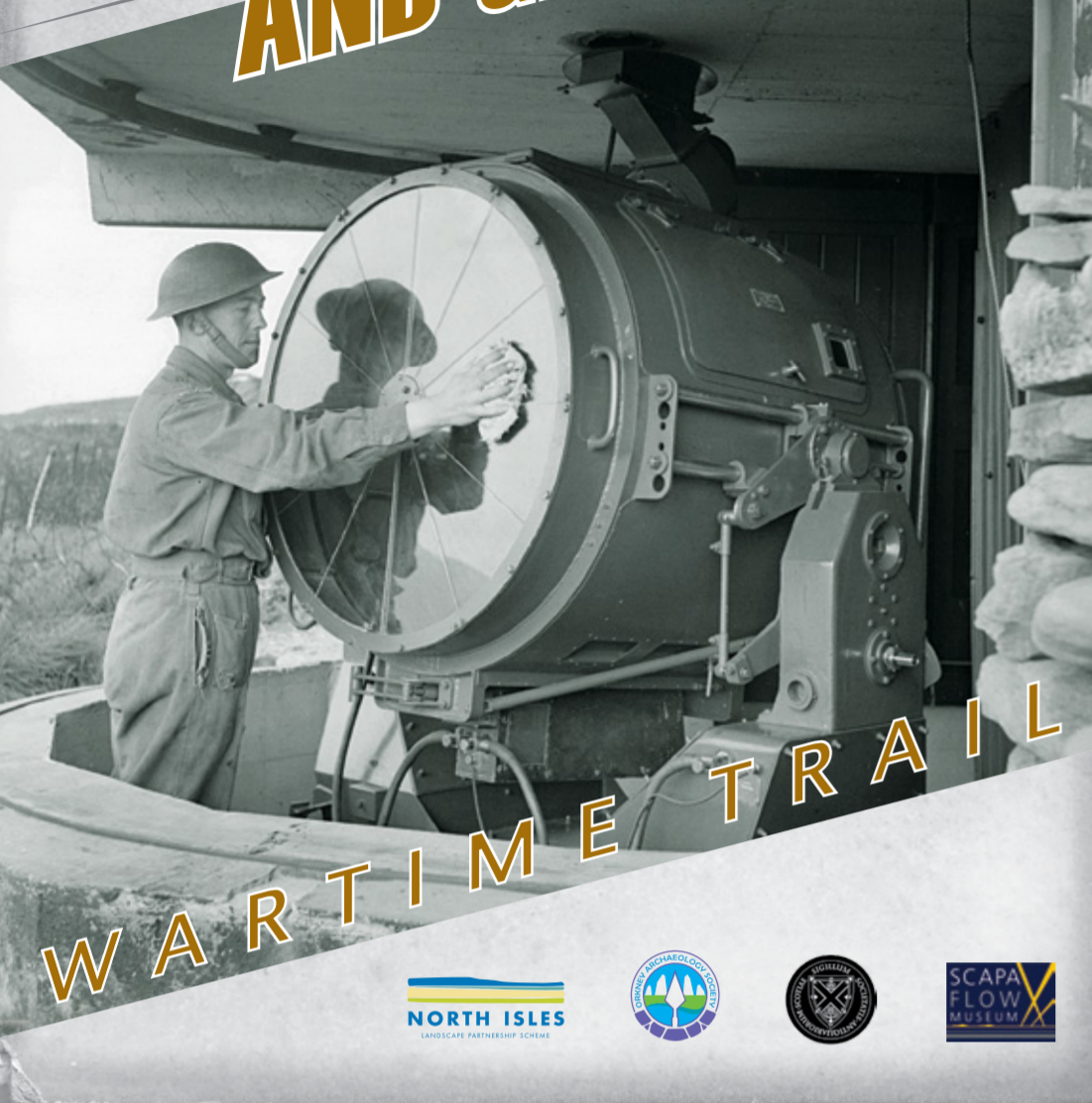
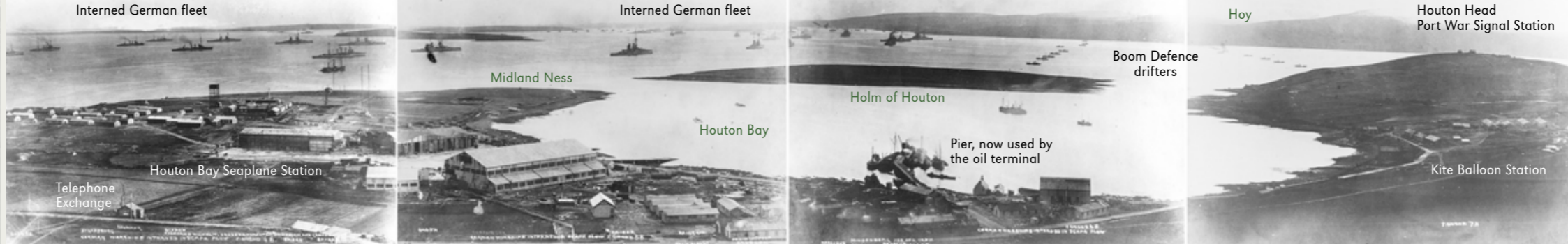




WEST MAINLAND AND GRAEMSAY



WARTIME TRAIL



A panorama of Houton Bay (site 7) from Hill of Midland c.1918-1919. Photos: US Naval History Command Ref. NH 84557-84560 inc.

A Landscape Transformed - the military occupation

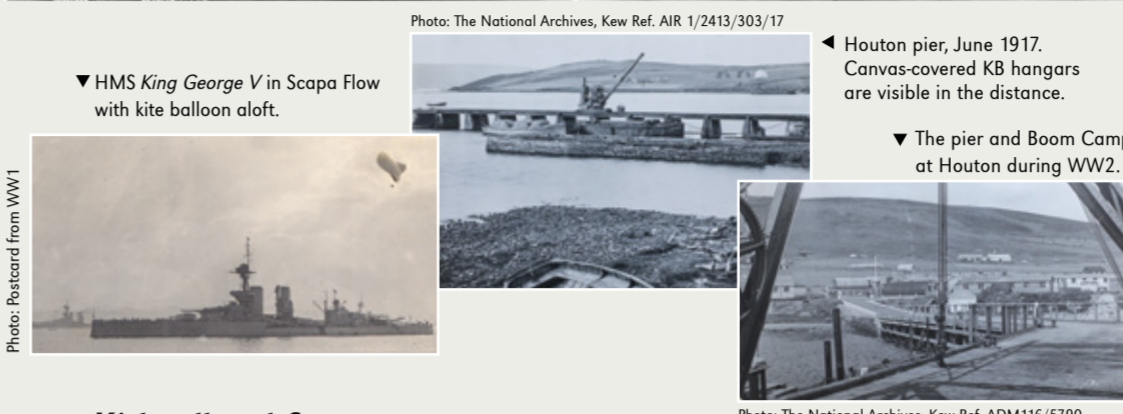
War, and the threat of war, has profoundly affected the physical and social landscape of the Orkney Islands. The sheltered natural harbour of Scapa Flow was the Royal Navy's main fleet base during both World Wars, its strategic importance being largely due the proximity of the North Sea and Atlantic Ocean. The inadequacy of existing defences at Scapa Flow were shown in October 1939, shortly after the outbreak of WW2, when HMS Royal Oak was sunk at anchor (see site 2). A series of air raids followed, including one that almost sank HMS Iron Duke. Consequently, the islands rapidly became one of the most heavily defended and militarised parts of the UK. Homes, hotels and farmland were requisitioned, curfews and travel restrictions were imposed; the resident population of 22,000 islanders was outnumbered by the presence of up to 40,000 military personnel. The landscape was transformed by thousands of structures including roadblocks, command centres, fuel stores, power stations, railways, accommodation huts, gun emplacements, airfields, piers, barrage balloon sites, radio stations and the four Churchill Barriers.

At the end of hostilities most of the armed services departed. Their buildings and installations were demolished, scrapped, repurposed or left to decay. Previously isolated communities remained linked by the Churchill Barriers. The remaining earthworks and concrete structures have become enduring, if accidental, monuments to the military occupation, some of which might last as long as the Neolithic sites for which Orkney is better known.

Few large military installations were purpose-built close to Stromness and Kirkwall, notable exceptions being Links & Ness batteries (site 9), RNAS Hatston (site 1) and this enormous reinforced Combined Operations Block, 'The Black Building', near Towerhill in Kirkwall NGR HY 460 097. Operational from 1944, it housed the RAF Sector Operations Room and a Gun Operations Room that coordinated responses to enemy attacks. It was demolished in 2009.

Cover: Gunner E.A. Leggett clearing a 30cm searchlight near Links Battery, Stromness. Photo: Sgt. C.F. Travis, June 1944. Imperial War Museum H.39420

Photo from 1982 by Paul Francis



HMS King George V in Scapa Flow with kite balloon aloft.

Photo: Postcard from WW1

Kirkwall and Stromness

The sudden arrival of many thousands of military personnel and civilian contractors caused a severe shortage of accommodation, a problem that persisted until mid 1941 by which time most camps were completed; meantime, the military made use of whatever buildings they could requisition. Hotels and large houses became military headquarters and provided accommodation for officers and their staff; lower ranks often found themselves on the floor in agricultural or industrial buildings, such as the Ayre Mills in Kirkwall. Military command and operational control centres, wooden huts, pillboxes and checkpoints became part of the townscapes. Many buildings had radio masts attached, and the Kirkwall Hotel had a signalling lamp installed behind the round window in its central tower. Every pre-war hotel and many of the houses here have a wartime story to tell.

The Church of Scotland Canteen and a NAAFI delivery truck, Kirkwall. This is now the site of the St Magnus Centre car-park on Palace Road.



Photo: Rev. George Allan c.1945 © Biggar Museum Trust GABW14202



Photos: Neil Thain/Aerial Vision Orkney, August 2024

The radar ramp, Smoogro HAA Battery from the west.

Smoogro HAA Battery from the south-west. The semi-sunken command post is in lower RH corner.

5 Smoogro (M4) & Galaha (M3) Heavy Anti-Aircraft batteries

No parking nearby. M4 location NGR HY 371 062 on the track that forks left off Smoogro Road. There were c.25 HAA batteries in Orkney during WW2; M3 and M4 were active from early 1940. The remains of M4 include the command post and an arc of four gun-emplacements, each surrounded by ammunition lockers. The similar site at Galaha has been cleared and is now occupied by domestic properties; in the field opposite are concrete foundations for accommodation huts. About 250m to the south-east at HY 373 061 and visible from Smoogro Road are a concrete ramp and platform for a mobile gun radar, designed to assist with aircraft detection and targeting. Around the platform were hundreds of posts supporting a huge octagonal mat of chicken-wire 120m across and 1.5m above the ground. The performance of early radar was affected by uneven local terrain; the 'ground mat' provided a reference plane to allow accurate calibration. Extensive use of this technology during WW2 caused a UK-wide shortage of chicken-wire.

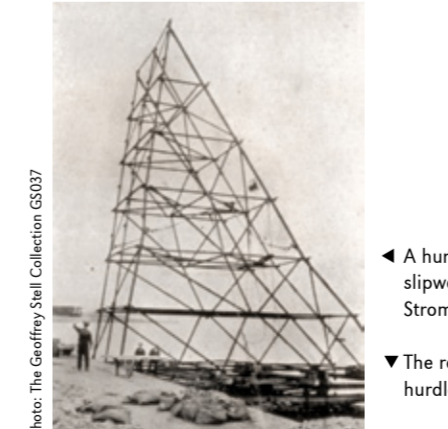


Photo: The Geoffrey Steel Collection GS037

A hurdle on the slipway at Stromness in 1917

The remains of the hurdles after WW1.

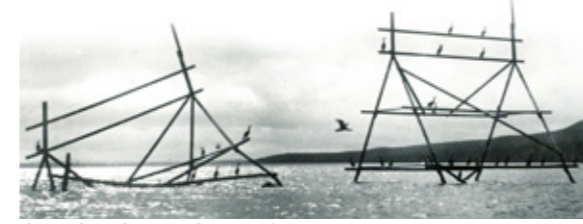


Photo: Orkney Library & Archive L5660/4

6 Clestrain Hurdles

During 1917, the shallow waters of Clestrain Sound were obstructed by a mile-long line of anti-submarine 'hurdles' made of steel rails. They were assembled on the shore at Stromness and transported to the Sound on the bows of an adapted ship from where they were lowered into position. Divers were used to unhook the winch cables, a dangerous task given the strong tidal currents. Each was 30 feet wide and the largest were at least 80 feet high and weighed over 50 tons. After the end of WW1 some of the hurdles were demolished using an ice-breaking ship. An unsuccessful attempt to recover the hurdles was made in the summer of 1940, the plan being to use them to help block the eastern channels into Scapa Flow. Unfortunately, the fixings of the hurdles were corroded and gave way when a floating crane attempted a lift. Parts of the hurdles remain on the sea bed.

7 Houton Bay Seaplane Stations, Midland Ness HAA Battery and Houton Head Battery

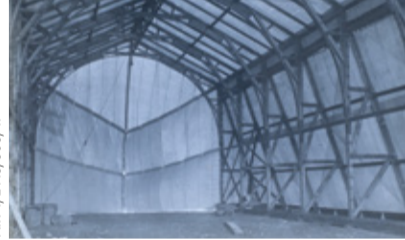
The panorama of Houton Bay, (see above), taken after the end of WW1 shows the scale of military activity here; by 1918, the Bay was home to over 600 service personnel. Construction of a base for seaplanes and flying boats used in anti-submarine patrols began in 1916, including three large hangars, two slipways, a full range of workshops, a wireless telegraphy station and accommodation huts. This was followed in 1917 by the Kite Balloon station equipped with timber and canvas balloon sheds, gas generating plant, workshops and accommodation huts. The balloons were towed behind warships at a height of up to 1000m to provide a platform for observation. Both stations were dismantled and the sites cleared in the early 1920s apart from the pier and telephone exchange; the seaplane slipways were blown up in an Army training exercise sometime after WW2 but remain partially intact.

During WW2, a pair of heavy anti-aircraft gun batteries, a gun-laying radar installation and an accommodation camp were built on the eastern side of Midland Ness; their concrete emplacements and shelters survived until the 1960s when they were demolished and the remains dumped on the shore. At Houton Head, further west, a signal station, anti-submarine boom and coast artillery battery were set up early in WW1. Together, they defended the western entrance into the Fleet anchorage through the Brings Deep. During WW2 the signal station was reactivated, the boom relaid, coast artillery defences updated and an anti-submarine minefield added that was controlled from a shore station. The three searchlight emplacements of the battery are visible along the shore; the remains of the gun emplacements and other technical buildings are further inland. The site is not accessible.

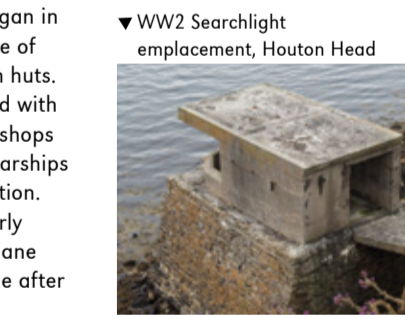
8 Type 22 and Type 25 Pillboxes. Sites 8a-f

Prepared defensive positions, roadblocks and at least 35 reinforced defensive structures known as pillboxes were built across Orkney to defend vulnerable points from attack by parachute troops or commandos landed by sea. Pillboxes were usually of a standardised design; the commonest being the hexagonal Type 22 with walls of concrete or brick about 400mm thick with tapered openings known as 'rifle loops'. There are four overlooking the A967 and Loch of Stenness between Stromness and Hoy (sites 8a-d), constructed in 1939 as part of anti-invasion preparations. Beside the A966 in Finstown (site 8f), on top of what are believed to be the remains of an Iron Age broch, is a cylindrical Type 25 pillbox. Dating from WW2, these were manufactured by the Norcon Co., specialists in the manufacture of concrete drain pipes. They offered minimal protection against gunfire and shell splinters.

Type 22 pillbox at Hatston Quarry Cottage. The Norcon Type 25 pillbox at Finstown.

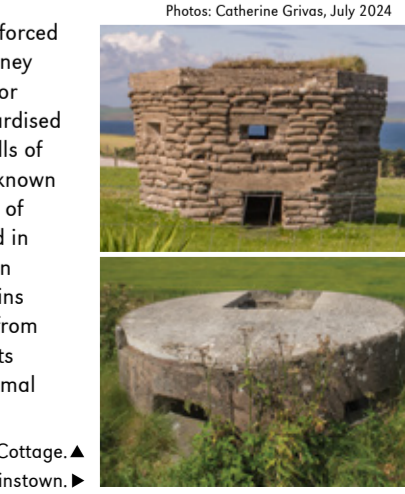


Interior of WW1 Kite Balloon hangar

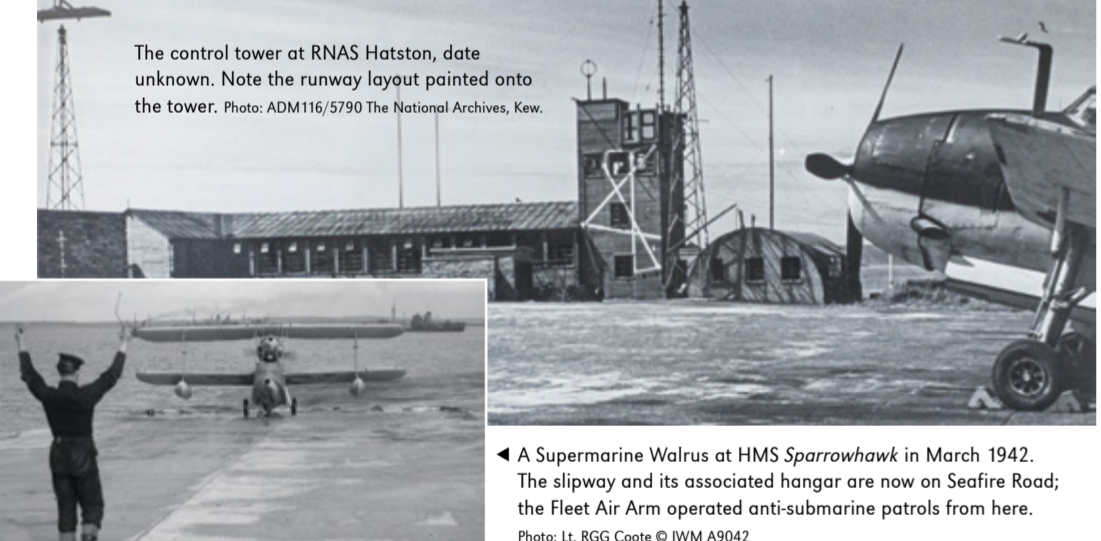


WW2 Searchlight emplacement, Houton Head

Photo: Ian Collins 2018



Photos: Catherine Grivas, July 2024



The control tower at RNAS Hatston, date unknown. Note the runway painted onto the tower. Photo: ADM116/5790 The National Archives, Kew.

A Supermarine Walrus at HMS Sparrowhawk in March 1942. The slipway and its associated hangar are now on Seafire Road; the Fleet Air Arm operated anti-submarine patrols from here. Photo: Lt. RGG Coote © IWM A9042

1 RNAS Hatston (HMS Sparrowhawk)

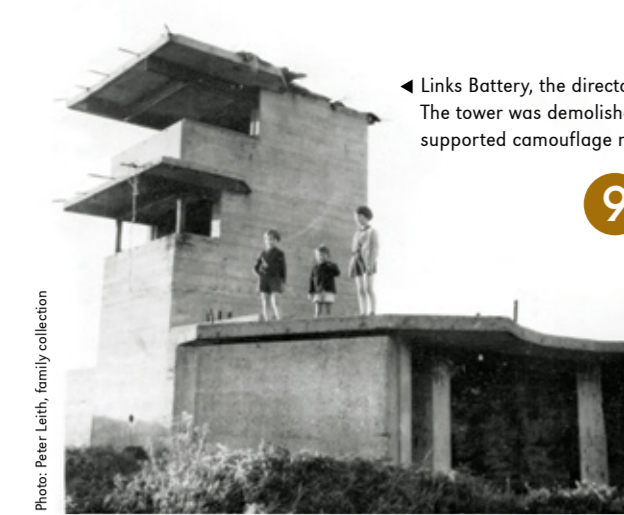
Hatston industrial estate occupies the site of an important Royal Navy airfield that became operational in 1939. It is believed to be the first in the UK to use asphalt runways and in 1942 was home to the first US squadrons to be based in the UK. It was closed in 1948 though many of the sheds and hangars have been repurposed. The main thoroughfare, Grainshore Road, was the longest of the four runways. Remains include the slipway, a corrugated iron hangar on Swordfish Road, air-raid shelters, earth-banked dispersal bays and bomb stores (further information on the HES Canmore website).

2 Scapa Seaplane Station, HMS Royal Oak Memorial and Scapa Pier Oil Tanks

Core path K13. Memorial Garden and hut with display. Picnic spot, beach access and parking. A seaplane base was established here in 1914, though problems with its exposed position led to it being moved to Houton Bay (see site 7), with the Scapa base being used mainly for aircraft maintenance. The base was dismantled in the early 1920's and the officers mess adapted for use as a TB sanatorium. During WW2 there was a large military accommodation camp here. The HMS Royal Oak Memorial Garden commemorates the lives of the 835 sailors lost when the ship was sunk by U-47 on the 14th October 1939. Its wreck, a protected war grave, lies just over 2 miles south by west from here. During WW2, Scapa Pier was used for the inter-island military ferry service. Behind the pier, just across the bay, are nine underground tanks that were built into the hillside during 1940 as the main storage facility for aviation fuel in Orkney. The site has air-raid shelters and a range of ancillary buildings; it is still used as a fuel depot.

Scapa Seaplane Station in 1920. Photo: Tom Kent, Orkney Library & Archive TK80





◀ Links Battery, the director tower and gun emplacement c.1967-68. The tower was demolished in 1969. Note the metal rods that supported camouflage netting.

9 Links and Ness Batteries, Breckness Radar Station and the Gun Viewpoint, Stromness

Core Path WM31 Parking at Point of Ness & Warebeth Cemetery. Information panels. Signposted walk to Gun Viewpoint (Citadel). Guided tours of Ness Battery (see back cover).

In the 1860s, fears of conflict with France led to additional coastal defences being established around the UK (See also 17). Hoy Sound was protected by a battery with two muzzle-loading cannon at Point of Ness, just west of the campsite where one of the gun platforms and a parapet wall remain intact. In WW1 there were three gun batteries guarding the Sound, named Hoy 1, 2 & 3. The remains of No.3 are within the west end of the golf course and can be seen from the road, they include two earth-banked magazines and parts of the three concrete gun emplacements. Nothing remains of No.1 though traces of No.2 can be seen in the grounds of Ness Battery.

Ness and Links Batteries both date from WW2; the engine house, searchlight and gun emplacements of the latter are adjacent to the coast path, though its director tower was blown up by the army during a training exercise in 1969. Ness Battery is largely intact and can be visited on a guided tour.

1.5km further along the coast path, beyond Warebeth cemetery at NGR HY 237 084 are the single storey concrete remains of the Breckness Coast Defence/Chain Home Extra Low radar station that was active from 1942 to 1945. The short wavelengths used by the Type 31 radar equipment here enabled the detection of low-flying aircraft, ships and the periscopes of submarines.

A walk up to Gun Viewpoint offers a fine view of Stromness, Hoy and Scapa Flow. This was the site of a Bofors light anti-aircraft gun in WW2. The path is marked by a signpost on Back Rd. at the junction with Citadel Rd.

10 Bridge of Waithe



This small settlement was extensively damaged in an air-raid by the Luftwaffe on Saturday evening, 16th March 1940. One of its residents, James Isbister, was killed at the doorway of his family home, the first UK civilian to die in an air-raid. His neighbours had narrow escapes and a man walking home suffered serious injury when he was hit by bomb fragments in a field near Quoynamoan. The raid was part of a carefully planned mission to attack airfields as well as ships anchored in Scapa Flow. One of the targets was the disused civilian landing-strip at Howe, to the west of the bridge, which German intelligence had incorrectly identified as a military airfield. A large number of high-explosive and incendiary bombs were dropped, most of which landed in a broad swathe around Housequoy and neighbouring farms either side of the A965, just to the east of Stenness Village.

◀ The A964 road runs across the top of this photograph. Isa MacLeod's home stood at the site now occupied by 'Easkbank'. Illustrated magazine, 20th April 1940. From the collection of Patricia Long

11 RNAS Stenness Seaplane Station, Standing Stones Hotel

This was the third seaplane station to be established in Orkney during WW1. A jetty, slipway, light railway, power house and accommodation huts were built by the shore here in early 1918 as the main base for seaplane operations in Orkney; the hotel was requisitioned as HQ and officers quarters. However, the exposed and shallow waters of the loch proved unsuitable and the main base soon relocated back to Houton (see site 7). The probable site of the jetty and slipway can be seen in satellite imagery.

Stenness Air Station c.1918 Photo: Orkney Library & Archive L5343/4/2



12 Tormiston Camp

HQ Company, 9th Battalion, Gordon Highlanders were the first residents of Tormiston Camp, built in early 1941 to accommodate c.150 men, their task being to defend the area against enemy troops landed by parachute or by sea. What is now a World Heritage Site was often used as a training area for defence exercises. A solitary cement-rendered hut in the field just to the north of Maeshowe (visible from Stonehill Road) is the only remaining sign of military activity; the timber huts of the camp were sold off and foundations removed at the end of the war.

Universal Carriers of the 9th Battalion, Gordon Highlanders, pass between the standing stones of the Ring of Brodgar during a mock attack, 18th June 1941.

Photo: Lt. Taylor ©IWM H10589



13 Yesnaby - The Northern Anti-Aircraft (AA) Range

Car park, coastal walk Core Path WM26 and viewpoint. This was the site of a Royal Navy AA gunnery school opened in September 1941 to provide live firing practice. It was equipped with the main close-range AA gun types mounted on ships of the Royal and Merchant Navy. Fleet Air Arm aircraft, mostly from HMS *Tern* (see site 14), flew along the coast towing airborne targets for the gunners to fire at. The archaeological remains include a long row of mountings and cable conduits for all the different gun types. In a row behind this, from north to south, are a power plant building which had an observation deck and radar gunnery director mounted on the roof, another power plant (once with an attached coal store on the south side) and a magazine faced with stone and partly dug into the ground. On top of the latter stood a timber observation tower and optical range finding equipment. Finally, there is a square brick building with the remains of a radar rangefinder tower on its roof.

The 'ships company' who operated the range endured primitive living conditions in huts to the east of the range. Further afield, there is a flat-roofed building by the roadside, 350m to the east, that housed another power plant. There is also a corrugated asbestos hut attached to the nearby buildings of Forcewell Mill.



Photo: ADM 116/5790 The National Archives, Kew

14 RNAS Twatt/HMS Tern

Parking at the second entrance off Bryameadow Road at NGR HY 259 226. Open access. Guided tours are available (see back cover). This airfield was opened in April 1941 for the Fleet Air Arm. It started as a satellite aerodrome for RNAS Hatston (see site 1), taking squadrons disembarked from aircraft carriers visiting Scapa Flow and was also linked to the Fighter Direction School at Hesta Geo (see site 18). At its peak, over 1800 personnel were stationed here. Remains include the control tower, fire station, cinema, air-raid shelters, hangar bays and pillboxes.

▶ A Douglas Boston bomber passing the control tower. This is a frame from a 16mm colour cine film taken c.1944 by Lt. LS Hill. Photo: courtesy of the Hill Family.



HMS *Tern* looking north-west, A967 road in foreground.

Photo: ADM 116/5790 The National Archives, Kew

15 RAF Skeabrae

This airfield was opened in August 1940 for the Fleet Air Arm before passing to the RAF as a fighter base in early 1941. Aircrew from many countries, including Australia, Canada, Czechoslovakia, France and Norway were stationed here. Skeabrae was decommissioned in 1946. Although most of the buildings were demolished in the 1980s, there are still substantial remains, the most obvious of which are alongside the east side of the A967. The camp cinema is about 750m north of Garson, the brick-built entrance gateposts next to the airfield memorial 100m further on and a Stanton air-raid shelter backing onto a dispersal pen in the field 250m beyond that. After a further 650m northwards you will reach a crossroads. To the left is the large cuboid building at Linklater that was the main power station for RAF Skeabrae and RNAS Twatt; it is now a private residence & workshop. On the right is the minor road to Dounby, 1km along which will take you a point past Swartland farm from where there is a good view of a group of three magazines used for storing boxed ammunition; they have zig-zag blast walls and are probably the best-preserved examples of their type anywhere in the UK.

Accommodation was provided in a camp opposite the cinema and in another on the south side of the Skeabrae to Quoylool road, about 1km from the junction, where two precast concrete air-raid shelters standing in a field are the only visible remains of what was once home for many hundreds of service personnel.



Aerial imagery shows the extent of the site and how the landscape has been marked.
A - Entrance and Memorial **B** - Cinema **C** - Ammunition Magazine **D** - Site of Accommodation Camp
E - Remains of Stanton air-raid shelter adjoining a dispersal pen

Photo: Orkney Library & Archive L5441/3

▶ HMS *Hampshire*. Postcard issued by the Prudential Life Assurance Company of America. Date unknown.

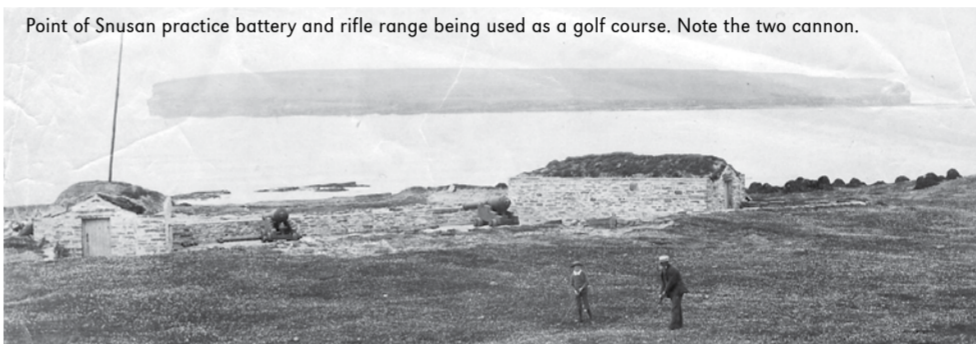


16 Kitchener Memorial, HMS Hampshire and HMD Laurel Crown, Marwick Head

West Coast Path WM26, viewpoint & car park. At 8.45 pm on the 5th June 1916 HMS *Hampshire* is believed to have struck one of many mines that had been laid off the coast by the German submarine U-75 during the previous week. The ship sank in 15 minutes with the loss of 737 lives, including that of Lord Kitchener who was on a diplomatic mission to Arkhangelsk in Russia. There were only 12 survivors. A further 9 sailors died on the 22nd of June when HM Drifter *Laurel Crown* struck a mine; she was part of a flotilla of eight small vessels searching for mines in the area. The 48ft high Kitchener Memorial was unveiled in 1926 after being built by public subscription. A commemorative wall inscribed with the names of all those lost in both incidents was added in 2016.

17 Point of Snusan (17a) and Twatt Drill Hall (17b)

Core Path WM26/ St Magnus Way. The OAV (Orkney Artillery Volunteer Corps), was established in 1867 mainly as a response to the perceived risk of conflict with France and Russia. The 10th (Birsay) Corps were formed in 1878; they set up a battery and rifle range at the Point of Snusan. Their drill hall at Twatt was built in 1885 and still stands at the junction of the A986 and A967. Remains at Snusan include the parapet walls and magazines for two muzzle-loading cannon. There is also a stone hut dating from before 1900 that was probably used as a lookout post during WW1.



Point of Snusan practice battery and rifle range being used as a golf course. Note the two cannon.

Photo: by Tom Kent, early 20th century courtesy Tommy Matches

18 Hesta Geo, Ground Control of Interception (GCI) radar station & Fighter Direction School (18a) Whitloo Point radio station (18b)

Whitloo Point is on the West Coast Path WM26. The cluster of brick buildings either side of the road at Hesta are the remains of a fighter direction training school which was operational from April 1943 until 1945. It provided experience in air traffic control and in the operation of several different radar systems, using aircraft from RNAS Twatt in the training exercises. In a field at the west end of the site, on the north side of the road at NGR HY 255 286 there is a small brick-built transmitter building and concrete antenna base of an early IFF (Identify Friend or Foe) radio system that was used to establish the identity of aircraft spotted by radar. The pair of brick and concrete buildings and the antenna base at Whitloo Point are the remains of a WW2 radio station.



Hesta Geo Fighter Direction School transmitting and receiving station c.1944-45.

Photo: ADM 116/5790 The National Archives, Kew

19 Crustan Chain Home Low (CHL) radar station

The remains of the CHL radar station on the Knowe of Crustan are visible from the West Coast Path WM26 and from the A966. It was set up in early 1941 to detect low-flying aircraft, surfaced submarines and shipping that were effectively invisible to the long-range Chain Home (CH) early warning systems. Radar stations were also used to keep track of friendly vessels and to guide damaged or disorientated aircraft back to safety. The purpose of the tall and prominent building visible from the road is unknown, it does not appear in the photograph below.

▼ Crustan CHL station from the south. May 1943. Prominent archaeological remains include the foundations of the accommodation camp (A), the power station (B), the transmitter/receiver block with an adjacent concrete base for its tower (C), stone walls associated with one of the radar antennae towers (D) and earth banking associated with another (E). Security fence (F). The road running across the foreground is the current A966.

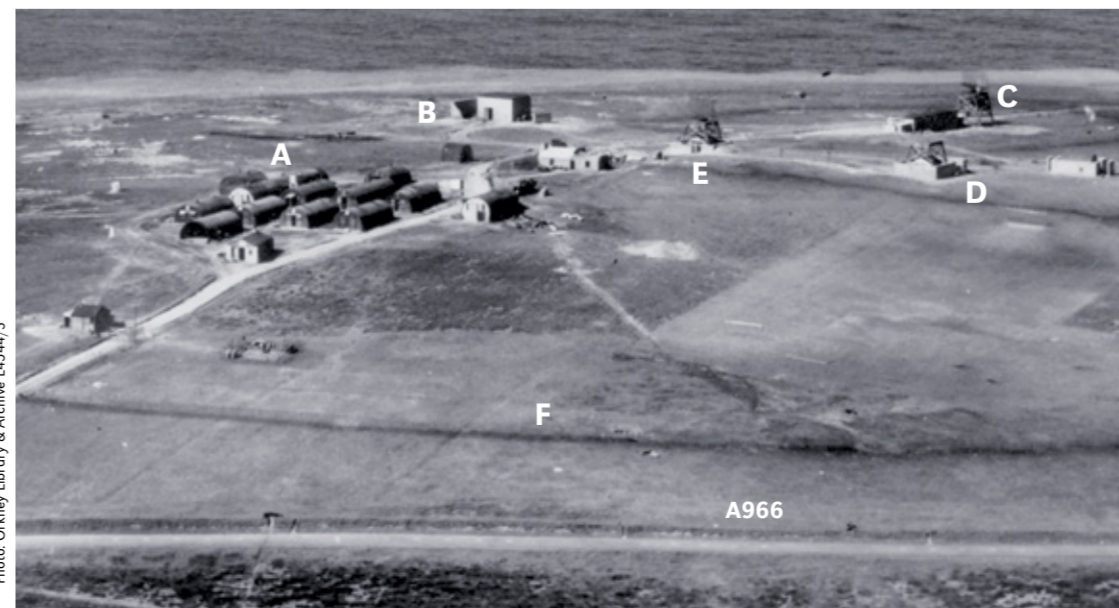


Photo: Orkney Library & Archive L5441/3

20 Wilderness, Burn of Grid decoy control. Sites 20a-c

During WW2 there was an extensive programme of decoy construction throughout the UK, designed to fool enemy aircraft into believing that they were attacking 'real' targets. Daytime raiders were misled by dummy military installations such as fake runways, factories and encampments along with wooden aircraft and vehicles (so called 'K' sites). Night raiders were presented with 'Q' sites that had lighting to imitate airfields, harbours, buildings, roads, searchlight emplacements, etc. along with reservoirs of flammable liquid that could be ignited to simulate a target under attack.

By the side of the B9057 at NGR HY 315 220 is the sheltered control building (**site 20a**) for one of the seven decoy sites laid out in Orkney, all of which were designed to confuse night-time raiders. This and the one at Hundland/Deasbreck (**site 20b**) mimicked the nearby pair of airfields at RAF Skeabrae (site 15) and RNAS Twatt (site 14), being a similar distance apart. The brick and concrete shelter is of a standard design with an entrance area and a room to either side; one contained the generator which supplied power for the lights, the other acted as a crew room, look-out and air-raid shelter. Additional protection was provided by layers of soil. There are similar remains at the Plain of Fidge (Sanday) and Cot-on-Hill (Shapinsay) that were designed to mimic night landing grounds. The shelter at Mou Ness (**site 20c**) was part of a decoy laid out to simulate the oil tanks at Lyness, the deception completed by coast artillery searchlight decoys at West Ness, Eynhallow (no trace identified) and Grit Ness (site 21) to imitate the layout of Hoy Sound.

21 Grit Ness, Anti-submarine boom netting and decoy

Footpath WM24 & St. Magnus Way. Parking. On the beach below and to the south of the car park is a bank of anti-submarine boom netting over 110m long and dating from WW2; it has been moved from Scapa Flow and re-purposed to prevent coastal erosion. A decoy control building, code OR6, stood at the site of the WC block.

22 Graemsay Coast Artillery Battery and Burra Sound

Ferry service from Stromness. Core path G2. Graemsay Battery at the Point of Oxan, next to Hoy Low lighthouse, became operational in 1944 to provide additional protection for the western approach into Stromness harbour and Scapa Flow. The single emplacement has no overhead cover as the risk of attack from the air was minimal at this stage of the war. The well-preserved remains include the director tower, two dispersed-beam searchlight emplacements, the magazine and the concrete foundations of the two engine houses. The site of the officers' accommodation camp, including hut foundations and isolated fireplaces lie to the east; other ranks lived in huts erected in the walled garden, much to the dismay of the lighthouse keeper who requested compensation from the War Office for the loss of his vegetables.

During WW1 eight blockships were sunk in Burra Sound, and a further two during WW2. The ship closest to the shore in the photograph below are the bows of the German-built oil-tanker, *Inverlane*, sunk in 1944 and visible until it collapsed below the waves in 2000. The unidentified ship behind and several submerged ones were 'dispersed' by the Royal Navy in 1962 using explosives.

▶ One of the two dispersed-beam searchlight emplacements. Each was equipped with a pair of searchlights, an arrangement not seen anywhere else in the UK.

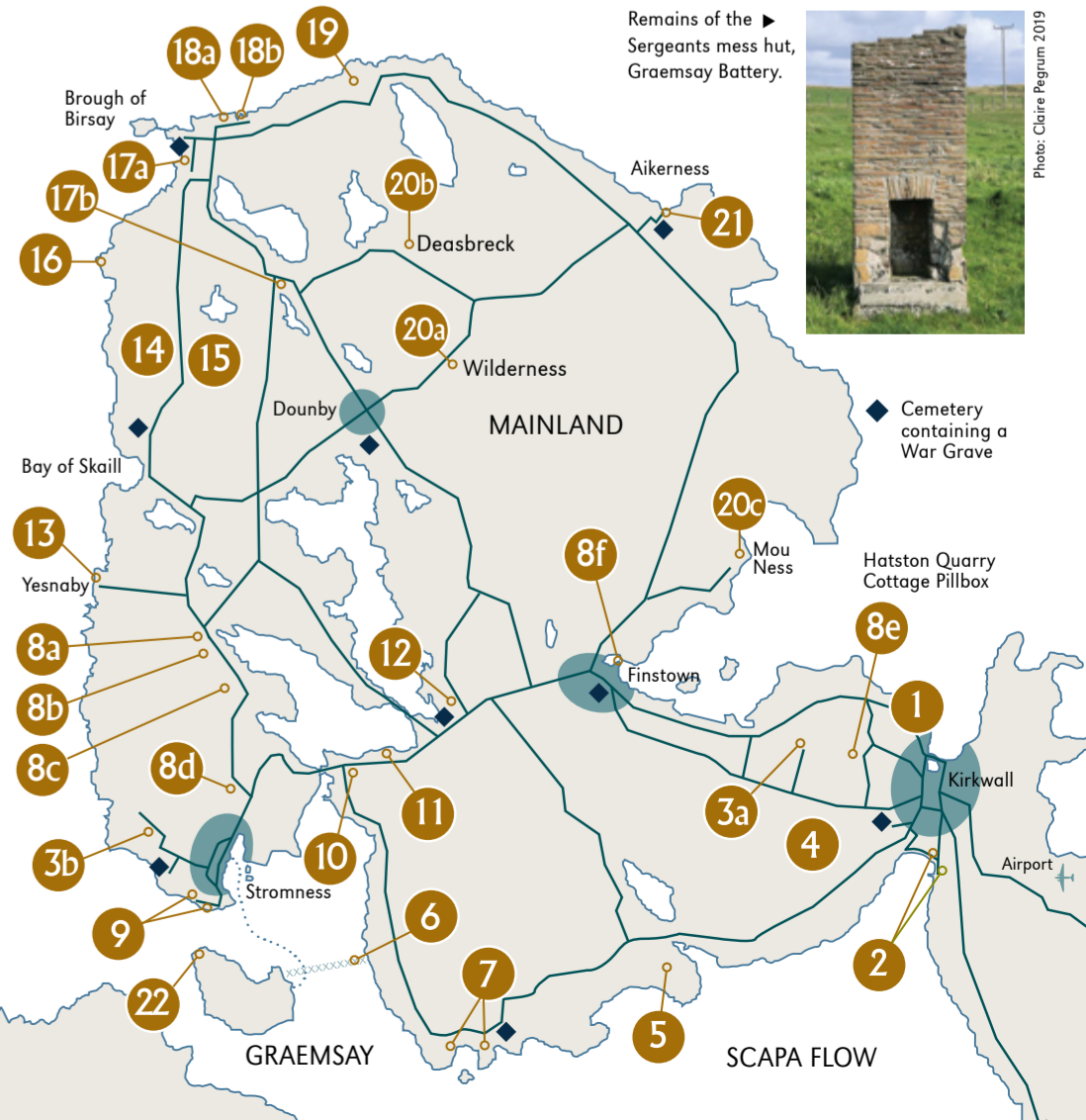


Photo: Ian Collins 2018

▼ Burra Sound from below West Hill, Graemsay, pre 1956.



Photo: From a postcard, courtesy of Euan Howe.



Remains of the ▶ Sergeants mess hut, Graemsay Battery.



Photo: Claire Pegrum 2019