

THE MILITARY HERITAGE OF SOUTH WALNEY

ARCHAEOLOGICAL SURVEY AND RECORDING ON WALNEY ISLAND, BARROW-IN-FURNESS



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1. INTRODUCTION

This report details archaeological survey and recording in the area of South Walney, Walney Island, Barrow-in-Furness, Cumbria. The survey activity was integral to the training of local volunteers in archaeological recording. A series of recording workshops and survey days were undertaken, where the under-recorded military heritage of South Walney was surveyed.

The area saw military activity since the first decade of the twentieth century, as Barrow was developing as a centre for the manufacture of naval armaments. A fort and batteries were constructed prior to the First World War, when Vickers Armstrong at Barrow were constructing airships, and the town was recognised as being at risk from naval bombardment. The defences were expanded and upgraded during the Second World War, with a renewed focus on anti-aircraft provision alongside the continued defence of the sea-lanes into the port of Barrow.

This activity has left its archaeological mark on South Walney, but prior to this project it remained poorly understood and under-recorded. The work undertaken by local volunteers included a walkover survey, recording the remains of the military infrastructure in the area, and a metric survey of a camp associated with a heavy anti-aircraft battery. An important aspect of this work was a condition survey of the military features, as they are at risk from neglect, decay, and coastline erosion.

The following report discusses the twentieth century military heritage of the Barrow area, provides a baseline assessment from documentary sources, before moving on to discuss the results of the various survey activities.



2. THE MILITARY LANDSCAPE OF MORECAMBE BAY

The military history and heritage of the Morecambe Bay area is extensive. Warton Crag, which commands the approaches to Warton Sands, has the remains of an Iron Age Hill Fort; the Romans established a military outpost at Lancaster, overlooking the Lune Valley (Shotter 2004); and the region is marked by several defensive structures of the medieval period. Foremost of these are Lancaster (work likely started in the 11th Century, on the site of the old Roman Fort); Sizergh Castle (work started in the 13th Century); Piel Castle on Piel Island (built in the 14th Century); and Gleaston Castle (also built in the 14th Century). The post-medieval period similarly witnessed the establishment of new defensive structures in response to contemporary regional tensions and, most importantly, border reiving (cross border raiding involving Scottish and English 'clans'). Known as Pele Towers, examples include those at Levens (first established in the 14th Century but later remodelled as a Manor House in the 17th Century); Arnside Tower (built in the 15th Century), and Wraysholme Tower (work started in the 14th Century). The region remained strategically significant well into 18th Century, particularly during the contemporary revolutionary wars which raged across Europe and North America. In 1778, the town of Whitehaven would even be 'invaded' by elements of the newly formed Navy of the American Colonies, led by John Paul Jones (Callo 2006).

This project, however, was designed to look at the built heritage associated with the more recent militarisation of the area during the First World War, the Second World War and the Cold War. The particular focus for the Headlands to Headspace Project is Walney Island and Cockerham; this report details the results of archaeological survey and recording at South Walney on Walney Island.



Vickers advertisement: Janes Fighting Ships 1914

STRATEGIC SIGNIFICANCE: SEA POWER, AIR POWER, AND THE BAY

The strong influence of the military on the area in the 20th Century was the result of the strategic location of Morecambe Bay. The region's ports offered access to the Irish Sea, and then the Atlantic (crucial to contemporary British sea power, as well as to the maintenance of Imperial control in Ireland) whilst 19th Century developments in transport infrastructure (most notably, the railway) had provided good connections to the industrial zones of South Lancashire, Merseyside and Manchester. New developments in military technology only added further to this strategic significance: with the arrival of military aviation in the first decade of the 20th Century testing sites were needed in areas away from the obvious centres of population. Morecambe Bay was a perfect location, possessing a huge intertidal mudflat already well known to the Royal Navy.

The key company in the area were Vickers (later Vickers-Armstrong Ltd), who were at the cutting edge of naval technology and specialised in warships, submarines, passenger liners and tankers. Vickers, which had been employed by the British Navy to construct warships as early as 1897, contributed substantially to the maritime war effort during both World Wars. Employing 28,000 workers, the shipyard at Barrow delivered a fleet of 64 new submarines for the First World War. During the Second World War Vickers produced 4 aircraft carriers, 2 cruisers, 12 destroyers, 89 submarines, 18 midget submarines, 11 cargo vessels, 2 transport ferries, 10 tank landing craft, 8 motor landing craft, and 6 skids (Johnston & Buxton 2013). In due course, the military significance of the region was recognised by the *Luftwaffe*, with the Furness Peninsula the focus of the so-called 'Barrow Blitz'. Between April and May 1941, 83 civilians were killed, 330 were injured, and several thousand homes were damaged or destroyed. The attack on Barrow station (7 May 1941) even damaged the First World War memorial, which still bears the scars (Mansergh 2015).

Barrow was not just a Navy town: military airpower first arrived in the region in 1908 when the Admiralty, worried about recent German advances, approached Vickers of Barrow with the request for the development of a British airship. The first Vickers (later Vickers-Armstrong Ltd) built Airship was unveiled in 1910, and several more were built in the town by the end of the First World War (Mansergh 2015). Military aviation briefly departed from the town during the interwar period, but returned again not long before the outbreak of the Second World War. As the Air Ministry launched the first part of what would become a massive programme of airfield construction, RAF surveyors descended on Barrow and identified Walney Island as the location for a new temporary airfield. Construction began in 1940, and the airfield took the classic form of three runways crossed to form a giant 'A'. Administrative and accommodation buildings were also of familiar Air Ministry style, including large numbers of Nissen and Quonset huts (Bowyer 1990). Around the same time, similar construction activity was also undertaken at Cark (Nixon 2014). Here too, a temporary airfield was established (Cark had also been used by the Admiralty for airship testing during the First World War).



HMS Indomitable, launched at Barrow, 1940. Image crown copyright.

Both RAF Barrow and RAF Cark exploited the unique resource offered by Morecambe Bay: the tidal mudflats. By the war's end, the Bay had in fact become one giant practice range, for both air to air and ground to air gunnery. At Cockerham Sands, south of Lancaster, aircraft obstructions, consisting of anti-landing poles criss-crossing the area are still visible on air photographs, as is a bombing range marker. At least one practice marker was still present – and visible – within living memory. A single Quadrant Tower (there would have been two originally) still stands on farmland at Cockerham, looking out over the Estuary. These towers were used to measure the accuracy of Royal Naval Air Service trainees flying out of HMS Nightjar at Inskip, in the Fylde.

The airfield at Barrow, meanwhile, was specifically established as a site for air-gunnery training, and the same role was assumed at Cark after initial plans by Fighter Command to use the airfield were shelved following the RAF's victory in the Battle of Britain. At both sites, aircraft of various different sorts were used as 'tugs' (towing targets for air-gunnery practice), most notably Masters and Martinets, whilst student gunners operated from Ansons and, towards the end of the war, Wellingtons. As was the case at many such locations, accidents were not infrequent. On New Year's Day 1945, one Anson flying out of Walney Island was lost in bad weather killing all four crew on board (pilot, instructor and two trainees). By the war's end, thousands of student pilots and gunners had been trained at RAF Barrow (Cunningham 2012).

As a result of the war-time significance of the area, Morecambe Bay also had extensive defence fortifications which make up a major part of the remaining military landscape. In 1940, pillboxes were constructed along the western coast of Barrow from Sowerby, down to the tip of Walney, to provide lookouts in case of invasion from the Irish Channel (Foot 2006). Many pillboxes are still in existence along the coast, although in varying conditions. Possibly constructed for the First World War and modified for the Second World War, three Coastal Artillery Searchlight Emplacements are also still standing on the current golf-course, which once accommodated Fort Walney, which was one of two coastal artillery installations constructed in the area, the other being Hilpsford Fort. Fort Walney was armed with two 6-inch breech-loading Mk. VII guns and was manned by 299 Battery of 256 Coast Regiment until 1943. The battery remained into the post-war period and was used as part of the early Cold War defences, with the observation post used until recently as a Coast Guard station - the building is now derelict. Fort Walney has been extensively redeveloped but some individual characteristics from both installations still remain. Fire-Watchers' posts were made by and for Vickers during the Second World War, two of which survive. Pill boxes also survive in nearby areas, often at points of tactical significance (sited assuming an invasion from the Irish Sea, and heading inland), especially along canals (for instance,

¹ <http://archaeologydataservice.ac.uk/archives/view/dob/>

along the Lancaster Canal, close to Glasson Dock), or at Hornby, near the junction of the Rivers Wenning and Lune (Osborne 2007).

It is likely that many more sites exist; a number of them have been surveyed and recorded as part of the Defence of Britain project¹ and North West Rapid Coastal Zone Assessment². However, the records which have been created and made publicly accessible by the Defence of Britain project are brief and critically difficult to search for and access without specialist knowledge. This project was aimed at recording the military landscape of the South Walney area in greater detail, to ensure the vital recognition and conservation of this national important heritage for future generations.

² <https://www.historicengland.org.uk/images-books/publications/nwrcza-phase2-project-report/>

3. BASELINE ASSESSMENT

Prior to beginning the community-led survey of South Walney (NGR 321956, 461973), an assessment of the existing data on the early twentieth century military archaeology was undertaken. Data was mainly drawn from the Historic Environment Record (HER) held by Cumbria County Council, National Monuments Record (NMR), via Pastscape.org, and the results of the Rapid Coastal Zone Assessment NMP Project.

NATIONAL MONUMENTS DATA

The NMR list seven separate relevant data points for the survey area on South Walney (see figure 1, below). In addition to describing the data extracted from these archives, this section will also indicate whether structures are visible on the ground currently. Where location information may be described as inaccurate as a result of the walkover survey undertaken as part of this survey, a statement on the reliability of the spatial information will be provided (see tables).

The only listed First World War element is the Hilpsford Battery (1429214), which is reported as consisting of military buildings, roads, barbed wire obstructions and coastal searchlights. It was opened in 1915 mounting two 4.7 inch Mk.IV guns and two coastal searchlights for the illumination of shipping. National records further indicate that, having been decommissioned in 1920, it was re-armed in 1940 with two 6 inch naval guns. This has been re-identified in the walkover survey that led to the production of this report, though its actual position is on the very southern beachline some 400m to the south.

Further records are all listed as Second World War in date. The weapons pits (1488315; 1488368) have not been re-identified during this survey due to the level of disturbance from sand dune formation, but are reported as visible on 1985 Ordnance Survey vertical photography.

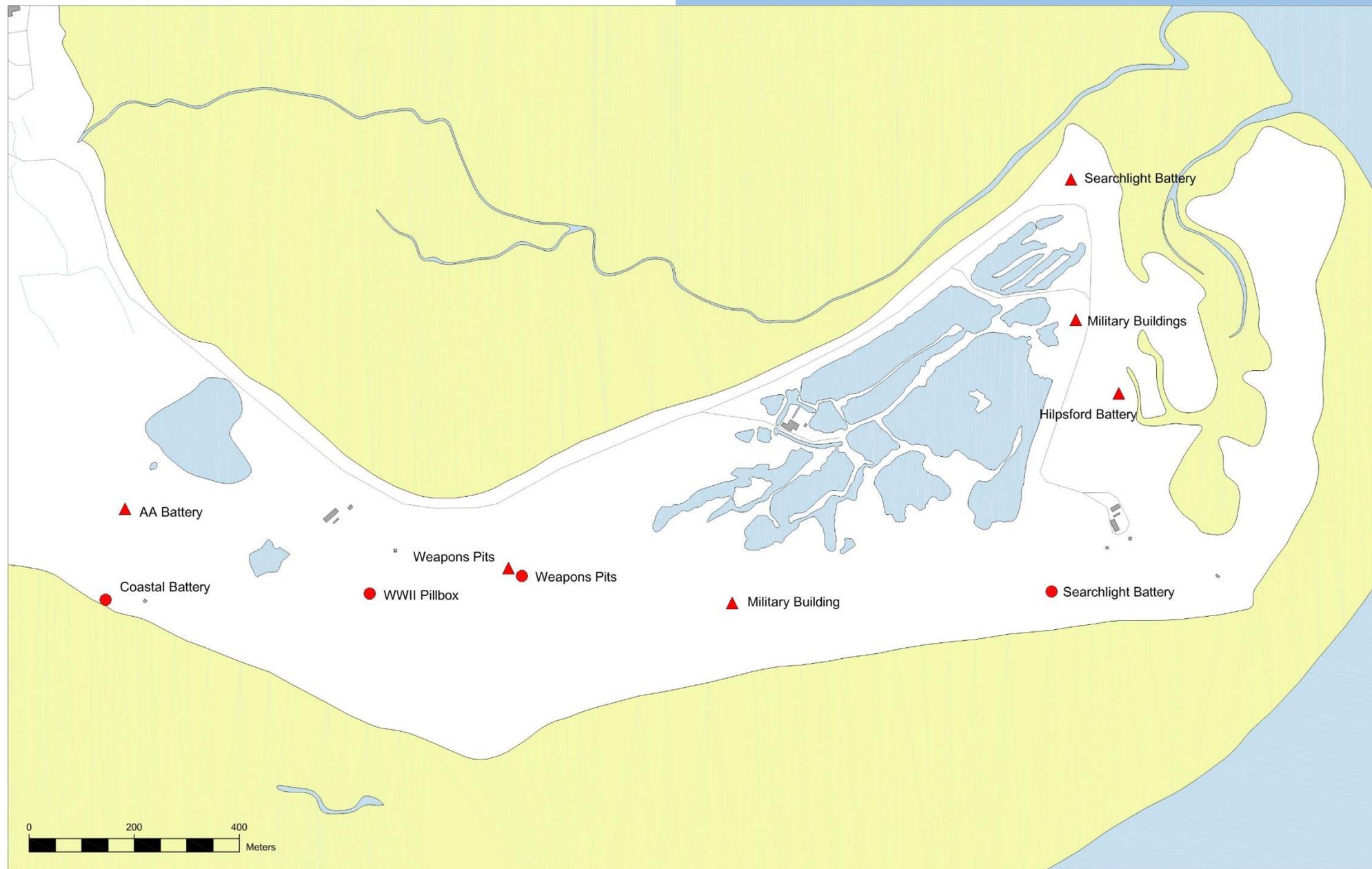
Military buildings are listed in two locations (1488323; 1488264) though their potential uses are not specified. The westernmost point are described as being associated with the Hilpsford Battery to the south. These buildings are not

immediately apparent on the ground, but there are a series of concrete bases in the area some 400m to the south and concrete structures that are more likely to be associated with salt extraction and transport. The eastern data point is similarly enigmatic, with no structures visible on the 1985 OS aerial photographs, though there are a number of concrete bases in the area that may relate to this record if it suffers from poor spatial accuracy.

The searchlight battery (1488364) is listed as a separate construction from the Hilpsford Battery to the south, and appears to be drawn from early aerial photography in 1950, though nothing was visible on later photographs. A concrete base was located during this survey.

The H5 Heavy AA Battery (1471349) at Southend Haws is a series of complex remains, comprising an anti-aircraft battery, a military camp, roads and barbed wire obstructions. Coastal erosion has badly damaged the gun emplacements, and the record lists no surviving remains. This battery and its associated camp were extensively surveyed as part of this project, and details can be found below. The location provided appears to relate to the northernmost limit of the camp, rather than the battery itself, which is on the beach.

| <i>Monument #</i> | <i>NMR #</i> | <i>Name</i> | <i>Location Accuracy</i> |
|-------------------|--------------|--------------------------------|--------------------------|
| 1471349 | SD26SW30 | Heavy Anti-Aircraft Battery H5 | Poor |
| 1429214 | SD26SW15 | Hilpsford Battery | Poor |
| 1488315 | SD26SW22 | Weapons Pits | Unknown |
| 1488323 | SD26SW23 | Military Building | Good |
| 1488354 | SD26SW27 | Searchlight Battery | Good |
| 1488364 | SD26SW28 | Military Buildings | Poor |
| 1488368 | SD26SW29 | Weapons Pits | Unknown |



HER and NMR Data Points at South Walney

- ▲ NMR Data
- HER Data

NMR data taken from Pastscape.org, HER data taken from Cumbria Historic Environment Record. Underlying mapping OS Opendata license

Figure 1: HER and NMR data points drawn from public records

HISTORIC ENVIRONMENT RECORD DATA

Data from the Cumbria Historic Environment Record (HER) relating to the military remains in the area is less extensive than the NMR but appears to be more spatially accurate, the detail provided in the HER entries also tends to be less detailed (see figure 1, above).

The Walney Coastal Battery (19875) corresponds with the Heavy AA Battery from the NMR data, though the location data differs widely. From this survey, the HER data point appears to be more accurate. However, whilst the HER does list this site as an anti-aircraft battery, it provides additional information that the battery was preceded by coastal defences constructed in 1911 by the Lancashire and Cheshire Royal Garrison Artillery.

The pillbox (19847) is listed as associated with the coastal battery (above) but the HER states that no remains are currently visible. However, it could relate to a brick structure identified during the survey, now used as a bird hide, and could have been an observation tower rather than a pillbox.

The searchlight battery (19861) is located at the centre point between the two visible searchlight emplacements recorded during this survey (see below) and as such the location information is accurate. There are no further details on the HER.

The weapons pits (44000) were recorded as part of the Rapid Coastal Zone Assessment and appear to coincide closely with similar location information from the NMR (1488368). The HER lists eleven such pits covering three hectares, dug into the dunes. These were not re-identified as part of this survey due to the difficulty of identifying such sites in the shifting sand dunes.

³ http://www.users.globalnet.co.uk/~rwbarnes/defence/barrow_/walney_/wal7-.htm

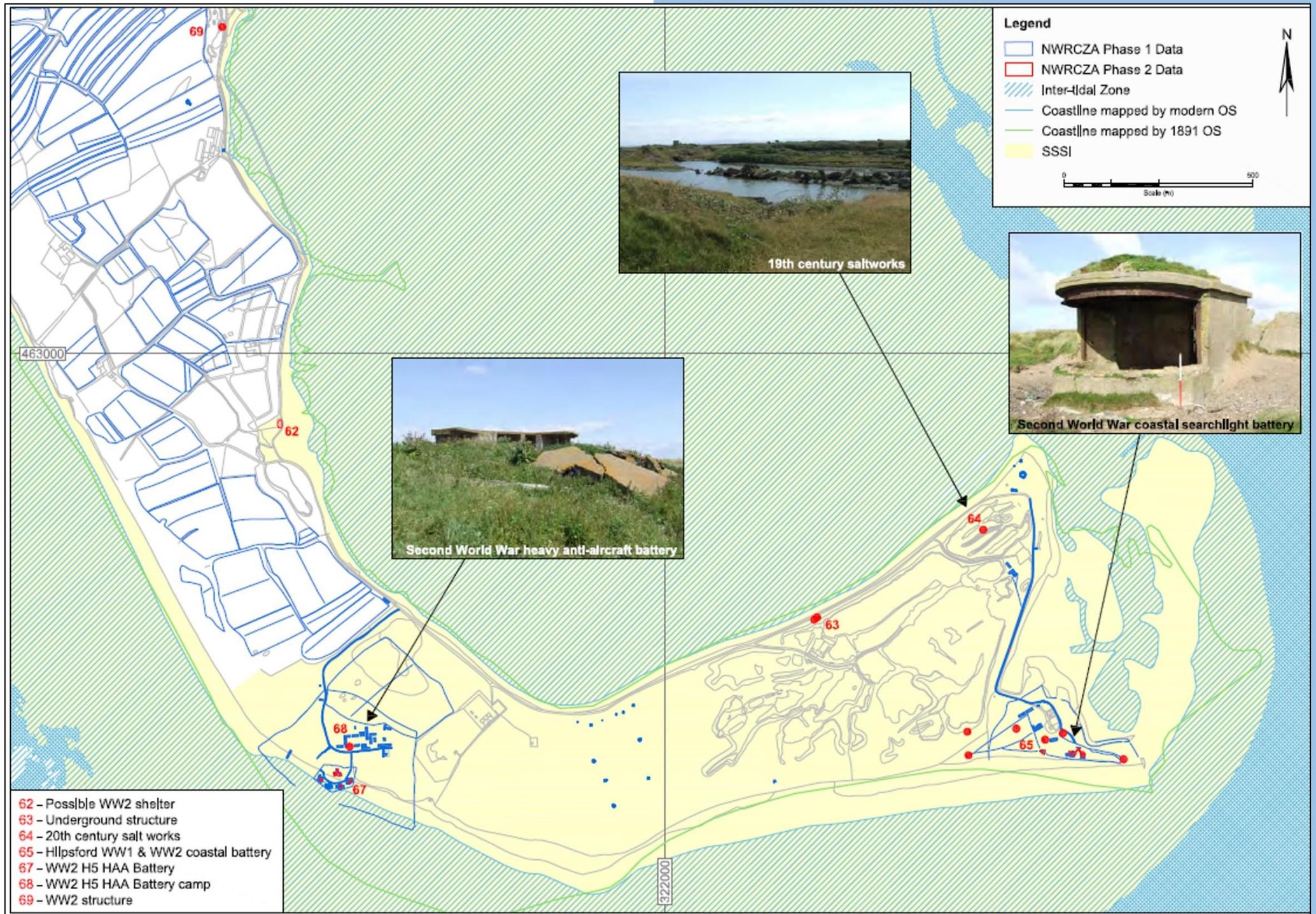
| <i>HER #</i> | <i>Name</i> | <i>Location Accuracy</i> |
|--------------|---|--------------------------|
| 19875 | Walney Coastal Battery, Barrow in Furness | Good |
| 19847 | WWII Pillbox at South End | Good |
| 44000 | South Walney Weapons Pits | Unknown |
| 19861 | Searchlight Battery | Good |

RAPID COASTAL ZONE ASSESSMENT

The Rapid Coastal Zone Assessment found few new sites on South Walney but did provide a useful summary of existing information synthesised with aerial photographic information from 1945. See figure 2 for a summary of the RCZ data from South Walney.

This data clearly displays the regression of the southern coastline around the HA5 Heavy AA Battery, and the recorded extent of the camp to its north. Similarly, military buildings and roads associated with the Hilpsford Battery and searchlight emplacements can clearly be seen.

The 'rapid' nature of the survey means that its results are complemented by the further, more detailed survey work undertaken as part of this project. For example, the most notable absence from the RCZ survey is the well-preserved spigot mortar emplacement identified during this survey, and another located by Richard Barnes³, which could not be relocated – too small to appear on aerial photography and not sufficiently coastal to fall within the purview of the RCZ phase two work.



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Figure 2: Summary map from the Rapid Coastal Zone Assessment (after Eadie 2012)

DOCUMENTARY SOURCES

through this project, a number of documentary sources have been identified to enhance the archaeological record, however, as a volunteer project it is acknowledged that there may be omissions in this record, which could be enhanced through further archive research.

Newspaper archives provide evidence for the pre-First World War planning and construction of defences on Walney Island, but the lack of specific details in many of the articles makes it difficult to ascertain whether it is the Hilpsford Fort or other features that are being planned. It is presumed that the following relates to the construction of the Hilpsford Battery, but in only one case is the southern end of Walney Island mentioned specifically.

The *Manchester Courier* of 7th September 1900 details the expansion of Barrow, mainly as a result of the increase of armaments production in the town, leading to the construction of additional workers housing on Walney Island. This was followed in 1901 in the *Yorkshire Telegraph and Star* on 21st November by calls for defences on Walney to defend Barrow and its industries. The *Sheffield Daily Telegraph* of 18th July 1903 states that the War Office had succeeded in the design of these defences, and that they were to mount 'modern heavy guns'. In 1909 the *Manchester Courier* reports on the 8th January that the Mayor of Barrow was planning to raise two companies of garrison artillery, and the *Yorkshire Post* reported on the 9th March that a site had been chosen for the construction of a fort at South Walney. The following month, on the 6th April, the *Courier* reported that construction of a fort would be beginning later in the year. On the 21st September 1909 the *Yorkshire Post* also reported that two six inch guns would be mounted at the fort.

The final mention of the fort was in the *Lancashire Daily Post*, and relates to the decommissioning the Battery in 1920. The paper for June 25th lists an auction to take place on 29th June at South End, Walney for the sale of the constituent parts of the Hilpsford Battery. Officer's quarters, a cookhouse, ablution sheds, artillery stores, an engine room, reinforcement bars, sheet glass, RSJs, storage tanks and other sundry items were all offered for sale as surplus war equipment.



Plate 1: Aerial view of the Hilpsford Battery, 1943



Plate 2: The camp at the Hilpsford Battery, 1943

Copies of photograph's submitted through Sarah Dalrymple, South Walney Warden, Cumbria Wildlife Trust are shown on the previous page as Plates 1 and 2 and provide some limited photographic reference material for the recommissioned Battery during the Second World War. Particularly interesting are an aerial view of the Hilpsford Battery (plate 1) and the size and extent of the associated camp around the lighthouse to the north of the guns (plate 2). There is scope to undertake further documentary research such as acquiring resources held at the National Archives which may provide further details of the plan and form, in particular of late 19th and early 20th century installations.⁴

⁴ <http://discovery.nationalarchives.gov.uk/details/r/C3271931>

4. WALKOVER SURVEY

INTRODUCTION

The walkover survey was undertaken in combination with training sessions for local volunteers, organised by the Morecambe Bay Partnership through the Headlands to Headspace HLF-funded scheme. Archaeologists from the Morecambe Bay Partnership and Manchester Metropolitan University led the walkover surveys, which were undertaken on four separate instances over the spring and summer of 2016. The aims of the survey were to:

- a) catalogue previously undocumented military archaeological remains
- b) locate known and unrecorded remains with greater spatial accuracy
- c) make a condition assessment of all military archaeology recorded

METHOD

Groups of volunteers were led by a trained archaeologist and surveyed given areas of South Walney on each survey day. Record sheets were provided to each volunteer (see appendix), and any remains that were encountered were recorded on the standard proforma, measured, characterised and photographed. Whilst it was often possible to identify the type of remains encountered, such as gun platforms or searchlight emplacements, it was common to locate undiagnostic concrete blocks or bases that acted as foundations for buildings now lost. In these cases, the remains were recorded on the assumption that they *may* relate to First or Second World War structures, and were therefore worth documenting.

In addition, particularly well preserved or characteristic remains were subject to detailed photogrammetric recording. This involved the photography of sites and the use of AgiSoft PhotoScan to align and identify common points between them. This software then creates three-dimensional models of sites using these common points, and textures them using the photographic data. This was undertaken on two sites on South Walney and a newly discovered pillbox in Barrow-in-Furness – see below for the results of this method of recording.



| <i>ID</i> | <i>Type</i> | <i>Dimensions</i> | <i>Description</i> | <i>Condition</i> | <i>Condition Comments</i> |
|-----------|-------------------------|-------------------|---|------------------|--|
| 1 | Searchlight Emplacement | 6 x 4m | Concrete building with steel beams. Steel beam supporting concrete roof at opening. Faces 190 degrees south west. | Very Poor | Concrete spalling, deterioration of steel beams, vegetation on roof. Corroded rear doors. |
| 2 | Gun Base | 7.9 x 5.35m | Sub-rectangular concrete block with central octagonal holdfast - retains 20 in-situ bolts. Associated with similar placement to east and ammo stores to NW. | Fair | Partially covered with vegetation - south edge. Bricks and concrete remains around western side - ?another structure |
| 3 | Gun Base | 11.6m (diagonal) | Rectangular concrete base with pebble inclusions. 1.5m sq raised plinth in centre with 20 steel bolts. In vicinity of two other holdfasts and ammo store. | Poor | Concrete cracked, collapsed on two sides. Two fixings broken, collapsed brickwork visible. |
| 4 | Ammo Store | 1.4 x 3.1m (x2) | Two sunken nissen huts with Y-shaped slit trenches leading to gun platforms. Brick lined trenches. Huts 1.7m below surface. Brick-built, corr. iron roof. Trenches 6.5m in length sloping to surface. | Fair | Overgrown, some collapsed brickwork. Iron roofs in good condition, except near entrances. |
| 5 | Searchlight Emplacement | 4.23 x 4.1 x 1.8m | Concrete searchlight emplacement, shutters still in place. | Fair | Partially buried by sand dunes, shutters in poor condition, has bird hide built on top. |
| 6 | Unknown - Concrete Base | 5.8 x 5.4m | Concrete base with 7+ surrounding concrete breeze blocks, bricks under blocks and on top of base. | Poor | Covered in grass and turf, edges barely discernable. |
| 7 | Concrete Structure | 4.9 x 5.1 x 1.8m | Concrete structure, originally hollow. Built in 6 layers, 2 large bolts visible between bottom 2 layers. Angle bar in NE corner. Rebar on E side. Cast in formwork | Good | Now filled in but structurally sound. Later bird hide built on top, probably contemporary with concrete in-filling (due to difference in quality). |
| 8 | Steel Girder | 0.1 x 0.1 x 0.3m | Steel girder protruding upright from ground, associated with brick rubble. | Fair | Traces of corrosion |
| 9 | Unknown - Concrete Base | 3.8 x 4.6m | Rectangular concrete base, remains of brick wall to north side | Fair | |
| 10 | Gun Base | 3.6 x 2.9m | Rectangular concrete base, with holdfast. 8 visible bolts as mounting point, poss. 12 originally, 30mm in height. Central steel fixing point 90mm in height 50mm dia. | Very Poor | Now at 45 degree angle partially buried. Apparently disturbed by gravel extraction to west. |
| 11 | Concrete Remains | 9.2m (along road) | Variety of broken concrete debris - blocks and fragments, variable quality, some reinforcement visible. Distributed along roadside, unknown function. | Very Poor | Rubble |
| 12 | Exposed Metalwork | | Exposed metalwork debris, poss. assoc. with gun emplacements and ammo stores to west. | Very Poor | Waste |
| 13 | Concrete Base | 2 x 1m | Rectangular concrete base, central fixing point, circle of 10 fixing studs, 55cm from centre. | Fair | |

| | | | | | |
|----|-------------------------|--------------------|---|-----------|---|
| 14 | Concrete Building | 3.7 x 4.1m | Rectangular concrete building with flat roof, breeze block wall protecting entrance. | Good | Now used as storage building |
| 15 | Concrete Building | 3.5 x 3.5m | Rectangular with blank walls. Metal pipe protruding from ground 10m to west, 2cm dia. 1m in height. | Good | Now used as storage building |
| 16 | Concrete Base | 7.8 x 4.7m | Structure outline, brick wall remains on 3 sides. 4th side open facing two separate concrete blocks (2.65 x 1m) with protruding steel rebar. | Fair | Mainly covered in grass, spalling of concrete bases. |
| 17 | Spigot Mortar | 2.3m dia | Rectangular spigot mortar base in circular brick lined gun-pit. | Fair | Metalwork in good condition, bricks somewhat decayed. |
| 18 | Gun Emplacement | 7.8 x 7.8m | Octagonal concrete base with raised corners. 10 visible steel fixings in square, 2 large points. Cinderblock and brick wall fragments and dmg. concrete slab to rear. | Poor | Collapsed brick material, underside of base badly decayed. |
| 19 | Gun Emplacement | 7.8 x 4m (visible) | Octagonal concrete base (0.5m thick), large beach pebble inclusions. 10 visible fixings for AA gun, 2.6m across, damaged cinderblock walling to N. | Fair | Partially buried on beach, but one fixing has nut still attached. Could be displaced from original position further N. |
| 20 | Gun Emplacement | 7.8 x 7.8m | See #18 & #19 | Poor | As #19 |
| 21 | Gun Emplacement | 7.8 x 7.8m | Octagonal concrete base with associated cinderblock and brick storage buildings. See also #18-20 | Poor | Concrete base in reasonable condition, but ancillary structures dangerous and collapsing - no public access due to safety concerns. |
| 22 | Unknown - Concrete Base | 5.8 x 5.4m | Rectangular concrete slab base with cinderblock debris surrounding. | Very Poor | Earthfast block mainly overgrown, very badly damaged. |

RESULTS

The results of the walkover survey are most appropriately categorised based on whether they were newly recorded by this project, or previously known and therefore recorded in more detail. Figure 5 displays the results of the survey (see below, following page). A number of the newly recorded sites are characterised by concrete bases or fragment and therefore cannot be securely identified; however, where possible an attempt is made to integrate them into a scheme for military activity at South Walney.

NEWLY IDENTIFIED SITES

#17 – SPIGOT MORTAR EMPLACEMENT

A well preserved spigot mortar emplacement was discovered on a low rise to the north-east of Hilpsford Fort. It is a brick-lined sub-circular pit, diameter 2.3m, with a concrete pillar in the centre mounting the metal spigot fixture for the mortar. Entry is provided by a gap in the brick lining. It is in excellent condition: the bricks are slightly decayed, but the metal mounting is undamaged and not corroded. See figure 4.

When the ancillary buildings to the south were extant, it is likely that this feature would have formed part of this complex of buildings, constructed to protect the coastal battery from the rear. The location of the emplacement is unusual in that it was designed primarily as an anti-tank weapon with a limited range. It was ill-placed and unsuitable to defend from an attack by sea or to bombard shipping passing up the channel to Barrow, and was similarly not designed to protect from infantry assault.

#6,22 – CONCRETE BASE

A duplication on the survey. A concrete base (5.8 x 5.4m, long axis E-W) surrounded by cinder blocks and brick debris, apparently from damaged walling.

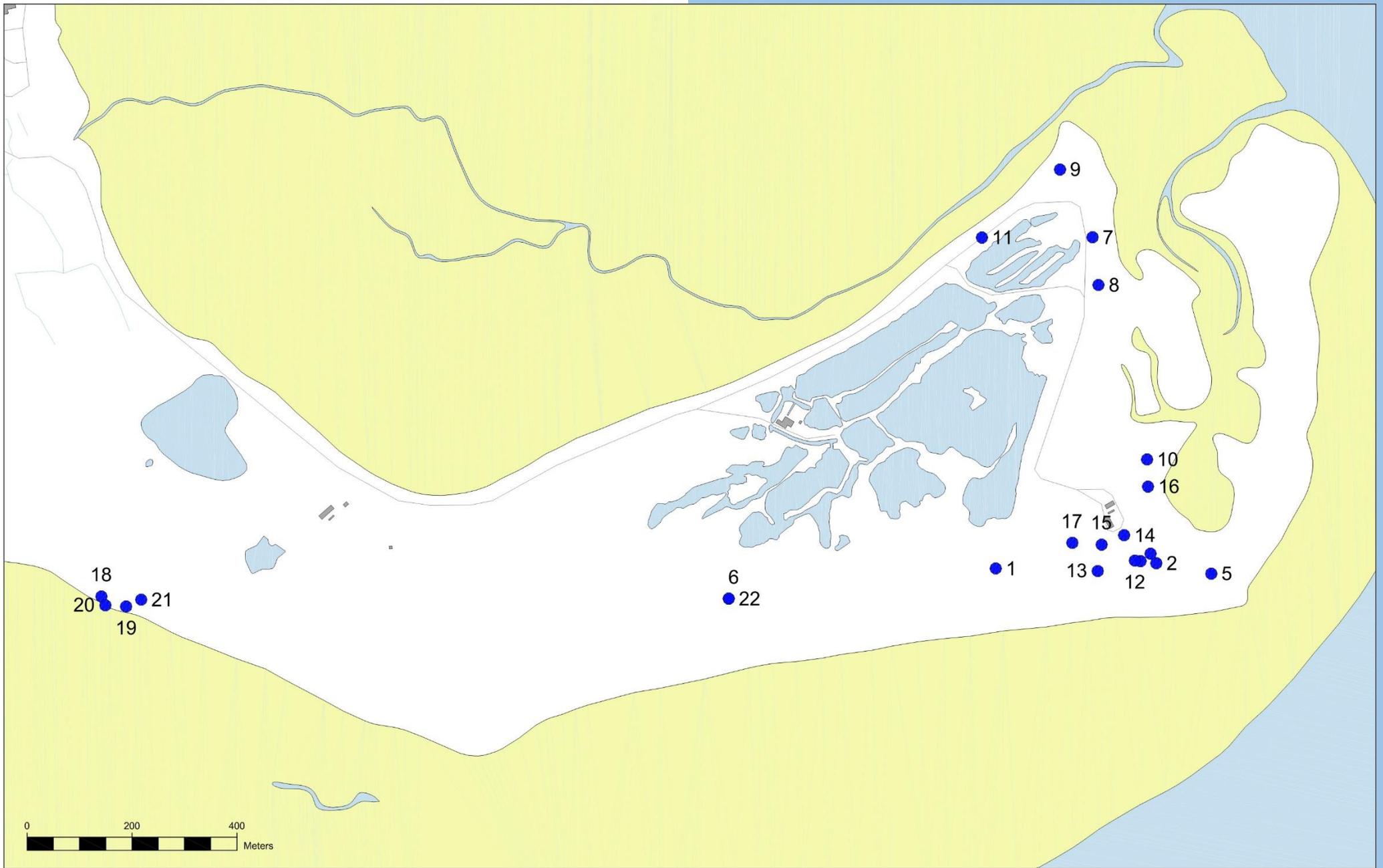
This feature probably represents a concrete raft foundation for a small military building of unknown function. See figure 4.



Figure 3: #17 - Spigot mortar emplacement



Figure 4: #6,22 – Concrete base



Walkover Survey Results at South Walney

Underlying mapping OS Opendata license

#7 – CONCRETE STRUCTURE

A rectangular concrete structure (4.9 x 5.1 x 1.8m) positioned so as to view over the channel to the east of Walney Island. It is constructed from 6 layers of concrete cast in-situ in a formwork, with various metal fittings fixed between the layers. It is now filled with concrete of a demonstrably later type due to its much higher quality, and is surmounted by a bird hide. Whilst it is badly obscured, there appears to have been an entrance to the rear of the structure, perhaps protected by an overlapping wall.

The precise function of this structure is unknown, but given its proximity to #9, which may be the searchlight emplacement recorded on the NMR (1488354), it could represent part of a series of buildings in this area designed to observe the entrance to the channel up to Barrow that runs between South Walney and Piel Island. As it is now infilled with concrete it is impossible to qualify this interpretation, but the concrete from which it is constructed is of similarly low quality to that of other military buildings – relying heavily on a high proportion of beach pebbles in its matrix – this also sets it apart from the concrete used in the construction of buildings related to the gravel and salt workings. See figure 6.

#8 – STEEL GIRDER

A steel girder protruding 0.3m from the ground surface. Of unknown date and function, recorded due to its proximity to #7.

#9 – CONCRETE BASE

A concrete raft foundation base (3.8 x 4.6m) on the north-eastern point of South Walney, 150m north north west of the concrete structure at #7, and constructed from concrete identical to other such bases in the area. Some little evidence of brick walling associated with the base, now collapsed.

Whilst no positive identification of this feature is possible, its location does correspond to that of a searchlight emplacement listed on the NMR (1488354), and it would be well placed for such a feature to sweep the channel between South Walney and Piel Island to the north.



Figure 6: #7 – Concrete structure with later bird hide



Figure 7: #9 – Concrete base

#10 – GUN BASE

A rectangular concrete base (3.8 x 4.6m) with the holdfast for a gun in the centre. The holdfast has 8 visible 30mm diameter bolts, possibly 12 originally, arranged in a circle, with a central 50mm diameter bolt standing 90mm in height. The base is very badly damaged having largely collapsed down the side of a gravel extraction pit to the west. See figure 8.

The type of gun mounted on this holdfast is unknown. It appears to be of smaller calibre than the guns mounted at the HA5 AA battery and those at Hilpsford fort given the smaller mountings. It could therefore be a lighter anti-aircraft position covering the northern side of the Hilpsford fort and the channel up to Barrow.

#11 – CONCRETE REMAINS

A series of concrete blocks and concrete rubble distributed along the edge of the access track to the lighthouse. Of unknown function and origin – included in the survey as it may represent the demolished remains of military buildings.

#12 – EXPOSED METALWORK

Exposed metalwork debris, some earthfast, probably associated with the Hilpsford Fort battery to the east.

#13 – CONCRETE BASE

A rectangular concrete base (2 x 1m) with a central metal fixing point surrounded by a circle of 10 fixing studs, 0.55m from the centre.

Similar to #10, above, this is likely to be a holdfast for a smaller calibre weapon or some form of range-finding instrument. It may be significant that this features is placed broadly equidistant between the two searchlight emplacement #1 and #5.



Figure 8: #10 – Gun base and mounting

PREVIOUSLY IDENTIFIED SITES – HA5 BATTERY

The heavy anti-aircraft battery Southend Haws is listed on both the HER and NMR databases, although with differing levels of accuracy (see Baseline Assessment). As part of this survey project, the gun platforms comprising the armament of the battery were surveyed during the walkover, whilst the remains of the camp behind the battery were subject to detailed metric survey – see following section. There were four heavy anti-aircraft emplacements comprising the battery, and it is clearly visible on 1940s aerial photography – see figure 9.

#18,19,20 – GUN EMPLACEMENT

Three octagonal concrete bases (7.8 x 7.8m) with ten visible steel fixings and two further larger fixing points – 2.6m across. Fixing points are corroded but visible. The bases are approximately 0.5m thick, with a larger central column visible where bases are undermined by coastal erosion. It appears that the concrete was poured into sandbag formers, as the weave of the bags is visibly impressed into the cement. Steel rebar is visible within the formed concrete where it has become damaged. The concrete is low quality and uses beach pebbles in the matrix, presumably extracted from the location of construction.

These three gun bases are surrounded by cinder block and brick rubble that relate to ammunition storage buildings, examples of which are still visible to the rear of gun emplacement #21 (below). All three have suffered due to the regression of the shoreline, leading to their collapse onto the beach, in one case leading to partial burial under the beach pebbles. It is this erosion that has exposed the undersides of the gun platforms. This has badly damaged elements of the concrete foundations and the bases are visibly under threat of fragmentation. See figure 11, below.



Figure 9: Aerial photograph of the HA5 Battery. Barrow Council GIS



Figure 10: #20 – HA5 heavy AA gun base

#21 – GUN EMPLACEMENT

The octagonal gun base on this emplacement is still largely in its original position, though is becoming undermined by shoreline regression. It is otherwise identical to the three others (#18-20). In addition to the base, this emplacement has intact ancillary ammunition storage buildings to the rear (see figure 12). These comprise three cinder block three-sided bays without surviving doors. The roof is a concrete slab, now in bad condition – the area has been closed to access due to the threat of collapse.

3D MODELLING OF THE HAS BATTERY

In addition to the written and photographic record of the battery, photogrammetric recording was undertaken to model one of the gun bases (#20) in order to provide a permanent record of its state of repair. The 3D model that resulted from this recording is fully scalable and can be manipulated to provide a variety of different angles of viewing. Figure 13, below, is a render of the gun base to illustrate the results of the technique.



Figure 13: #20 – Render of 3D model



Figure 11: #20 – Underside of base with sandbag forming visible



Figure 12: #21 – Ammunition storage buildings

PREVIOUSLY IDENTIFIED SITES – HILPSFORD BATTERY

The Hilpsford Battery is recorded on the NMR (1429214) as first established c.1915, see previous section, before re-equipping during the Second World War, when it was associated with ancillary military buildings, roads and barbed wire defences. Much of the camp behind the battery has now been demolished, or in some cases the buildings have been reused as the nearby lighthouse cottages have been converted into residential dwellings. The battery proper is amongst the sand-dunes to the south-east of the lighthouse, and includes two sunken nissen huts connected to two gun platforms by brick-lined trenches. The complex also comprises two searchlight emplacements on the southern beachline, and may also relate to some of the newly recorded features discussed above.

#1 – SEARCHLIGHT EMPLACEMENT

The first of two surviving searchlight emplacements associated with the Hilpsford Battery, comprising a concrete building with three square walls to the sides and rear, and a curved front wall whose arc steel shutters originally followed. The metal shutter tracks are still present though the shutters themselves are not. Approximate dimensions are 6 x 4m by 1.8m in height. The structure faces approximately 190 degree (south-west). There are no significant internal fittings. Concrete rubble to rear apparently represents the remains of a wall covering the entrance to the rear.

The condition of this emplacement is poor. The roof is covered with a depth of soil and vegetation which is visibly straining the steel beam across the curved front opening – its only support in this area. The concrete overall is badly spalled, and the steel rear door is badly corroded. The emplacement has been closed to public access due to the danger of collapse. See figure 14.

#5 – SEARCHLIGHT EMPLACEMENT

The second searchlight emplacement is identical in form to the first (#1) but it differs significantly in condition. In this case the structure has been partially buried by sand-dunes, which has presumably aided its preservation. As a result, it



Figure 14: #1 – Searchlight emplacement



Figure 15: #5 – Searchlight emplacement

is in excellent structural condition, with its shutters still in place. There is a bird-hide placed onto the roof, which was closed at the time of the survey whilst assessments are made to the integrity of this structure. See figure 15. The rear access is now buried in sand, but access to the interior is possible through shutters. The interior is now used for storage and has evidence of concrete spalling and cracking, and suffers from the ingress of roots and moisture.

#2,3,4 – GUN BASES & AMMUNITION STORES

To the west of searchlight emplacement #5 is a complex of features that represent the remains of the battery itself. This comprises two gun bases (#2,3) and a pair of sunken ammunition stores, linked to the gun bases by two trenches sloping up to ground level. The gun bases are two rectangular concrete slabs (7.9 x 5.4m) with central octagonal holdfasts made up of 20 in-situ steel bolts, placed on a 1.5 sq m raised plinth in the centre. The western holdfast is partially covered with vegetation and the eastern is cracked and partially collapsed on two sides. Both are associated with brick and concrete rubble that may represent ancillary buildings or structures. See figure 16.

To the north of the two gun bases is a sunken pair of ammunition stores. These are brick-walled structures with corrugated metal roofs, sunk 1.7m beneath the current ground surface, with the roofline parallel with the ground. Their entrances face one another over a sunken area of trench, they measure 1.3 x 3.1m but are badly overgrown with some collapsed brickwork. The roofs are largely covered with vegetation. It would be prudent to fence this area to prevent unauthorised access, due doubts about their structural integrity. See figure 17.

From the sunken area between the stores two diverging trenches slope up to ground level, leading to each of the gun bases. These trenches are brick-lined and measure 6.5m in length. They are in fair condition, with some collapsed brickwork from the walls, but as the bases are grassed there is no evidence of any features for the transportation of ammunition.

From evidence provided in the NMR (1429214), the battery mounted a pair of six-inch naval guns.



Figure 16: #2 – Gun base with holdfast



Figure 17: #4 – Ammunitions stores and trenches

#14 – CONCRETE BUILDING

A rectangular concrete building with a breeze block wall protecting the entrance, measuring 3.7 x 4.1m. In good condition, now used for storage by the occupant of domestic dwellings at the lighthouse. See figure 18. It is likely that this building is a survival, in addition to #15 to the west, of the ancillary buildings associated with Hilpsford Fort.

#15 – CONCRETE BUILDING

A concrete building to the west of #14, in similarly good condition and now used for storage. It is square with blank walls, measuring 3.5 x 3.5m, and has a blank protecting wall in front of the door. 10m to the west is a single metal pipe protruding 1m from the ground.

#16 – CONCRETE BASE

Within the area previously covered by Hilpsford Fort is a concrete base 7.8 x 4.7m in size. There are remains of brick walls on three of the sides, with the fourth apparently open, facing two further small concrete bases (2.65 x 1m) with protruding steel rebar. The base is somewhat overgrown with grass and there is evidence of concrete spalling. The steel is somewhat corroded. See figure 19.



Figure 18: #14 – Concrete building



Figure 19: #16 – Concrete base

5. METRIC SURVEY

INTRODUCTION

In addition to the walkover survey, it was decided that the military camp inland and to the north of the HA5 battery should be surveyed in detail. The remains of buildings are recorded on both aerial photographs (see figure 9) and on modern Ordnance Survey mapping, but no current condition assessment was available prior to this survey. The survey was undertaken in September of 2016, and the remains comprising concrete bases and trackways were badly overgrown with vegetation.

This section will discuss the method of the survey and provide the condition information for each of the recorded features. A detailed survey plan is provided alongside a comparison with OS information.

METHOD

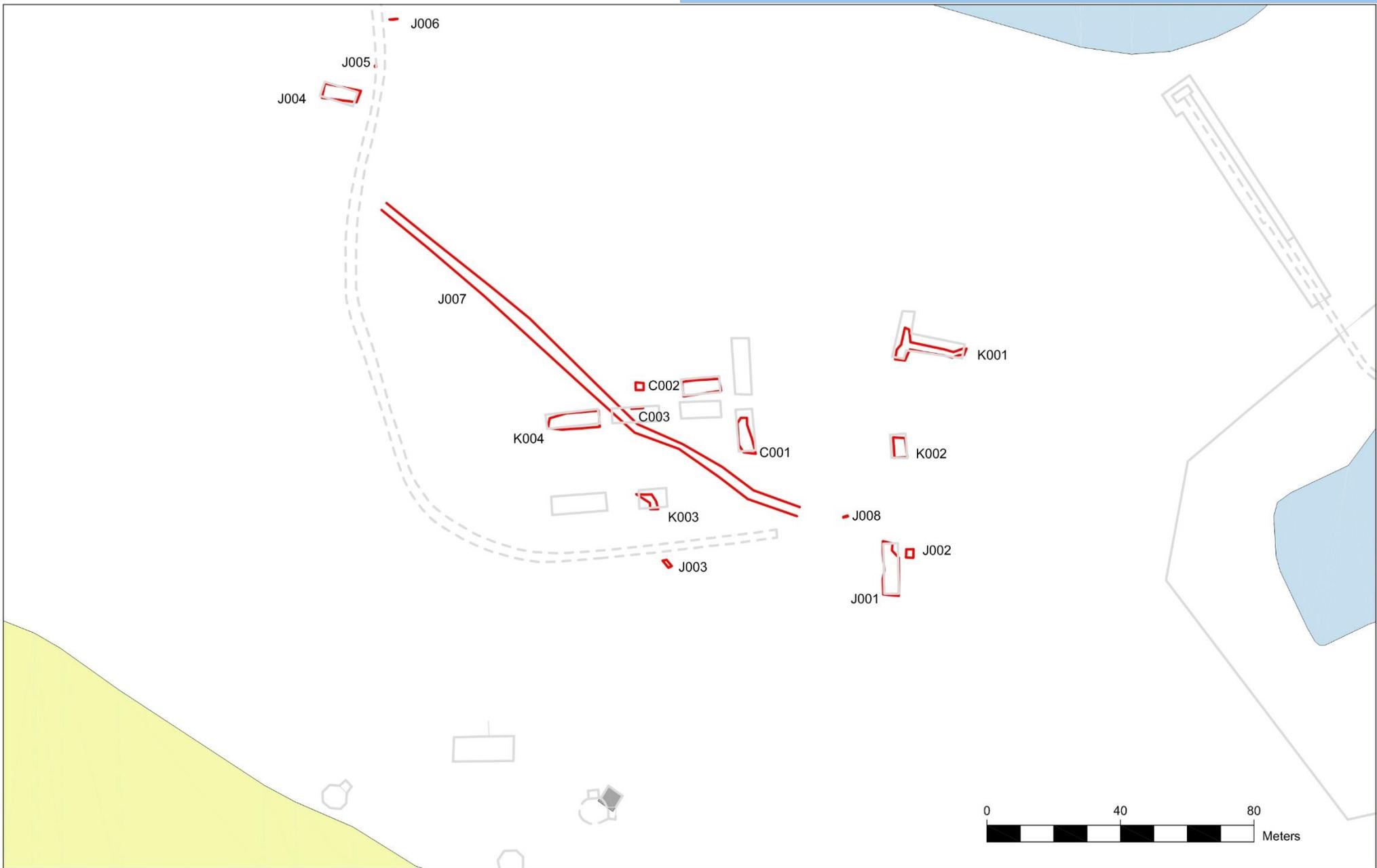
The survey was undertaken using a Leica TS06 total station and infrared reflector. The survey was tied to known Ordnance Survey grid references through post-processing – known points were recorded in the field and later rectified to OS mapping. Any exposed remains that were encountered were recorded in three dimensions in enough detail to record their outline visible above the ground surface. Volunteers on the survey were trained in the use and recording of the equipment whilst undertaking a condition survey of the remains.

RESULTS

The results of the survey are displayed in the table (following page) and the mapping in figure 20. Note the comparative data between the survey results and the OS data drawn from earlier aerial photography as a guide to the declining condition of the remains.



| <i>Size</i> | <i>ID</i> | <i>Description</i> | <i>Condition</i> | <i>Condition Comments</i> | <i>Type</i> |
|-------------|-----------|---|------------------|---|--------------------|
| 6.2 x 4.2m | K002 | Concrete base, beach pebble aggregate. Associated brickwork. | Poor | Badly obscured by vegetation. | Concrete Base |
| Varies | K003 | 3 areas of visible concrete blocks. | Very Poor | Badly obscured by vegetation. | Concrete Base |
| 9.5 x 4.8m | K004 | Concrete base in two sections, 25cm thick, pebble aggregate. Evidence of postholes in E, S buried under vegetation. | Very Poor | Cracked, broken, >50% covered in vegetation. | Concrete Base |
| Varies | K001 | 9 distinct elements of concrete base, in rough T shape. | Very Poor | Highly fragmented and largely covered by vegetation. | Concrete Base |
| 4.8 x 16m | J001 | Rectangular concrete base associated with two smaller bases 2.5m from S edge. | Poor | Badly obscured by vegetation. | Concrete Base |
| 2.65 x 2m | J002 | 2 Small walls, U-shape in plan, concrete tops, corrugated metal in centre. | Very Poor | Badly damaged structure with elements of roofing in centre. | Brick Walls |
| Varies | J003 | 2 small concrete blocks, 2.5m apart. | Very Poor | Concrete fragments. | Concrete Rubble |
| 11.1 x 4.4m | J004 | Large concrete base | Poor | Damaged concrete base, badly obscured by vegetation. | Concrete Base |
| Varies | J005 | Two sandstone blocks associated with brick rubble. | Very Poor | Fragmentary remains. | Brick Rubble |
| Varies | J006 | Fragments of a concrete base with metal reinforcement | Very Poor | Very fragmentary remains. | Concrete Structure |
| 4m width | J007 | Trackway shown by differential veg growth, brick fragments surrounding, some evidence of underlying tarmac. | Poor | Visible but badly obscured. | Trackway |
| 1.5 x 0.25m | J008 | Sandstone block on track edge | Poor | Fragmentary debris | Sandstone Block |
| 20 x 10m | C001 | Broken concrete base and remains of brick walls | Very Poor | Fragmentary and overgrown. | Concrete Base |
| 10.1 x 5m | C002 | Rectangular base with associated brick wall remains | Poor | Base well preserved but walls fragmentary. | Concrete Base |
| 5 x 8m | C003 | Concrete Base | Fair | Well preserved base. | Concrete Base |



Metric Survey Results at the HA5 Battery and Camp

- 2016 Survey Data
- Ordnance Survey Data (for comparison)

Underlying mapping OS Opendata license

Figure 20: Results of the metric survey

6. ADDITIONAL SURVEY ACTIVITY

INTRODUCTION

During the project, additional information was volunteered by the public on military heritage in the Barrow region. A pillbox was discovered on a construction site in Barrow town centre and the team was invited to record the feature at two stages during construction – on discovery and on total excavation. The pillbox was recorded using digital photogrammetry to create a scalable three-dimensional model of the feature. The full results are to be reported separately.

METHOD

Photogrammetric recording involves the production of 3D models from overlapping digital photographs. These can be used in conjunction with or without scales or geographical control. Photographs can be taken from any angle provided that they overlap and provide full coverage of the feature to be recorded.

Upon completion of the field survey work, photographs were imported in Agisoft Photoscan Professional and subject to the following processing steps.

- 1) Photographs are aligned, their relative positions calculated, and a 'sparse cloud' of points produced. This cloud is built from points that the software identified as common to two or more photographs.
- 2) A 'dense cloud' of points is produced using photographic data of the areas between the known 'sparse cloud' of points.
- 3) The 'dense cloud' is processed to produce a wireframe mesh – a solid 3D model of the site.
- 4) This solid object is then textured using the rectified photographic data.

The solid object produced by this method can be exported in a variety of formats, including industry standard OBJ format for further manipulation or animation, or 3D PDF for wider dissemination. The images produced here are high quality renders of the models, and 3D PDFs can be found in the digital appendices.



Figure 21: 3D render of the pillbox after partial excavation



Figure 22: 3D render of the pillbox after full excavation

7. DISCUSSION

The survey of South Walney was successful in identifying many components of the poorly recorded First and Second World War military heritage of the area. Whilst early twentieth century records provide an outline view of what was constructed, when and why, they are not detailed enough for a comprehensive picture to be formed of the military occupation of Walney Island. Archaeological survey has been useful, not only to identify the remaining defence heritage, but to also qualify the condition in which it survives.

NEW DISCOVERIES AND REDISCOVERIES

Many of the less substantial military remains in the South Walney area have been formally recorded for the first time through this fieldwork campaign. The NMR and local HER records are limited in scope and lack detail – they also often state that many of the features are no longer extant. However, this survey has managed to both locate new features and provide evidence that many of the ‘destroyed’ sites on the NMR/HER do still exist, albeit in much reduced form. An excellent example of this is the searchlight emplacement on the northern tip of South Walney, facing Piel Island across the channel up to Barrow. This was listed on the NMR (see figure 1) but was recorded as destroyed. This survey has identified concrete remains in the area that match the location of the searchlight.

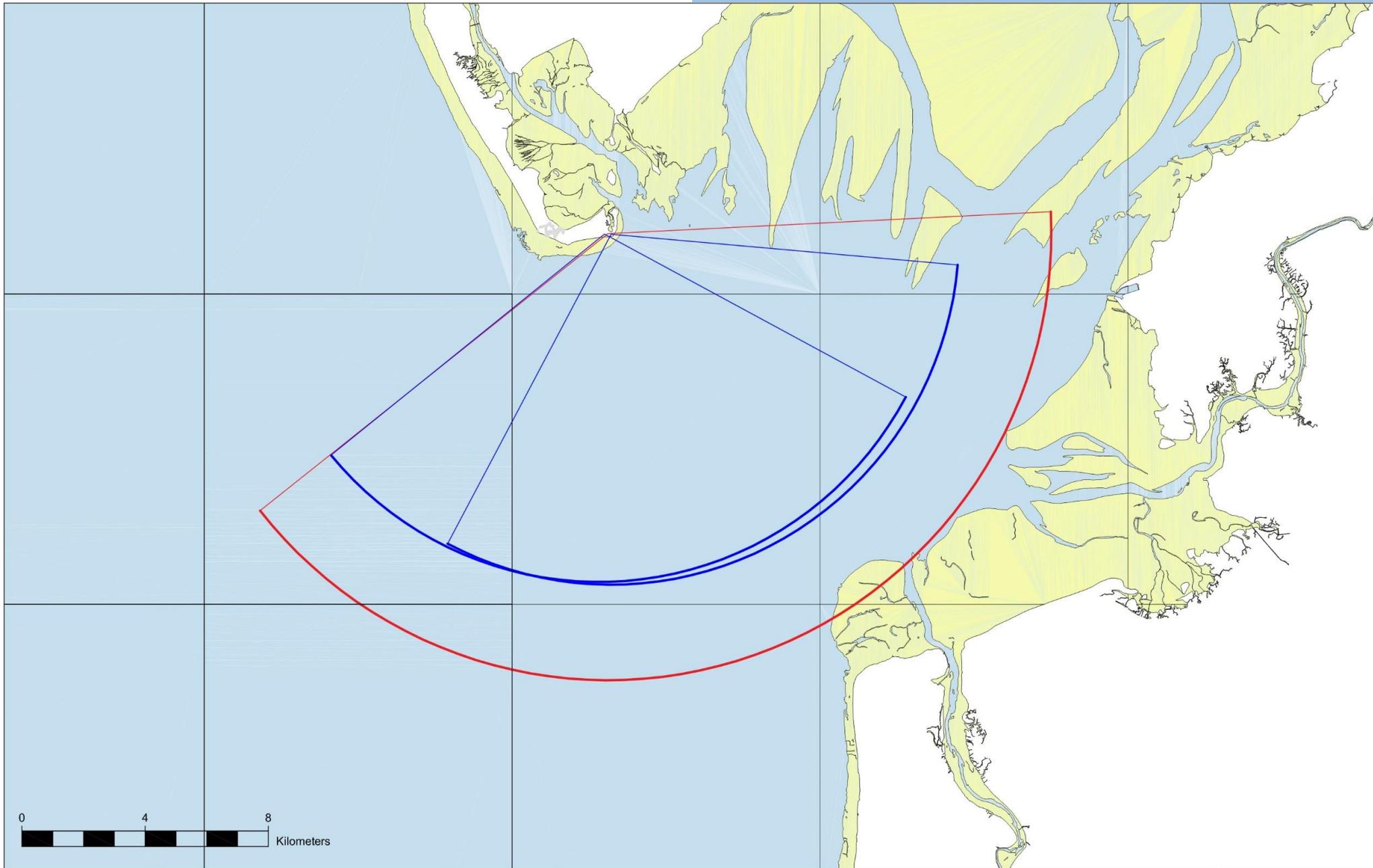
New discoveries are potentially more significant. The very well-preserved spigot mortar emplacement (survey reference #17) is a new find, in addition to the example already identified by Barnes, despite its visible position and recognisable form. Similarly, gun base (survey reference #10) was not listed on any database or the Rapid Coastal Zone Assessment but must, given its location on the eastern shore of the island, been integral to the defence of the approaches to Barrow, either from the sea or the air. Many of the less visually distinctive discoveries also would have been part of the system of defence, observation or military infrastructure of the area, which we know housed a significant number of men and materiel.

BUILDING ON EXISTING KNOWLEDGE

The detailed survey of known sites, such as the HA5 battery and associated encampment, or the Hilpsford Battery adds to our knowledge of these sites, and will help us build more detailed interpretations in the future. An excellent example of this, and an indication of the potential for future investigation, is provided by the plan in figure 23 (following page). Here, the positions of the searchlight emplacements and the guns of the Hilpsford Battery are shown at the apexes of arc roughly approximating their field of fire and the known range of the equipment. The range for the guns is based on the published specifications of Mk. VII 6” naval guns, which we know the battery housed, whilst the searchlight ranges are the distance to the horizon for a light positioned 10m above sea-level (their surveyed height from OS data). Here we see that the position would have been easily able to dominate the sea approaches into Barrow, and indeed protect the entrance to Morecambe Bay as a whole, with its flat sands a perfect potential landing ground for sea-borne invasion. It would be interesting to investigate whether a matching battery could be found to the south, on the coast near Fleetwood, and widen the project to cover the whole Morecambe Bay area.

CONDITION AND PRESERVATION

An important element of the survey work was assessing the condition of the heritage assets that remain at South Walney. Whilst a minority of features survive relatively well, such as the spigot mortar, most are either in poor condition or in immediate danger of collapse. The most significant structures are those most at risk: the HA5 battery is eroding onto the beach and could be badly damaged by the next major storm; the searchlight emplacements are dangerously at risk of collapse; and the buried ammunition stores of the Hilpsford Battery should be cordoned off for fear of collapse and potential injury to the public. The badly damaged features, such as the ‘lost’ searchlight emplacement or the newly discovered gun base (#10) are reminders of how catastrophically concrete structures can fail in the harsh coastal environment. It would be beneficial to fence many of these sites to also limit danger to the public.



WWII Battery and Searchlight Ranges, Hilsford Fort

- Range of Mk.VII 6" Naval Gun
- Range of Searchlights (horizon distance)

Underlying mapping OS Opendata license

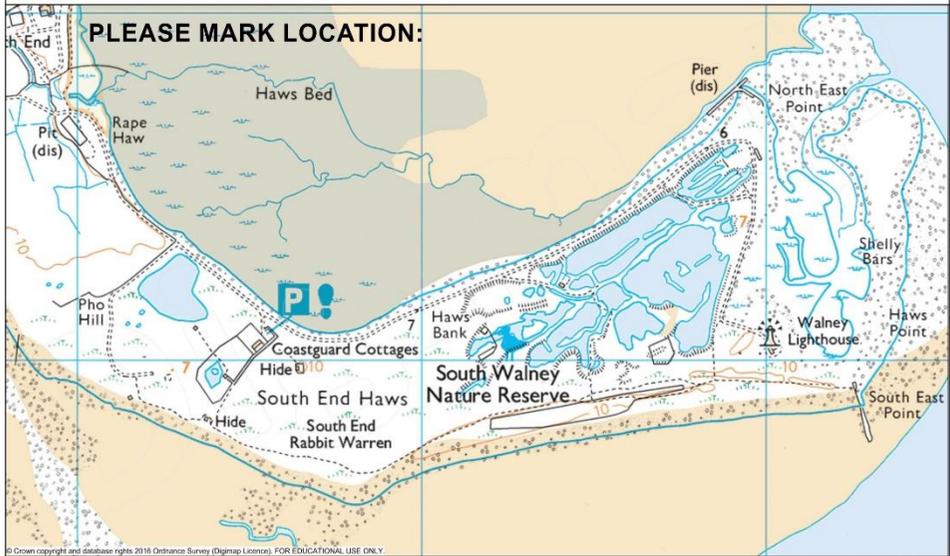
Figure 23: Hilsford Battery ranges

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| RECORDING THE BAY: MILITARY HERITAGE RECORD SHEET | |
|--|------------------------|
| Site Type: | |
| Overall size (largest dimensions): | Name: |
| Basic description (shape, details of form, location, relationships with other features): | Date: |
| | Number of photographs: |
| | GPS Grid ref: |
| Condition (please circle): GOOD FAIR POOR VERY POOR | |
| Comments on condition (what is damaged and how badly): | |



Sketch Plan

| | |
|-------|-------|
| Name: | Date: |
|-------|-------|

| | | |
|--|--|--------------|
| | | North Arrow: |
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