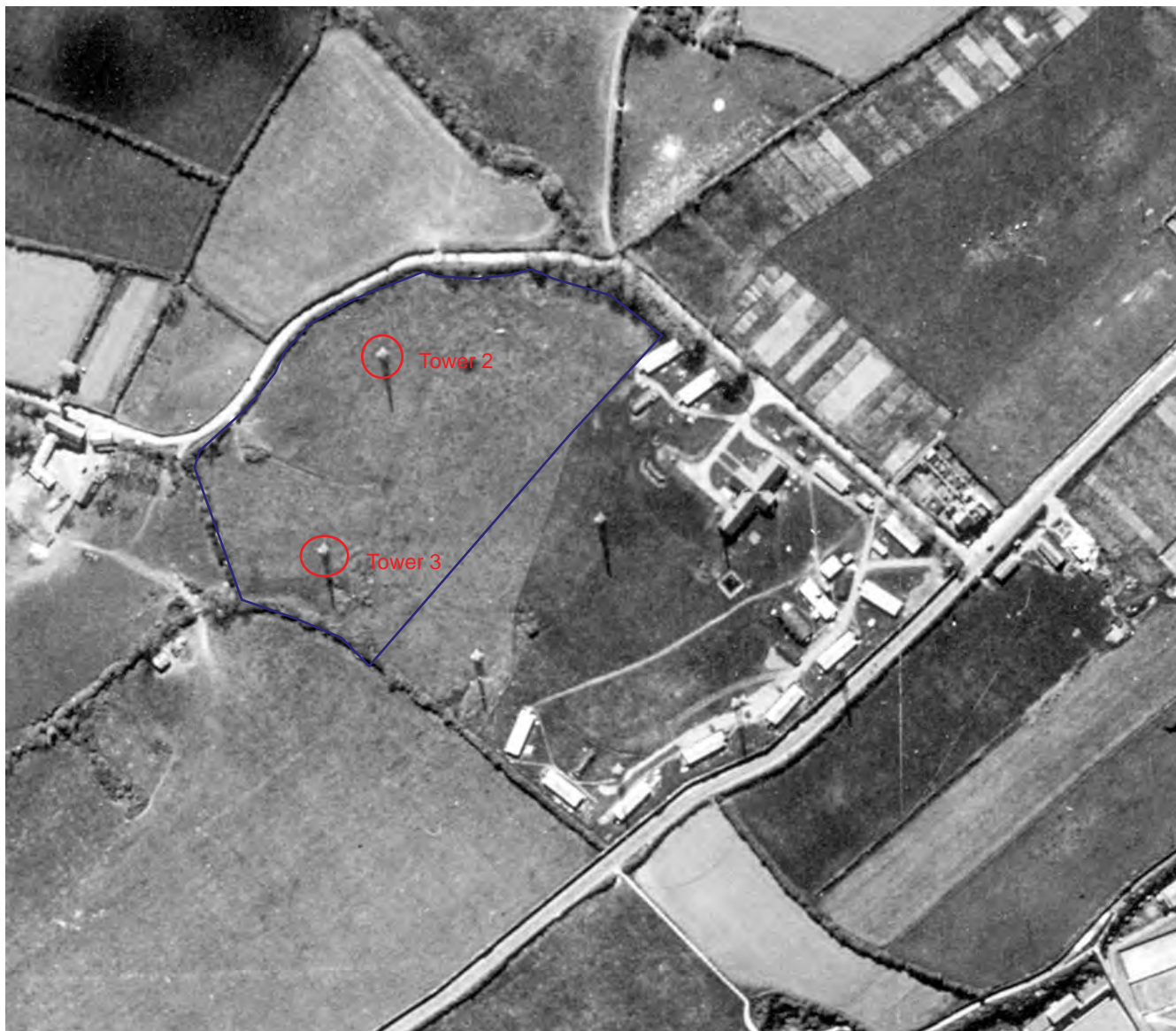
Fig. 1
Location of
site



 Tower bases identified during archaeological WB

SITE No. 2.			
171.	GUARD HUT.	H.	2751. 44
172.	CYCLE SHELTER.	T.	-
173.	LAUNDRY BLOCK.	T.B.	2751. 44
174.	W.R.F. BATHS, SHOWERS, H.B.L.'S & LATS.	T.B.	Do.
175.	RECREATION HUT.	T.B.	Do.
176.	W/T, TRANSMITTING BLOCK.	R.B.	3649. 38
177.	FUEL STORE.	T.	10'-0" x 10'-0"
178.	W.R.F. LATRINES & DRYING ROOM.	T.B.	2751. 44
179-185.	Do. QUARTERS & NIGHT LATS (NO 6)	T.	O. R.'S.
186-187.	W/T. HUTS.	J.I.	-

Fig. 2
Extract from a 1945 map of the military infrastructure in Pembroke Dock showing the layout of the radio station.





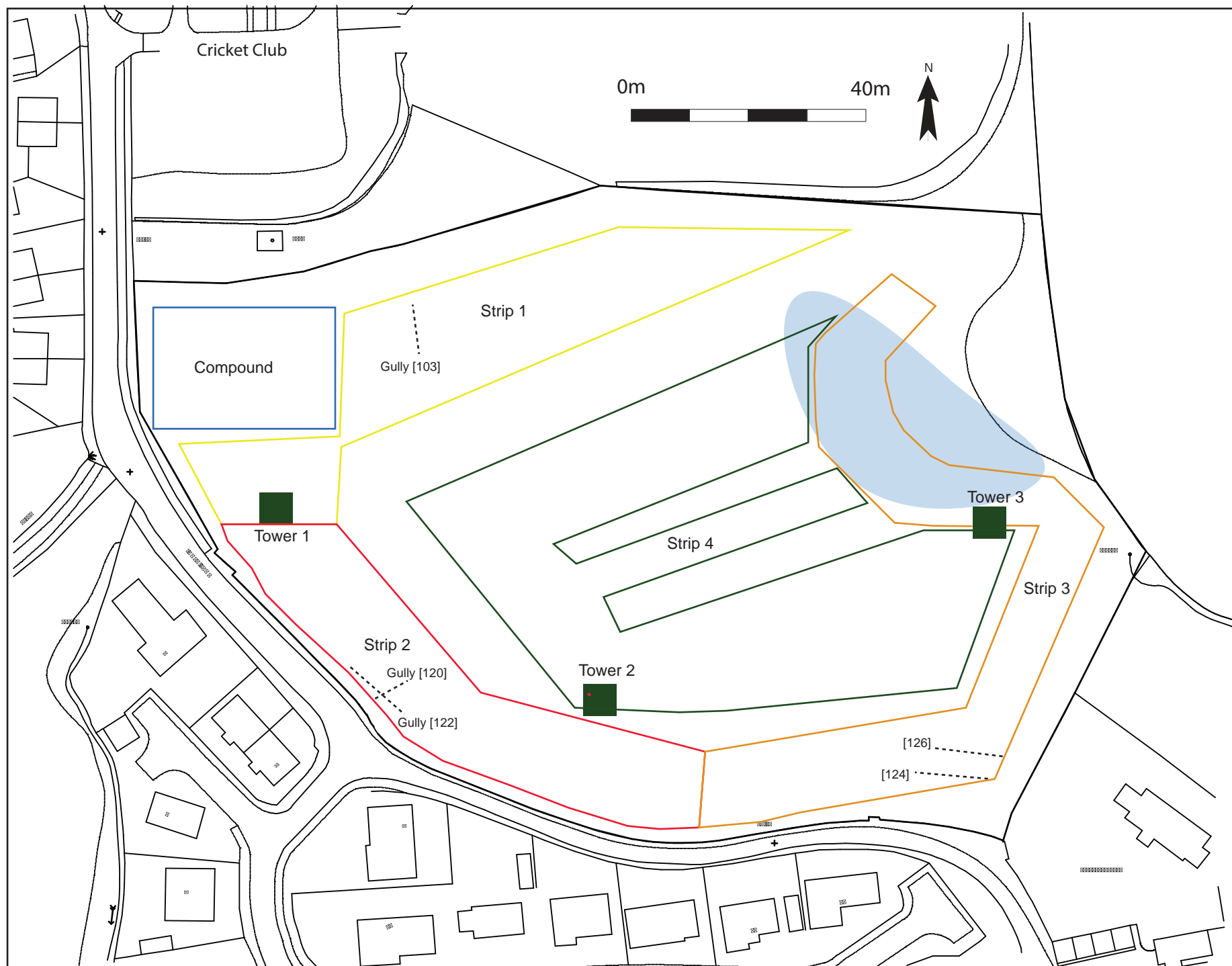
-  Development site boundary
-  Aerial tower bases identified during WB

Fig. 3
RAF aerial photo
from 1945 showing
the layout of the
RAF radio station



Fig. 4
Image from 1939
showing the radio
towers on the hill
above Pembroke
Dock
(c) The Sunderland
Trust



Approximate area of nineteenth century bottle dump

Fig. 5
Strip areas on the development site showing location of features identified



Fig.6
Geological feature
[103] identified in
strip area 1

Looking N
Scale = 2m



a. Looking NW
Scale = 2m



b. Detail of concrete blocks
Scale = 1m

Fig. 7
Tower base 1



Fig. 8
Concrete floor
adjacent to tower
base 1 (circled in red)

Looking NE
Scale = 2m



Fig. 9
Gullies [120] and
[122] within strip
area 2

Looking N
Scale = 2m and 1m



a. Gully [120]
Scale = 0.5m and 0.3m



b. Gully [122]
Scale = 0.3m and 0.1m

Fig. 10
Sections through
gullies [120] and
[122] within strip
area 2



a. Drainage feature [124]
Scale = 2m and 0.5m



b. Drainage feature [126]
Scale = 2m and 1m

Fig. 11
Drainage features
[124] and [126]
identified within
strip area 3
Looking SE



Fig. 12
Section through
drainage gully [126]
identified within
strip area 3

Looking SE
Scale = 1m and 0.3m



Looking E
Scale = 2m

Fig. 13
Tower base 3



Fig. 14
Victorian dump
deposits across
the eastern half of
the site

Scale = 2m and 1m



Fig. 15
Sherd of pottery
and bottle fragment
from dump of
nineteenth
century waste on
eastern side of the
site



Looking SE
Scale = 2m

Fig. 16
Tower base 2

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