



ISLAND OF HOY DEVELOPMENT TRUST



Legacies of Conflict:

Hoy & Walls Wartime Heritage Project

Wartime Hoy Development Document

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Lyness Naval Base from Wee Fea



Lyness Naval Base from Ore Brae



RN Squash Courts, Lyness



The Boom Slab & RN Repair Depot, Lyness



The West Pier, Lyness



RN Fire Fighting School, Rinnigill

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Executive Summary

Project Background

The Island of Hoy is host to one of the best preserved and least disturbed World War Two defence landscapes in the United Kingdom and can comfortably claim to have the densest concentration of well-preserved wartime sites in Orkney, as well as some of the richest in both Scotland and the whole of the UK.

In October 2013, the Island of Hoy Development Trust (IoHDT) gained funding from ScotGrad Graduate Placement Scheme, Orkney Islands Council's Community Development Fund and the Heritage Lottery Fund's Sharing Heritage Grant Scheme to undertake a 12 month study of the Island of Hoy's rich World War Two (WWII) archaeological heritage.

The project was undertaken at a time of heightened global interest in wartime heritage fuelled by the 70th anniversary of WWII when many of the derelict standing remains of WWII appear to be reaching a critical 'point of no return' in their rate of decay. It built partly upon initiatives and interest for Hoy's wartime heritage initially stimulated by the Scapa Flow Landscape Partnership Scheme of 2009-2012. Planned redevelopment work at the Scapa Flow Visitor Centre & Museum also highlighted the value of an island-wide wartime heritage evaluation project for cooperating with and mutually supporting larger initiatives interpreting Hoy's rich wartime heritage.

Project Aims

1. To determine whether the unique wartime legacy of the island of Hoy could be employed as a community enhancing resource,
2. To assess whether this resource could be better utilised to attract tourism and create additional revenue streams,
3. To establish whether wartime heritage could be utilised as an all-age educational strategy.

Project Delivery & Data Collection

The project (named the “*Legacies of Conflict: Hoy & Walls Wartime Heritage Project*”) undertook an intensive range of core activities and events to address the three principal project aims:

1. A desk based archaeological assessment of historical sources to inform fieldwork and engagement activities,
2. The production of a community accessible aerial photographic collection and archaeological GIS database to allow continued local engagement with wartime heritage after the end of the project,
3. A community archaeological survey to identify and record the extent of surviving remains from WWII on Hoy and encourage and evaluate active adult engagement with wartime heritage through site investigation,
4. A dedicated teaching programme with North Walls Community School to evaluate pre-teen engagement with wartime heritage and assess the potential use of wartime archaeological sites as educational tools,
5. The development of an outdoor educational geocache orienteering trail activity to evaluate teenage engagement with wartime heritage and assess the potential use of wartime archaeological sites as educational tools,
6. A series of drop-in/open-door sessions to encourage and evaluate active adult engagement with wartime heritage through archive materials,
7. A series of evening talks to encourage and evaluate passive adult engagement with wartime heritage,
8. A series of guided walks to encourage and evaluate adult engagement with wartime heritage through directed visits to WWII sites.

Throughout the duration of core activities 3-8, data were collected by way of participant questionnaires, informal conversations and participant observation in order to assess how different groups engaged with Hoy’s wartime heritage. Questioning was also directed towards future engagement and heritage resource management.

Project Results

1. Desk Based Assessment

A study of relevant historical archive documents, aerial photographs and published literature was undertaken to provide a historical framework summarising Hoy's significant involvement in World War Two (WWII). This work revealed connections to some of the major global narratives of WWII such as the Kriegsmarine 'Full Engagement' campaign of 1939-1940, the Allied and Axis invasions of Norway, the Battle of Britain, the Arctic Convoys, Operation Overlord, Operation Market Garden and the V1 attacks on London as well as numerous other Royal Naval Home Fleet operations.

Archive research also informed archaeological fieldwork, outreach & educational activities through the provision of valuable historical material for creating resources for all of the other project engagement activities.

2. Aerial Photographic Collection & GIS Database

Hard copies of the aerial photographs (obtained from the National Collection of Aerial Photography) was organised into a comprehensive photographic archive, forming a locally accessible resource for the community of Hoy and Walls. The collection forms a sustainable resource that will allow islanders and visitors alike to continue to explore Hoy's wartime past through aerial imagery held at the IoHDT Office in Longhope.

The Geographical Information Systems (GIS) WWII archaeological site database combines geo-referenced wartime maps and aerial photographs with Ordnance Survey map data and archaeological site survey data. Together they form a user-friendly interactive computer resource for the community and other interested parties to conduct their own research into Hoy's extensive WWII archaeology, making the island of Hoy's wartime heritage more accessible and engaging for local residents and visitors. The database also forms a valuable asset for a range of local and other stakeholders for informing future site management and the development of heritage/planning interpretation initiatives.

3. Community Archaeological Survey

A program of community supported archaeological survey located and recorded an incredible 415 previously unknown WWII archaeological sites from Rackwick in the north to west Cantick in the south east. Many of the sites recorded were found to be incredibly well preserved and rank highly amongst the best examples of WWII military offensive, defensive, supply and support structures in the UK. Three concentrations of military sites around Wee Fea, Lyness and Rinnigill are considered of such high historic value, that they merit consideration for non-statutory protection as conservation areas.

Archaeological fieldwork proved a highly effective educational device encouraging direct engagement with wartime heritage through active participation in identifying and recording sites. Participant feedback also revealed that archaeological survey was a good community enhancing activity as it brought individuals together who would otherwise not have met to carry out group-based tasks.

4. North Walls Community School Project

A wartime heritage project with North Walls Community School was conducted to evaluate the potential use of WWII archaeological sites as an effective educational resource. The project proved a resounding success, with high levels of engagement and information retention observed in all of the primary aged pupils who participated.

A wartime heritage project - utilising archaeological site investigation as the principal learning access point - was found to be perfectly suited for the Scottish Curriculum for Excellence (CfE). The North Walls Community School project successfully covered 38 experiences and outcomes across 7 curriculum areas, providing opportunities for pupil development in all four capacities of CfE.

5. Outdoor Educational Geocache Orienteering Trail

The educational potential of Hoy's wartime heritage was further demonstrated through the use of archaeological sites in an outdoor education orienteering trail. The geocache trail was delivered in cooperation with OIC Outdoor Education and consisted of seven weatherproof plastic ammunition-style boxes located at wartime archaeological sites on Wee Fea.

Although the trail was not fully tested during the project, a preliminary trial with Primary 6 pupils from Papdale Primary School indicated that archaeological sites could be used effectively to educate schoolchildren about WWII in an active and engaging way.

6. Drop-In/Open Door Sessions

Drop-in/open door sessions were run at the Hoy Kirk, the Royal Hotel in Longhope and the IoHDT Office in Longhope, providing visitors and island residents with opportunities to interact with wartime heritage on an informal level. The event provided a relaxed venue where archive materials could be consulted, presentations viewed, artefacts brought for identification or stories and information shared.

Results from participant feedback and attendance figures revealed a greater response to this event in the parish of Hoy than in South Walls. The figures also illustrated a preference in North & South Walls to engage more passively through attending an evening talk rather than more actively at a drop-in. However, when archive materials were made available for consultation at an evening talk they were well received. Questionnaire returns also indicated a greater interest by visitors and islanders to engage through drop-in sessions in the future.

7. Evening Talks

The evening talks programme followed a regular monthly pattern and were delivered at The Gable End Theatre, a popular and well established venue for evening entertainment on Hoy. Each talk followed a theme and endeavoured to share some of the information that had been researched during the desk-based consultation of archive sources.

The talks received the second highest attendance of the events delivered during the project and were by far the most popular method for island residents to engage with wartime heritage. Although few visitors attended the talks, participant questionnaires indicated an interest by visitors in engaging through such events in the future.

8. Guided Walks

An assessment of the wartime archaeological resource as an attraction for tourists (and as a possible additional source of island revenue) was carried out through the evaluation of visitor participation in all of the events and activities delivered, but primarily through involvement in guided walks around the WWII Naval base at Lyness. The walk followed a 2 mile circular route that allowed the story of the naval base, the personnel and their role in WWII - told through archive images and the extant archaeological remains that are found in abundance around Lyness today. Over the 26 weeks that the Lyness guided walks were run, a total of 189 people engaged with the archaeological legacy of the WWII naval base.

Feedback and attendance data demonstrated that with sufficient publicity and investment, visually stimulating active forms of engagement, such as guided walks and trails, would be extremely popular with tourists and could be developed in the future to increase visitor numbers to the island. Participant questionnaires also highlighted that the guided walks attracted a new type of tourist to Hoy that otherwise may not have visited the island. This is a particularly important dataset, as it demonstrates the potential of wartime heritage to draw a new tourism market to Hoy and Orkney.

Additional Observations

Community Enhancement

Wartime heritage was found to be most effective as a community enhancing resource when employed as a means of bringing people together, creating opportunities for island residents to meet, interact and learn together. Activities such as archaeological survey, evenings talks and drop-in sessions were particularly effective in this respect.

Adult Educational Resource

The project also demonstrated that archaeological fieldwork on and guided walks around wartime sites, as well as evening talks or drop-in sessions about wartime heritage, served a particularly effective adult educational purpose with all participants learning something from their involvement in these activities. These results highlight that a variety of integrated approaches can be implemented to better use the WWII material legacy on Hoy as an adult educational resource.

Tourism

Participant questionnaires revealed that, although involvement in other activities such as archaeological fieldwork and evening talks was low during the project, there was a general desire to engage in these activities in the future. A new area of interest for 'in the passing' engagement was also identified which could be build up into a tourist attraction for the future. The data gathered indicates that a great deal of interest in wartime heritage exists amongst tourists visiting Orkney and it is anticipated that further development of attractions and interpretive devices would nurture this interest and encourage greater numbers of tourists to visit Hoy for longer periods of time.

Future Management and Development of Hoy's Wartime Heritage

As part of the participant questionnaires, visitors and islanders were asked to state from a list of options who they felt were the most appropriate organisation to manage Hoy's wartime heritage in the future. A National Heritage Protection Agency such as Historic Scotland or a Hoy-based trust or charity were perceived to be the most appropriate long-term managers of Hoy's wartime heritage, with the local council surprisingly being the third choice for visitors and the lowest choice for island residents.

The first choice of National Heritage Protection Agency could be attributed to Historic Scotland's perceived excellent reputation for safeguarding Scotland's heritage, but may also indicate an acknowledgment by participants that Hoy's wartime heritage is of National importance, warranting a greater level of recognition and protection than it is currently afforded. The equally high response for a Hoy-based Trust or charity to manage the wartime resource could be viewed as a strong display of support for the work of IoHDT and how positively the Legacies of Conflict project has been received. A general lack of confidence in OIC as a manager of wartime heritage was detected in feedback from island residents, which appears to stem from a lasting memory of demolition and clearance of wartime sites in the past. It is clear that the ideal way forward to deliver real success over such a wide range of complex deliverables would be some form of strategic partnership between these three key stakeholders.

Recommendations

The evaluation of community, islander and visitor engagement during the Legacies of Conflict Project has revealed that Hoy's wartime heritage (and its extensive material legacy) can provide a valuable all-age educational resource, community enhancing asset and means of attracting greater numbers of tourists to Hoy. Four core output areas (Figure 1) that underpin future development have been identified which seek to build on the demonstrated values of Hoy's wartime heritage.



Figure 1 - Core Recommendation Outputs

Archaeological Resource Management is a key consideration of any future development work as it concerns the long term care, maintenance and understanding of Hoy's wartime heritage asset. Without these active steps to identify, document, preserve and interpret Hoy's well-preserved archaeological sites, future use of wartime heritage for education, community enhancement and tourism will not be as effective or sustainable.

Education clearly has an important role to play for both the preservation and interpretation of wartime heritage into the future. WWII sites and stories have proven to be powerful tools for teaching younger generations about past conflict. The development of resources to integrate more fully with the school curriculum and engage with children in less formal learning environments are an important development output.

Community Enhancement has been shown to be a positive outcome from events and activities delivered during the Legacies of Conflict project. The creation of local jobs and continuing to provide opportunities for island residents to meet, learn and engage with each other and their island's past through passive and active events programme are socially valuable outcomes.

Tourism can have a significant socio-economic impact on a small community. The four subcategories within this core area are intended to develop attractions to encourage more visitors to Hoy, providing additional revenue and stimulating economic growth on the island. Interpretation of the wartime archaeological landscape to a wider audience is also a key educational output, teaching more people about the impact of WWII on Hoy and telling the incredible story of one island's important role in a global struggle.

Building upon the Legacies of Conflict Project

These core outcomes are intended to provide direction for the delivery of sustainable tourism and community heritage initiatives, with each development recommendation directed towards achieving these capacities. A phased development plan, requiring increasing levels of investment, is presented below. The timescale corresponds with the 80th anniversary milestones of WWII (2019 - 2025), which provide an excellent context for heightened global interest in WWII history for the public launch of events, activities and interpretive programmes.

Five-Year Development Plan

Continuation of Current Initiatives (Phase 1 – begun with current project in 2013): A low cost, short-term means of maintaining the interest and momentum that has been achieved during the Legacies of Conflict Project involving:

- The designation of Lyness, Rinnigill & Wee Fea as conservation areas,
- The creation of a volunteer heritage coordinator position to run passive & active engagement events & activities,
- Opening dialogues with Landowners, Orkney Schools & outdoor youth groups as a prerequisite to next development stages,
- The continuation of the Lyness guided walks by SFVC&M staff,
- The monitoring of the Wee Fea geocache trail to gauge popularity,
- The Introduction to wartime heritage pages on the IoHDT website,
- Orkney wide publicity of events & activities.

Phase 2 (Delivery by 2017): A middle level phase requiring moderate financial investment to develop interpretive and educational resources including:

- The creation of conservation area management plans,
- Detailed archaeological recording of fragile wartime buildings,
- Structural conservation surveys of sites identified for consolidation and redevelopment,
- The provision of landowner/land user financial support grants for site conservation work,
- The production of school resource packs,
- The creation of a part-time education officer to deliver children & youth activities,
- The creation of a part-time/seasonal heritage officer to plan and deliver a more extensive passive & active engagement of events & activities programme,
- The expansion of the geocache trail to other areas if Wee Fea trail found to be successful,
- A pilot study of GPS/App interpretive trails,
- The creation of a mobile exhibition,
- The creation of a web-based virtual museum,
- The production of a marketing plan offering guidance on how best to publicise wartime heritage to attract visitors.

Phase 3 (Delivery by 2019): The largest scale development phase requiring significant levels of funding to maximise the use of Hoy's wartime heritage for educational, community and tourism purposes, as well as its interpretation and preservation in dynamic, engaging and ultimately sustainable ways:

- Completion of extensive digital mapping of the wartime landscape,
- Delivery of an oral history recording project,
- Conservation and redevelopment of selected key WWII sites for heritage interpretation and other sustainable purposes,
- Expansion of the part-time education officers responsibilities to include delivery of CPD & an Orkney-wide schools programme,
- The creation of a full-time heritage officer to plan and deliver a full and varied programme of passive & active engagement events & activities,
- The creation of Island wide GPS & App digital trails incorporating Google HUD technology, individual site tours using location activated audio & visual handheld devices and child-friendly interactive content,
- Expansion and full delivery of a marketing and advertising plan.

Concluding Remarks

Five years of war has left a lasting legacy on a small island in Orkney. The landscape continues to bear witness to those tumultuous times, but it doesn't do so in silence. This project has demonstrated that overgrown earthworks, crumbling concrete and imported brick (not traditionally viewed as heritage monuments) continue to speak to the present population of Hoy and those who visit the island's shores. This development document has endeavoured to summarise the results of a very successful year of community and visitor engagement with WWII heritage and hopefully serves to illustrate how vocal the archaeological remains of WWII continue to be.

Collaboration and cooperation with departments of Orkney Island's Council (OIC) has been instrumental to the successful delivery of this project and the recommendations presented are intended to reflect that positive working relationship and allow a wartime heritage development plan to be produced that is both collaborative and mutually beneficial to OIC the residents of Hoy and visitors to the island. It is hoped that this document and the growth

of interest in Hoy's wartime heritage that has come from the project will serve as a solid basis for the residents (through the Island of Hoy Development Trust) to create a plan for the future of Hoy's rich wartime legacy. Through continued momentum, financial investment and strategic development, Hoy's exceptional wartime remains can be safeguarded for future generations of islanders, interpreted more clearly to a greater number of visitors, utilised more effectively as a community enhancing, educational and socio-economic asset and ultimately bear a more fitting and longer lasting tribute to those who gave their lives in defence of these islands shores during WWII.

Introduction

With the densest concentration of well-preserved wartime sites in Orkney and perhaps one of the least disturbed WWII defence landscapes in the UK, the Island of Hoy is home to an incredibly significant, visually dominating but little known material legacy from recent world conflict. In October 2013, the Island of Hoy Development Trust (IoHDT) employed a Graduate Heritage Officer to undertake a dedicated 12 month placement focusing on the island's rich World War Two (WWII) archaeological heritage. The project aimed to:

1. Evaluate the potential of the extensive and unique wartime legacy of the island of Hoy and examine how this may be employed as a community enhancing resource,
2. Assess how this resource may be better utilised to attract tourism and create additional revenue streams,
3. Establish a means by which this significant and fascinating aspect of Hoys heritage could be utilised as an all-age educational strategy.

The Legacies of Conflict: Hoy & Walls Wartime Heritage Project occurred at a critical time for the WWII archaeological sites on Hoy as many of the derelict standing remains approach 'a point of no return' in their rate of decay. Global awareness of World War heritage has also been at a heightened state throughout the project with WWII 70th anniversary events taking place as well as the commencement of World War One (WWI) centenary commemorations. At a local level, the recently completed Heritage Lottery Funded Scapa Flow Landscape Partnership Scheme (SFLPS) has raised awareness of WWII archaeological sites across Hoy and indicated their potential as rich and engaging assets for encouraging community and wider public interest in Hoy's past. The Arts, Museums & Heritage Service (AM&H) of Orkney Islands Council (OIC) is also preparing a programme of redevelopment and reinterpretation work at the Scapa Flow Visitor Centre & Museum (a museum based on Hoy that is dedicated to Orkney's WWI, inter-war and WWII history). The project could therefore not be timelier or better placed to build on the ground swell of global and local interest in World War heritage as well as to contribute to wider discussions concerning the future development of wartime heritage initiatives on Hoy.

This development document represents the principal output of the Legacies of Conflict Project and intends to present a summary of the activities and initiatives that have been implemented over the past year to address the three aims detailed above. Through the interpretation of the results from these activities, this document also offers a series of recommendations to support and guide future initiatives and funding applications for the long term sustainable preservation and interpretation of Hoy's unmatched WWII heritage.

The development document has been structured to address three key outputs which contribute to answering the core aims of the project. This document therefore includes:

1. A brief historical overview of Hoy's role in World War Two, informed by textual, oral and archaeological sources,
2. A summary of a targeted archaeological desk-based assessment and fieldwork program that characterised the extent of surviving archaeological remains dating from WWII.
3. Collated data summarising how the local community and visitors to Hoy perceive and connect with Hoy's wartime legacy and the potential of specific heritage initiatives to feed into future IoHDT and OIC economic development plans.

Section 1 of this document has been written to specifically address output 1 and provides a brief historical overview of Hoy's role in the global narratives of WWII. Section 2 offers a summary of the methodology and results from the desk and field-based archaeological assessments and connects with output 2. Section 3 contains short summaries of the outreach and engagement initiatives that have been delivered as part of output 3 and therefore forms the bulk of the evidence for responding to the three placement aims. Each summary is followed by the results and outcomes from the relevant initiative. Section 3 concludes with a general analysis of other project evaluation results with observations being made on what they may imply for future development of the wartime heritage resource. Section 4 provides the second component to output 3, presenting a series of recommendations for developing wartime tourism and engagement initiatives in the future. In addition to this development document, a number of additional community resources have been established as part of the placement which will be introduced and discussed

under the relevant subheadings of this document. Direction is also offered on how these resources may continue to be utilised and developed in the future.

The position of Graduate Heritage Officer has been facilitated through the ScotGrad Graduate Placement Programme and funded by Highlands and Islands Enterprise (HIE), the European Regional Development Fund, Orkney Islands Council's (OIC) Community Development Fund and the Heritage Lottery Fund's (HLF) 'Sharing Heritage' Grant Scheme.

Section 1. Historical Background

Introduction

As the second largest island in the Orkney archipelago at around 10 miles in length by 5 miles in width, Hoy forms the west and southwest sides of the 120-160 square mile natural harbour of Scapa Flow. With substantial upland areas of high ground rising to 479m above sea level in the north, it is not surprising that the inner north eastern shores of the island have served as a welcome shelter to seagoing war vessels from the worst of the prevailing North Atlantic gales for hundreds of years. Hoy has had a long affiliation with global conflict and especially maritime warfare which can be traced from Norse activity in the 1st century AD, through the Napoleonic Wars of the 19th century to the First and Second World Wars of the 20th century.

Hoy's wartime story is inextricably linked to the broader campaigns and narratives of World War Two (WWII). This historical background endeavours to present a summary of key global war narratives that Hoy and the personnel stationed on Hoy contributed to. It has not been intended as a complete history of Hoy in WWII as this would be a most extensive undertaking quite beyond the remit of this development document. The chronological section of National Archives document ADM116/5790 has been attached to this document as Appendix 1 to offer a more detailed summary of the events and activities that took place on Hoy during WWII and consultation of the rest of this archive source would be encouraged if additional information is required. William Hewison's *'The Great Harbour Scapa Flow'* also offers a very comprehensive history of Orkney during WWII including many detailed references to Hoy and is recommended as a further point of reference. When linking local narratives to global World War events, efforts have been made to include

reference to the archaeological sites that were involved wherever possible. The archaeological legacy that survives on Hoy today represents a powerful and tangible connection to the events that took place and it is hoped that this historical background will serve to demonstrate just how critical Hoy's role in WWII was.

Preparations for War

This historical background picks up Hoy's incredible story of involvement in the global narratives of WWII on 7th March 1936 when Germany, under the leadership of Adolf Hitler and the fascist right wing Nazi Party, contravened the Treaty of Versailles and remilitarised the industrial Rhineland area of Germany. This dramatic action reawakened concerns of renewed hostilities between the European powers and as a consequence the British Government began to re-evaluate its defensive capabilities. The Admiralty conducted surveys of its naval anchorages and by June plans had been drawn up for the laying of anti-submarine boom nets across the main entrances into Scapa Flow and an expansion scheme was initiated to increase the oil fuel storage capacity at Lyness previously established during World War I (TNA: ADM116/5790 p.159).

The conversion of these plans from paper to reality was a slow one and it wasn't until German troops marched into the northern and western *Sudetenland* border regions of Czechoslovakia in March 1938 that the pace began to quicken. June saw the arrival of Naval personnel and boom laying vessels in Scapa Flow at what was now designated a Category A Defended Port. Local recruitment also began by the hurriedly reinstated Orkney Territorial Army, advertising for men to serve in two heavy anti-aircraft gun batteries to be built overlooking Lyness (The Orcadian, 12/5/1938 p.6). The Boom Defence Office set up its net construction and laying operations at Lyness; their workshops, hangar-like shed, launching trough (NMRS: ND39SW 20.05) and concrete assembly slab (which still spans a large portion of the Lyness wharf) forming some of the first purpose built military installations to be erected on Hoy in preparation for WWII (Figure 2).

Owing to severe shortages of enlisted manpower, most of the pre-war military construction work on Hoy fell to the Civil Engineer in Chief's Department who oversaw a vast array of civil engineering contractors including Messrs, Balfour Beatty, Baldry, Yerburch & Hutchison,

Gibson & Co and Sir William Arrol & Co Ltd (TNA: ADM116/5790 p.159). By the end of 1938, Messrs and Balfour Beatty were progressing well with the fabrication of 12 above ground oil tanks (NMRS: ND39SW 20.02) and associated pumping infrastructure (NMRS: ND39SW 20.01) and Messrs, Baldry and Yerburch & Hutchison had begun the herculean task of constructing an underground oil fuel store (UOFS, NMRS: ND29SE 4) with a capacity of over 100,000 tons on Wee Fea (TNA: ADM116/5790 p.6). Civilian contracted engineering work continued on Hoy throughout the war years and a great many of the large structural archaeological sites that survival today stand as a testimony to the hard graft of the civilian workers who lived alongside the Navy in a menagerie of camps at Lyness.



Figure 2 - The Boom Defence Office in 1943 & 2013

In January 1939 Scapa Flow was designated Main Fleet Base for the British Home Fleet and the full land-based organisational infrastructure required for such a hub of Naval operations started to make its way north. In the ensuing months, a survey of Scapa Flow was conducted by a joint staff from the three services of the armed forces. The survey highlighted a woeful lack of protection for the Fleet from air and submarine attack whilst at anchor. On 25th August 1939, 226 Battery, the Orkney raised Territorial Army Anti-Aircraft unit, moved across to Hoy and manned eight 4.5” Heavy Anti-Aircraft (HAA) guns overlooking Lyness (TNA: WO166/2507). Other than the Fleet’s own guns, the two half batteries at Ore (NMRS: ND39SW 43) and Rysa (NMRS: ND39NW 161), which represent the earliest examples of HAA gun batteries in Orkney, served as the only defence against air attack at the outbreak of hostilities on 3rd September 1939.

Defence Expansion & the War in the North Sea

Following a conference held by Sir Winston Churchill, recently appointed 1st Lord of the Admiralty, to try and resolve concerns over the lack of air and submarine defences around

the Fleet anchorage, the War Office initiated Plan Q, the strategic army defence plan for the protection of the Fleet Base (TNA: ADM116/5790 p.402). This scheme, and the much more extensive inter-service Plan R, which superseded it in December 1939, was responsible for the posting of thousands of personnel to Hoy during WWII (Appendix 2). It is the vast array of defence, supply, domestic and administrative sites that were constructed as a direct result of these plans that now form the backbone of the archaeological legacy surviving on Hoy today.

Plan R, which called for significant increases to the defences against sea attack as well as from the air, transpired as a response to the dramatic events of October 1939. The second month of the war brought *Großadmiral* Raeder's energetic campaign against British Naval and merchant shipping in the North Sea to the shores of Scapa Flow. Since the outbreak of WWII, Britain had been subjected to a 'double pole' naval strategy that Raeder had been formulating since 1937 (Bird, K., 2006 p.117 & 128). This strategy, which could be paralleled to Blitzkrieg in terms of its speed, called for quick action to maximise the advantage of Britain's ill preparation for war. Through offensive manoeuvres against merchant shipping, isolated units of the British Navy and weak strategic points, Raeder hoped to divide the forces of his stronger opponent enabling victory over each in turn (*ibid*). In the first month of the war, Raeder's small surface and U-boat fleets accounted for 152,040 tons of allied shipping in the North Sea through minelaying and direct engagement (Churchill, W., 1948 p.342). In the early morning of 14th of October, naval vessels in Scapa Flow became the target when German submarine U-47 succeeded in entering the Fleet anchorage. The ensuing loss of HMS Royal Oak whilst she lay at anchor emphasised just how poorly defended Scapa Flow was from seaborne attack.

The Battle for Orkney and the Air Assault on Scapa Flow

The threat from air attack became starkly apparent on 17th October when two air raids were carried out on elements of the Fleet in Scapa Flow. These were some of the first bombing raids on the UK during WWII and occurred just one day after Junkers Ju-88 aircraft of *Stab 1, Kampfgeschwader 30 (I/KG30)* inflicted damage on HMS Southampton, Edinburgh and Mohawk in the Firth of Forth (Taylor, L., 2010 p.9). With Adolf Hitler's Directives on the Conduct of the War still restricting the Luftwaffe from attacking land-based targets or

docked warships (Trevor-Roper, H., 1964 p.5-13), potential bombing objectives in Orkney were limited as Scapa Flow remained relatively empty following the sinking of HMS Royal Oak. When an armed reconnaissance flight of I/KG30 appeared over the anchorage on the morning of the 17th, the largest target of opportunity to be found was HMS Iron Duke. This battleship of WWI vintage was moored at the mouth of Ore Bay near Lyness where she was serving as a transit accommodation & Fleet Mail ship as well as the headquarters for the Admiral Commanding Orkney & Shetland (ACOS) and his staff (TNA: ADM116/5790 p.80). 226 Battery opened the defence as the new, fast German medium bombers dived on the Iron Duke. The gunners at the Rysa battery succeeded in hitting one of the aircraft which crashed near Pegal Burn becoming the first German aircraft to be shot down by anti-aircraft gunfire and crash on British soil during WWII (Hewison, W., 2000 p.232). Despite 226 Battery's best efforts, many of the aircraft succeeded in releasing their bombs over the target and although many fell short, by the end of the second raid the ship had received extensive damage and had to be beached in Ore Bay to prevent her from sinking entirely (TNA: ADM116/5790 p.81).

This raid had a significant impact on the nature of the British Navy's presence on Hoy as the bombing of HMS Iron Duke highlighted the dangers of having so many critical departments housed aboard moored ships. The movement of personnel to the shore led to a greater expansion of the Lyness Naval Base which had by now become commissioned as the land-based ship HMS Proserpine. Following the attack on HMS Iron Duke, ACOS and his staff moved ashore, eventually settling into offices at Head of Right (HY25) where all matters concerning the Home Fleet base as well as Shetland and Scrabster in Caithness were coordinated from (TNA: ADM116/5790 p.27). All communications from the Admiralty in London or to and from the Fleet also moved ashore and went through a single telephone exchange on the Lyness base (NMRS: ND39SW 135) until 1943 when the custom built splinter proof communication centre was completed at Wee Fea (NMRS: ND29SE 2).

One of the many bombs that failed to find its target on HMS Iron Duke was reported in various war diaries as having fallen in a field near to the HAA battery at Ore (TNA: WO166/1234 & WO166/2507). These accounts, combined with Civil Defence reports would suggest that this bomb was the first to have fallen on British soil during WWII (Doyle, P.

2010 p.9). Although bombs were dropped during the raid on the Firth of Forth the previous day, all were aimed at ships in the Forth estuary and as a consequence none are known to have fallen on land. Four bombs that fell next to a cottage near Sullom Voe in Shetland on 13th November 1939 have been claimed as the first to fall on British soil (Ramsey, W., 1987 p.48). However, the war diary sources plus cross examination of Luftwaffe aerial photographs taken of Hoy dated 2nd October and 18th October confirm the presence of a bomb crater in a field near the house of Orraquoy that predates the Shetland examples (Figure 3). An archaeological walk over survey of the fields around Orraquoy identified a faint circular depression (HY56) at the approximate bomb crater location marked on the aerial photographs. Further intrusive archaeological investigation may yield more substantive evidence but the research carried out thus far would indicate HY56 to be the site of the first bomb to fall on British soil during WWII.

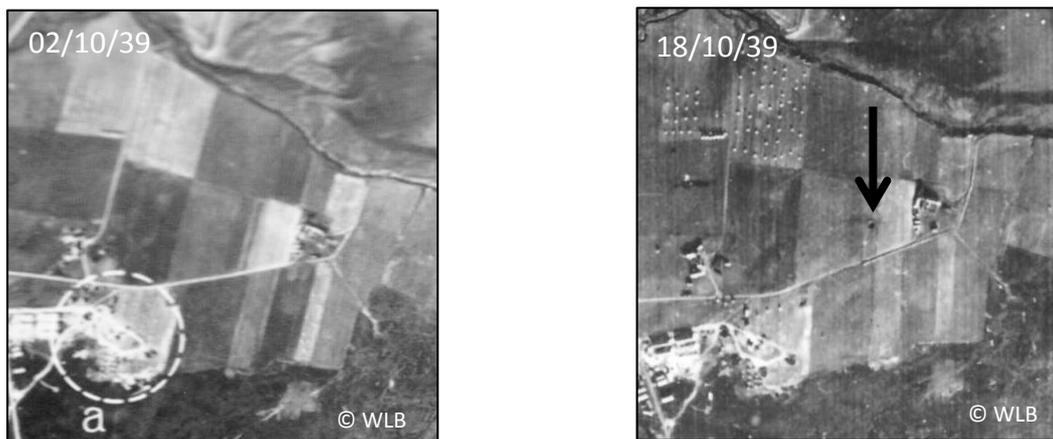


Figure 3 - Location of First Bomb to Land on British Soil in WWII

Lack of available fighter protection, teething troubles with Radio Direction Finding (RDF) and the combined losses of HMS Royal Oak and HMS Iron Duke were sufficient evidence to persuade Churchill to order the abandonment of Scapa Flow as a viable Fleet Base until such times as it could be made fully secure (Roskill, S., 1954 p.78). Two months into the war, Raeder's strategy was showing every sign of success. Not only had Hitler granted clearance for the attack of naval units in naval bases as part of Directive 7 (Trevor-Roper, H., 1964 p.15) but the British Fleet had now become divided making it less effective and easier to attack. With the Home Fleet pushed back to more southerly bases across mainland Scotland, Britain lost the strategic position that Scapa Flow afforded for countering German fleet movements, enforcing the contraband control measures on neutral merchant shipping and maintaining the Northern Patrol across the entrances into the North Atlantic (Roskill, S., 1954 p.77).

The Second Phase of the Battle for Orkney

Work to realise the Q & R Plans and strategically retake Scapa Flow continued through the harsh winter of 1939 and into 1940 with defences deemed sufficiently improved for the Home Fleet to return on 8th March. The arrival of such a large number of major capital ships in the first week of March did not go unnoticed by the Luftwaffe. Monthly reconnaissance sorties flown throughout the winter had monitored the gradual transformation of Orkney into a fortress and now, 8 days after the Fleet's return, the campaign to push the British Navy back out of its strategic anchorage recommenced.

British intelligence reports record the air raid that took place at dusk on 16 March as one of the best planned attacks made by the Luftwaffe on Scapa Flow (TNA: WO166/1234). It was during this raid that 27 year old James Isbister became the first civilian to be killed in an air raid on Britain during WWII. Heinkel He-111 medium bombers of I/KG26 carried out one of the first attacks on British land targets in WWII during this raid and were accompanied by Ju-88's I/KG30 who dive bombed ships of the Fleet (de Zeng IV, H. & Stankey, D., 2007 p.75 & 116). On Hoy, storms the previous day had grounded all but one of the barrage balloons which would normally have forced hostile aircraft to higher, less accurate bombing altitudes (TNA: WO166/1234). The newly installed Vickers Mk VIII light anti-aircraft (LAA) guns intended to engage diving aircraft either jammed, traversed too slowly to keep pace with the targets or spoiled the gunners aim with the bright muzzle flash (*ibid.*). The Chain Home Radar system was also found to be ineffective offering insufficient warning for the two frontline RAF fighter squadrons stationed at Wick to intercept the bombers. A more localised gun laying radar system proved partially effective for directing anti-aircraft gun fire and Hoy's HAA batteries assisted in forming a 52 gun barrage of exploding shrapnel in the path of the high altitude He-111's (*ibid.*). Despite this, the defences failed to bring down a single aircraft whilst the Luftwaffe succeeded in inflicting damage on the Royal Naval Air Station at Hatston and the cruiser HMS Norfolk (TNA: ADM116/5790 p.407).

The 16th March raid was a rude awakening for the fledgling Orkney defences and steps were quickly taken to rectify the problems that had been encountered. Replacement of the Vickers Mk VIII guns sighted on Hoy was slow with the first of the more effective 40mm Bofors guns arriving in February 1941. As a consequence of the replacement programme

few examples of the early Vickers emplacements survive. Two sites have been identified on Hoy where the mounting bolts of the early Vickers guns remain (HY69 & 74). Although these sites are not in excellent condition, they form an important link to the early development of the Orkney defences and the battle for the strategic harbour of Scapa Flow.

Operation Weserübung & the Closure of the Battle for Orkney

Unbeknown to the men working feverishly to bring the defences up to scratch on Hoy, the war in the north was entering a new phase. Although Raeder's full engagement campaign was exacting a heavy toll on the Royal Navy and the merchant vessels supplying the British North Sea ports, the need to secure the supply of Swedish iron ore to Germany via the Norwegian port of Narvik began to take precedence over all other German Naval operations in the North Sea (Stegemann, B., 1991 p.171). Since the outbreak of war, the British Government had recognised the importance of the iron ore shipments to Germany but had been unable to take significant steps to stop it. However, when the Soviet Union attacked Finland in November 1939 a potential opportunity arose. By using the ore railway link between Narvik and Sweden, the British formulated a plan where military aid could be provided to Finland whilst allowing a British force to occupy the Swedish ore-fields along the way (Maier, K., 1991 p.199). Concerned about the potential threat to the iron ore consignments, *Großadmiral* Raeder persuaded Hitler to prepare a plan to secure the resource which became known as Operation Weserübung, the invasion of Norway. Misinterpreting the return of the Home Fleet to Scapa Flow on 8th March as the build-up of an invasion force, German preparations escalated with the launch date of Weserübung set for the 9th April.

On the 8th of April the Luftwaffe mounted a three day campaign of large formation air raids on the Home Fleet in Scapa Flow which were intended to disrupt the British Navy's ability to respond to Operation Weserübung. Improvements to the radar chain at the beginning of March finally provided sufficient early warning for fighter interception and a month's worth of improvements to the anti-aircraft protection over Scapa Flow meant that the Luftwaffe began to suffer increasing losses with every raid. The anti-aircraft defences on Hoy contributed to a barrage of fire so intense that it was described by eye witness Reginald Brimicombe as being as if "*all the fire and thunder of Dante's Inferno was let loose*" (Brown,

M. & Meehan, P. 2002 p. 165). Little impact was made on the gathering British Forces, however, a considerable toll was inflicted on the Luftwaffe and by the end of the 10th April, losses sustained in raids on Scapa Flow were considered far too great to justify further large formation operations over such a well defended locality.

Sinking the Bismark & the Battle of Britain

Although armed reconnaissance flights to monitor the disposition of the Home Fleet continued on into 1940, the campaign to secure Scapa Flow as a strategic Main Base for the British Navy's operations in northern waters was effectively won. Had this not been the case then the entire course of the war at sea may have been quite different. The early interception of the German battleship Bismark by HMS Hood and HMS Prince of Wales in May 1941 for example, would not have been possible had Scapa Flow not been 'retaken'. The experience gained through the most intensive period of air raids that the UK had yet witnessed also made a significant contribution to the outcome of the Battle of Britain that would be fought predominantly over the south coast of England later in the year. Technical and operating improvements to early warning RDF/Radar and procedures for fighter interception that were critical to the success of the battle were developed during the raids of March and April 1940. The two Hawker Hurricane fighter squadrons based at Wick, 43 & 111 Squadron, also gained invaluable combat experience over Orkney with many of their pilots going on to become aces during Dunkirk evacuation and the Battle of Britain.

Hoy's involvement in global war narratives did not end in 1940 with the securing of the Fleet anchorage but continued on throughout WWII. The refuelling, rearming, repairing and victualling of warships involved in the Norwegian campaign continued until the withdrawal of troops from Norway in June 1940. The civilian salvage company Metal Industries, who had been based at Lyness since 1934 recovering the wrecks of the WWI German Fleet, proved invaluable during this campaign repairing and in some cases, refloating ships such as the cruiser HMS Suffolk which limped back into Scapa Flow following intense action (TNA: ADM116/5790 p.390). After Norway, much of the war's focus shifted south to France and the Low Countries where the British, French & Belgian Forces continued to be pushed back by the German *Blitzkrieg*.

Invasion Defences & Infantry Training

At the height of the invasion scare in the summer of 1940 the army presence also increased on Hoy with the extensive use of parachute troops in the German invasions of Denmark, Norway, Holland and Belgium highlighting a potential threat to vulnerable points such as the Underground Oil Fuel Store (UOFS) at Wee Fea (TNA: ADM116/5790 p. 407). Infantry units passed through Hoy on 12 month postings for the remainder of the war (Appendix 2) basing themselves at camps near Lyness and Longhope and manning prepared defensive positions, pillboxes and other strong points from Rackwick to Cantick.

Training exercises were carried out on a frequent basis throughout WWII not only to familiarise infantry units with their role in the Hoy Defence Scheme but also to provide vital training for future postings to the front line. In October 1943, it was the turn of the Battalion HQ and three rifle companies (c.300 men) of 7th Battalion, The Kings Own Scottish Borderers (KOSB) to defend Hoy from any airborne or seaborne assault (TNA: WO 166/12598). The men of 7th Btn KOSB dug many of the defensive firing positions that still survive on Wee Fea today, putting them and their combat training to the test in exercises conducted throughout November. Exercise 'Hawk' was the last simulated action for KOSB in Orkney as they left for Lincolnshire on 1st of December to join the 1st Airlanding Brigade and retrain as glider borne troops taking part in Operation Market Garden in September 1944 (*ibid.*). 7th Btn KOSB is just one of 13 separate infantry units who became part of the Hoy community for short postings during WWII before moving on to other, often more hazardous theatres of war and serves to illustrate the continued links that Hoy's wartime story has with the broader narratives of WWII.

The Arctic Convoys: Entertainment, Supply, Repair & Training

As the war wore on into 1941, the naval presence ashore on Hoy continued to increase as more and more of the base facilities were completed. The number of personnel borne on the books of the various base ships at Longhope and Lyness consistently totalled 12,500 from the end of 1940 onwards with further increases in population occurring whenever a warship disembarked crew for shore leave (TNA: ADM116/5790 p. 213). Lyness had quickly become a small town not only with accommodation and messing facilities but also a wide range of recreational amenities to keep shore and ship personnel fit and entertained. The

Royal Naval Recreation Centre (NMRS: ND39SW 20.12) was central to the vital tasks of maintaining morale and providing rest and relaxation. Like much of the base, it grew from humble beginnings at the outbreak of the war and by 1941 housed a 900 seat cinema (Figure 4), a stage for live performances with backstage dressing rooms, a billiard room and an educational centre offering lectures and handicraft workshops (TNA: ADM116/5790 p.358-359). Performances by visiting celebrity artists were a regular occurrence and the Entertainments National Service Association (ENSA) arranged classical and local talent concerts (*ibid.*). Inter-service badminton tournaments and boxing matches took place from 1943 onwards and the dances, which could cater for up to 250 couples, were also an incredibly popular event (*ibid.*). By 1943 the average number of personnel attending activities at the recreation centre was conservatively estimated at 1800 per day (*ibid.*). With the loss of HMS Hood on 23rd May 1941 and the Axis invasion of Russia a month later on 22nd June 1941, maintaining morale and providing rest for Home Fleet crews became all the more important.



Figure 4 - The RN Recreation Centre Then & Now

Codenamed Operation Barbarossa, German forces opened what became known as the eastern front, capturing Minsk and surrounding Smolensk on the road to Moscow in a matter of weeks. Russian losses in men and material were immense. On the 12 August the Anglo-Soviet Mutual Assistance Pact was signed in Moscow and on the same day the first convoy to Russia codenamed 'Dervish' set sail from Liverpool carrying much needed supplies of fuel, tanks, aircraft, ammunition and other equipment to the beleaguered Russian forces (Farrington, K., 2011 p.137). Through the perilous icy waters of the Norwegian Sea and the Arctic Ocean, merchant seamen ran the gauntlet of German U-

boats, battleships and bomber aircraft as they made for the Russian ports of Murmansk and Archangel on the Baltic coast.

The heavily laden merchant vessels travelled in convoys that were escorted by destroyers, cruisers, battleships and aircraft carriers operating from Scapa Flow. Provisioning and maintaining ships of both the British and US Fleets involved in this escort work remained a high priority right up until 1945 and placed a heavy demand on the naval facilities on Hoy. The Torpedo and Paravane Depot at Lyness (HY40 / NMRS: ND39SW 20.11) resupplied over 860 torpedoes and 500 paravanes to escort vessels and the Fleet Repair Base workshops (NMRS: ND39SW 134) were constantly kept busy rectifying the damage inflicted by enemy action and the harsh arctic conditions (TNA: ADM116/5790 p.148-171 & 196).

With the majority of escort vessels requiring refuelling and sometimes rearming whilst at sea, priority was also given to training merchant seamen in how to defend the Royal Fleet Auxiliary oilers and ammunition carriers that accompanied the convoys from air attack (TNA: ADM116/5790 p. 272). Training courses in aircraft recognition and anti-aircraft gunnery were carried out for the DEMS (Defensively Equipped Merchant Ship) personnel and for this a specialised training complex was developed at Rinnigill (*ibid.*). In addition to being a major naval stores area, RAF Hydrogen production facility and radar repair centre, Rinnigill formed a large training complex consisting of 5 synthetic trainers and a firefighting school which were used by the Royal Navy to prepare ship and submarine crews for combat at sea. Site HY57 and HY58 provided DEMS personnel with invaluable target identification and tracking experience through state of the art combat simulators. HY57 served as a Role, Yaw, Pitch, Alter Course (RYPA) trainer where a manually operated platform simulated the movement of hard chine or round bilged vessels. Trainees would operate various representations of ship-based anti-aircraft guns and endeavour to fire .22 ammunition at a target card whilst the platform was moved under them (TNA: ADM 1/17563). HY58 taught the principles of eyeshooting fast moving aircraft targets in a quarter sphere dome which represented the arc of the sky. Moving target images were reflected on the dome interior by a cam-actuated reflecting mirror attached to a 35mm projector which the trainee would endeavour to track using a mock-up ships anti-aircraft gun (*ibid.*).

Operation Overlord: RDF/Radar & LCTs

1943 marked a major turning point in WWII as the tide began to flow in the allies' favour. In January Japanese forces conceded the island of Guadalcanal to US Forces and in February German forces were defeated by the Russians at Stalingrad. In March the British continued to push the German Afrika Korps back through Tunisia and after failing to halt the allies, Field Marshal Rommel retired from Africa entirely (Farrington, K., 2011 p.255). On Hoy the situation was far less confrontational but still continued to serve a critical role in support of the war at sea. Luftwaffe reconnaissance sorties continued to monitor the disposition of capital ships in Scapa Flow as a means of estimating the departure of the next Arctic Convoy (Hinsley, F., 1981 p.200), however, more advanced radar directed gun laying and a balloon barrage of over 80 balloons meant that few hostile aircraft lingered over the Fleet anchorage for long.

Being such a new and complicated technological development, RDF had its fair share of teething problems. In the majority of Navy cases, malfunctions were found to originate from poor operative training and so in 1941 a small radar repair and maintenance unit was despatched to Hoy to address issues encountered with ship installed gunnery direction and IFF sets (Identification Friend or Foe) (TNA: ADM116/5790 p.186 & 187). The Radar Centre also maintained shore based early warning Admiralty Experimental Stations and radar navigation beacons which were often positioned in remote locations where repairs had to wait weeks before the weather conditions were good enough to transport personnel and parts to the sites. As a direct result, in 1945 Rinnigill became one of the first places in the UK to operate the Sikorsky R-4B helicopter (Figure 5) which meant repair trips could be undertaken in a matter of hours as opposed to weeks (TNA: ADM116/5790 p.190).



Figure 5 – Sikorsky R-4B at Rinnigill Then & Now

In January 1943 the radar unit moved from their two small huts at Lyness to a custom built Radar Repair & Servicing Centre at Rinnigill (HY60) where they began to take on fitting work as well as maintenance (*ibid.*). Radar development advanced at quite a pace during WWII and as a result Home Fleet capital ships were continually requiring upgrades to the latest gun directing, navigational & target tracking radar sets. In the opening months of 1944, the radar staff at Rinnigill played an important role in the preparations for the allied invasion of Europe codenamed Operation Overlord, installing top secret CXFR radar sets in many of the capital ships destined for the invasion force (*ibid.*). CXFR was an experimental high-powered radar jamming system which could identify the enemy radar frequency and then transmit modulated noise on that channel. The value of this fitting work cannot be understated as it was largely due to the jamming of German radar on the night of the 5th June that enabled the allied invasion fleet to approach the beaches of Normandy undetected.

Hoy based personnel also played an active role in the allied invasion of Europe. In August 1942 the 10th and 23rd Landing Craft Tank (LCT) flotillas had arrived in Scapa Flow to be fitted out specifically as Close Protection Anti-Torpedo vessels (TNA: ADM116/5790 p.9). The LCT was the largest landing craft in the British Navy and could carry 5 tanks or 350 tons of cargo. It was the shallow draft, long length and narrow beam that inspired the trial of LCTs as boom defence vessels and 30 of them were converted by the Boom Defence Office at Lyness to carry 9m deep anti-torpedo nets underneath their hulls (TNA: ADM116/5790 p.70). In this configuration, the LCTs could be allocated to up to 10 capital ships and 15 cruisers in the Fleet anchorage area sitting alongside the larger vessels to protect them from attack. In September the pier at North Ness (NMRS: ND39SW 100) was constructed to service the LCTs which were moored in Longhope and provide access to a camp at Crockness (HY75) which was completed in 1943 to accommodate the crews (TNA: ADM116/5790 p.71). The LCT Close Protection scheme wasn't entirely successful with many LCTs found to drag in the strong winds causing damage to the warships they were meant to be protecting. It was therefore with some relief that the LCTs were withdrawn from the Close Protection role in April 1944 to take part in Operation 'Neptune', the air and seaborne transportation of allied forces to the beaches of Normandy as part of Operation Overlord (*ibid.*). In less than two months, the LCT crews who had been living at Crockness found

themselves landing Canadian troops and amphibious Duplex Drive Sherman Tanks on the sands of Juno beach in Normandy.

Barrage Balloons and the V1 Threat

With the allied invasion of occupied Europe underway and German Forces losing ground on several fronts, the danger posed to the Fleet anchorage of Scapa Flow by 1944 was significantly reduced from what it had been several years earlier. The diminished threat and the demand for air defences over the Normandy beachhead led to a reduction of army personnel stationed on Hoy and a reorganisation of the searchlight and anti-aircraft gun sites (ADM116/5790 p.272). The 23rd of June witnessed further reductions in the defences when 950 Barrage Balloon Squadron was given orders to deflate the balloon barrage defending Scapa Flow and move from its headquarters at Ore Brae (HY53 & 54) to RAF Redhill in Surrey (TNA: AIR 27/2298). The order was given as a result of events unfolding over London. On 13th June 1944 the first V1 flying bombs fell on London killing 6 people and by the end of the month between 70 and 100 of the unmanned gyro guided planes were delivering their 1 ton payloads onto London every day. To try and counter this deadly threat Operation 'Diver' was launched which saw the large scale redeployment of thousands of anti-aircraft defences across the UK (Price, A., 2004 p.51). The majority of 950 squadron departed Hoy on the 30th June and added the Scapa balloons to a burgeoning barrage of over 1200 that formed a belt along the North Downs in Kent (TNA: AIR 27/2298).

Scapa Flow wasn't left entirely without a balloon defence. A token barrage of 12 Mk VI Low Zone (LZ) balloons (smaller kite balloons with an operational ceiling of 2000ft) remained and a staff of 4 kept the hydrogen factory at Rinnigill (NMRS: ND39SW 18.02) running to produce the gas to fill them (TNA: AIR 27/2298). In all, 6 RAF personnel and 1 WAAF stayed on to oversee the training and hand over of these balloons to the Admiralty also serving as a Care & Maintenance Party to organise the shipment of any remaining RAF equipment (ADM116/5790 p.418). RAF barrage balloon involvement in Orkney finally ended on 21st October with the departure of the last remaining personnel from Hoy (TNA: AIR 27/2298). With the addition of the Scapa balloons, the 'diver' defences along the south coast began to prove effective and the rate of V1 strikes on London was drastically reduced.

Section 2. Desk and Field-Based Archaeological Assessment

2.0 Desk Based Assessment

The successful delivery of the Legacies of Conflict aims and outputs has relied upon a sound understanding of the wartime historic environment and the contextual narrative in which it is set. To achieve such an understanding, the early months of the project focused on identifying, consulting and copying relevant historical source material held by national and local archives. The information gathered during this phase proved instrumental for informing the historical background found in Section 1 as well as for directing archaeological fieldwork and community engagement activities throughout the placement.

2.0.1 Historical Document Research

The principal source of historical documents consulted during the project has been the National Archives (TNA) at Kew in London. Intelligence summary documents, minutes from war cabinet meetings and defence maps showing site locations as well as detailed unit war diaries documenting the activities and events that took place on Hoy during WWII have been sourced from here. A highly successful 5 day research visit to TNA was undertaken and over 70 documents, maps, plans and photographs were consulted and digitally copied either in full or in part. A percentage of the records were processed into PDF format so that they could be more easily read and these were uploaded onto a tablet PC which formed one of the many resources for community members and visitors to access at drop-in sessions and other events held during 2014. All of the copied documents have been deposited on a laptop PC located at the IoHDT Office in Longhope and form a locally accessible archive resource for anyone interested in researching the WWII heritage of Hoy.

TNA archive document ADM116/5790 offers an excellent example of how widely beneficial the digital copies have been for the project and its outputs. ADM116/5790 *History of the Fleet Base - Scapa Flow 1937-1946* is a vast historical document written shortly after WWII which provides summaries and histories of Royal Naval as well as RAF and Army activity around the Fleet base of Scapa Flow. Examination of this document has provided a great deal of useful information relating to the wartime sites in Orkney, their chronologies, biographies and associated broader contextual narratives as well as some 140 historic photographs of sites and scenes from WWII on Hoy. Information and photographs from this

document have been used to form the basis for evening talks, articles in the local island newsletter 'The Blether' and the guided walk around the WWII Naval Base at Lyness.

Many of the unit war diaries copied from TNA were found to contain Cassini grid coordinates for military sites on Hoy such as camps, ammunition magazines, stores of equipment & supplies, anti-aircraft searchlight positions and gun batteries providing valuable location and descriptive information. These coordinates were extracted and converted into the National Grid coordinate system before being inputted into a Geographical Information Systems (GIS) database. Here the coordinates were compared against any visible features on modern and historical maps as well as aerial photographs to help identify whether any of the sites may survive as archaeological monuments. The coordinates were also compared against wartime archaeological sites previously recorded in the National Sites and Monuments Record of Scotland (NMRS) held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS).

2.0.2 Aerial Photographic Research

The National Collection of Aerial Photographs (NCAP) held at RCAHMS in Edinburgh forms the second major archive material source accessed as part of the project. NCAP holds tens of millions of aerial images and is one of the largest collections of its kind in the world. The Sharing Heritage grant awarded by the Heritage Lottery Fund earlier in 2014 enabled digital scans of 50 Royal Air Force photographic covers dating between 1946 and 1949 to be purchased from NCAP. These images represent some of the earliest aerial photographs of Hoy and are the closest in age to WWII thus providing a clearer picture of the extent of the defences at the end of the war. The copies were downloaded from NCAP and georeferenced into a GIS where comparative consultation between Ordnance Survey map layers and the aerial photographs has aided the field based aspects of the archaeological assessment enabling wartime site features to be located in relation to modern landscape features (see Appendix 3). Hard copies of the aerial photographs from NCAP have also been obtained and organised into a comprehensive photographic archive (Figure 6). This collection now forms a second locally accessible resource for the community of Hoy and Walls allowing islanders and visitors to continue to explore Hoy's wartime past through the aerial images held at the IoHDT Office in Longhope.

Through the use of a variety of data sources such as the wartime aerial photographs from NCAP and the historical documents from TNA it has been possible to build up a good impression of the scale of the military occupation on Hoy during WWII, roughly locate specific sites and features and obtain descriptive information relating to their function. This process has directly informed a focused programme of ground truthing and walkover survey to ascertain the extent and condition of any surviving archaeological remains of the sites.



Figure 6 - The IoHDT Hoy & Walls aerial photographic collection

2.1 Archaeological Fieldwork

Although the desk-based assessment proved successful in identifying a large number of military sites on Hoy that dated from WWII, gaps in the modern aerial photographic cover and inconsistencies between the locations of features on the historical aerial photographs and the converted Cassini grid coordinates emphasised the need for a programme of archaeological fieldwork. The fieldwork, consisting of focused walkover survey which was intended to ground truth potential military features identified on the aerial photographs and reconcile these with the Cassini grid coordinates recovered from the unit war diaries.

2.1.1 Methodology

A systematic approach was taken to the field survey which began in Rackwick with the most north-westerly sites and then progressed steadily back through the parish of Hoy and down the island to the southernmost tip of the parish of South Walls at Cantick Head. An

approximate area in the immediate vicinity of the converted Cassini grid coordinates and the features noted from the aerial photographs was walked and any wartime archaeological features observed were recorded using a handheld GPS, basic written description and photographs where appropriate. The vast majority of the island-wide walkover survey was conducted solely by the principal author working alone. However, there were four occasions where volunteers from the local community participated. A total of 6 sites were selected for more detailed topographic survey but this method of site recording was primarily used as a means of encouraging public engagement with wartime heritage through active involvement in archaeological fieldwork (Figure 7).

In addition to fulfilling its outreach role, the topographic survey also proved informative for interpreting poorly defined earthwork features. An example of this is site R054a in Rackwick which consisted of a small, roughly circular turf banked enclosure. Erosion of the banks and deep vegetation made the form difficult to define and the feature was initially interpreted as being similar to R054d, an Anti-Aircraft Light Machine Gun (AALMG) pit (see Appendix 4). R054a and R054d were topographically surveyed and when the hachured plans were compared they were found to be very different. However, the plan of R054a was later found to almost exactly match the plan of R052, a clearly defined blast embankment for an Anderson type Passive Air Defence (PAD) shelter. This comparison of topographic plans has allowed site R054a to be more accurately interpreted demonstrating the added value of the earthwork surveys.

2.1.2 Co-Operative Community Fieldwork

As part of the fieldwork programme an evaluation of archaeological field survey as a means of addressing project aims 1 and 2 (using WWII archaeological sites as a community enhancing resource and as an all age educational device) was carried out. To achieve this, two community fieldwork events were conducted, the first being a week long survey of the Rackwick area in Hoy and the second, a weekend survey of Wee Fea in North Walls.

2.1.3 Rackwick Survey

Following a broad publicity campaign in May, the Rackwick walkover and topographical survey was carried out between the 2nd and 6th June 2014 utilising archaeological equipment

purchased through the HLF 'Sharing Heritage' grant and was organised in co-operation with the Orkney Research Centre for Archaeology (ORCA) who have been conducting community archaeological projects in Hoy and Walls over the past 6 years. ORCA staff accompanied by a group of student volunteers travelled across from Mainland to join Rackwick residents and volunteers from other parts of Hoy. As part of the survey, a 'drive-by' oral history interview was conducted with Mr J. Rendall, a Rackwick resident who grew up in Rackwick during WWII. Mr Rendall offered remarkably clear and detailed information about military site locations as well as being able to provide interesting anecdotes about what it was like to live in Rackwick during the war years. When three notable events recorded in the 1944 war diary of 59 AA Brigade (TNA: WO166/14668) were shown to Mr Rendall he was able to indicate where they took place and recall additional details of the events themselves. In two of these circumstances, very little archaeological trace remained of the sites (R056 & R059) and they could quite easily have been missed had it not been for his reminiscences. The oral historical resource, supported by the war diary accounts has added a truly unique and personal layer to the narratives of the sites around Rackwick and offers an excellent example of how beneficial the combination of these multiple sources is to understanding the wartime archaeological landscape of Hoy.

The Rackwick survey proved very successful and 20 WWII sites were recorded in the area, only two of which were previously noted in the NMRS. One of these sites (NMRS: HY20SW 47) was inaccurately located and it was possible to correct its national grid position as part of the survey (re-recorded as R054). The survey proved highly effective as a means of engaging with visitors and islanders. With Rackwick being one of the most popular places of interest for visitors to Hoy, there was a steady flow of groups and individuals passing by who stopped to see what was happening throughout the survey week. Surprise and interest were expressed by many when the extent of military activity in Rackwick during WWII was explained and pointed out to them.

Volunteer turn out was a little lower than anticipated given the good weather and high level of publicity. Nevertheless, the event still served as an effective all age educational device engaging 8 volunteers within the 19-25 and over 60 age brackets all of whom provided

either written or verbal feedback that they had learnt something new as a result of their involvement.



Figure 7 - Volunteers conducting a topographic survey of site R054b, an Anti-Aircraft Light Machine Gun (AALMG) pit during the Rackwick Survey.

2.1.4 Wee Fea Survey

The Wee Fea walkover survey was carried out over the weekend of 30-31st August 2014 following a more traditional archaeological methodology which involved walking the hillside in transects. A weekend time frame and a more southerly location were chosen for the survey in order to allow members of the community and visitors not available during the week the opportunity to engage in fieldwork. The survey was conducted in close liaison with OIC, the principal landowner. Regular contact with OIC's Development & Planning Department and specifically Tom Hunter, the Historic Environment Officer has been maintained throughout the project and has provided an excellent opportunity to co-operate on mutually beneficial field and desk-based site investigations. With many of Hoy's surviving WWII sites falling under OIC ownership, the collaborative approach has enabled site condition, function and historical background data to be gathered which can better inform the Council's long term management of these sites. In addition to Mr Hunter's assistance, three island residents also participated in the survey and were given training in the use of the GPS units and shown how to fill in the recording forms. Working in pairs, the survey

teams then traversed the hillside in a line c.20 paces apart. When a site was located the pair would converge at the location and record it using a handheld GPS, brief written descriptions and photographs where appropriate.

Another reason for selecting Wee Fea for the survey came about through the discovery of a number of sketch maps in the infantry war diaries of the 7th Battalion, King's Own Scottish Borderers (TNA: WO166/12598), 1st Battalion, South Wales Borderers (TNA: WO166/12730 & WO166/15167), 2nd Battalion, East Surrey Regiment (TNA: WO166/15168) and the 7th Battalion, North Staffordshire Regiment (TNA: WO166/12714) which had been copied at TNA. The sketch maps depicted areas of demarcation across the hillside annotated as prepared defence positions for individual infantry companies serving as part of the Hoy Defence Scheme. According to copies of the defence scheme kept as appendices to the war diaries, Wee Fea formed a distinct sector of an island wide defence scheme intended to protect vital points, such as the underground oil fuel store (UOFS) and Lyness Naval Base, from attack by the landing of airborne forces or a seaborne commando force (see any of the infantry war diaries listed above for further details). The sketch maps also depicted other defence features such as a Light Anti-Aircraft (LAA) gun emplacement and a decoy gun position.

An initial reconnaissance of one of the demarcated areas earlier in 2014 revealed a number of small slit trenches surviving in remarkably good condition across the north east slope of the hill and so a larger systematic survey was deemed the most appropriate method of covering the whole hill in order to locate as many of the defence works as possible. The good weather, observation skills and speed at which the volunteers picked up the survey strategy meant that by the end of the weekend, 232 previously unrecorded archaeological sites had been logged across a 1.5km² area (Appendix 4). 156 of these sites are slit trenches c.2m long by 1m wide and c.1m in depth some of which were completely filled with water and others showed signs of partial collapse, erosion or natural infilling (Figure 8). Once again the archaeological survey demonstrated its value as an educational and community enhancing device. As they had during the Rackwick Survey, the Wee Fea Survey volunteers noted that they had learnt something new from their experience and through conversations with each of the three island residents who participated, it is clear that their perception and

appreciation of Wee Fea has changed as a result of their involvement in the survey and the discoveries made. Two of the volunteers expressed an interest in continuing to conduct wartime archaeological surveys in the future in conjunction with recreational walks and ecological surveys that they regularly participate in.

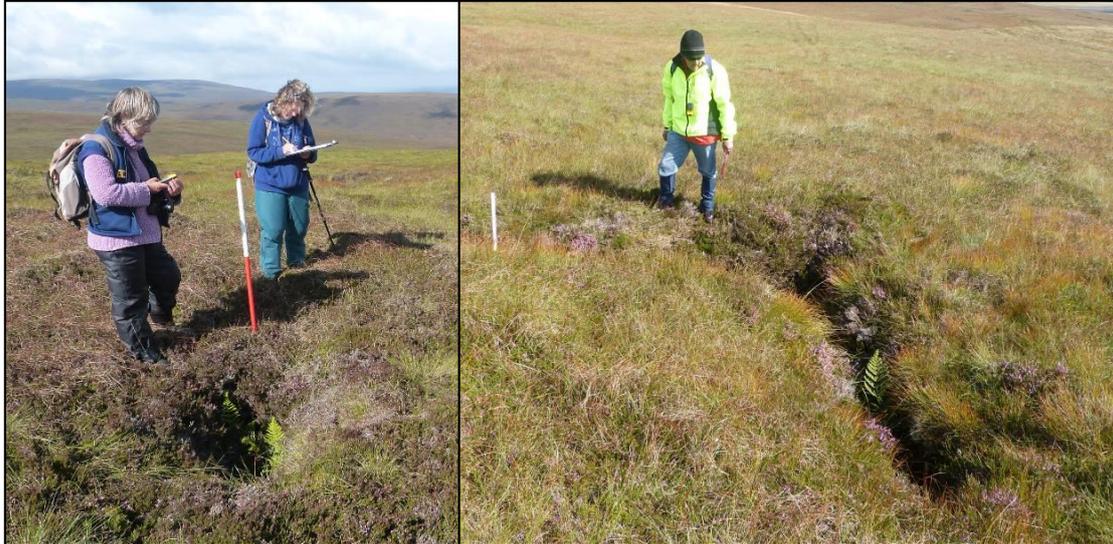


Figure 8 - Volunteers recording defensive firing positions on Wee Fea during the survey

2.2 Summary of Fieldwork Results

The fieldwork programme has proven to be an incredibly fruitful and beneficial exercise providing a wealth of information which has contributed to the delivery of the principal project aims as well as many of the other outputs. At its most basic level, the island-wide survey unequivocally demonstrates the scale of the military presence on Hoy during WWII and how much of it has survived as a lasting legacy on the island today. A total of 415 archaeological sites specifically relating to WWII activity on Hoy have been recorded during the course of the fieldwork programme (see Appendix 4). This figure more than triples the number of known WWII archaeological sites on Hoy from the 128 noted as previously recorded in the NMRS (see Appendix 5) to a new total of 543.

What is particularly notable about the sites that have been recorded during the island-wide survey is the number of well-preserved sites that have survived predominantly as earthworks. Indeed entire classes of site which were previously absent from the wartime archaeological record of Hoy have been identified such as AALMG pits, defensive firing positions, mortar pits, observation posts and bomb craters. The surviving nature of the sites

is an important point to highlight as overgrown concrete bases and earthwork features are far less resource intensive to manage than standing buildings. As a direct result of their composition, earthwork-based sites are far more stable as archaeological monuments having reached a relatively flat plateau in their rate of decay. Standing buildings however are for the best part derelict and open to the elements. These buildings were often constructed in haste and only intended to last 5 years of war and as a result are far more fragile decaying at a visibly quicker rate. From a long term sustainable management perspective it is important to recognise that the well preserved earthwork-based sites, in some cases with associated concrete structures and platforms, will require less resources investment to maintain their integrity in the future.

The archaeological record on Hoy has greatly benefited from low intensity land use patterns and a lack of post-war re-development which has allowed sites which are relatively easy to fill in and plough flat to survive almost fully intact. This is particularly true in more remote upland locations where some of the best examples of certain site types in Orkney, possibly even the UK can be found. The Anti-Aircraft Searchlight Battery (AASL) at Heldale Water (HY92) is particularly worthy of note for its unusual doglegged entrance to the main emplacement and the survival of internal edge timber revetment supports (Figure 9). A group of three mortar pits (Z024-026) near to the summit of Wee Fea are also quite remarkable with curved corrugated iron ammunition lockers set into the rear of the wedge shaped pits (Figure 10). Further down the slope of the hill to the east an incredibly unusual 4m long slit trench (Y073) with a pair of corrugated iron Anderson type shelters dug side by side into the rear wall of the trench remains in excellent condition. Even in more accessible lowland areas such as the north shore of Ore Bay the entirety of the Royal Naval Torpedo Depot and Armament Supply Depot Laboratories (HY40/NMRS: ND39SW 20.11) are in evidence consisting of large concrete bases for the main torpedo sheds reinforced concrete explosive stores, laboratory examination rooms and PAD shelters surrounded by substantial turf blast bunds (Figure 11). The list of remarkably well preserved sites could continue to be expanded upon and a further list could be compiled of sites with a particularly significant connection to historical events and activities. Table 1 presents a very short list of the top 10 sites or groups of sites that combine the highest level of preservation with a national or historical significance.



Figure 9 - Site HY92 - AASL Emplacement forming part of battery known as HY2.3 Heldale Water



Figure 10 - Z024 & Z025 Mortar Pits, Wee Fea



Figure 11 - HY40E RN Armament Supply Depot Laboratory Examination Rooms

Site No:	Description	Significance
ND39SW 20.12	RN Recreation Centre, Lyness	Building of WWI date that formed central hub of Lyness Naval Base entertainment in WWII. Contained 900 seat cinema & other recreational facilities.
W005-16,18,20-27,38-52,55-63 Y001-Y081,83,84 Z002-033,35-50.	Wee Fea Sector Prepared Land Defence System	Best surviving example & densest concentration of prepared trench positions from WWII in the UK. Consists of 156 slit trenches & 14 supporting weapons pits so far recorded over a 1.5km ² area of hillside.
ND29SE 2	ACOS HQ & RN Communication Centre	Splinterproof central communications centre & HQ of Admiral Commanding Orkney & Shetland from 1943. Coordinated all Home Fleet Base communications.
ND39SW 18.01	Submarine Torpedo Attack Teacher	Only known UK example of a cycloramic synthetic trainer of this design used to train submarine crews in simulated attacks on ships. 1 of 2 surviving from a complex of 5 synthetic trainers at Rinnigill.
HY65	RN Fire Fighting School	Complex consisting of concrete bases & standing brick buildings. School trained over 36,000 Naval personnel to combat ship based fires from 1942 until end of the war.
ND39NW 161	Rysa HAA Gun Battery	1 of few surviving pre-WWII built HAA sites in UK. Claimed 1 st enemy aircraft shot down by AA guns in to crash on British soil in WWII during air raid on 17/10/39.
HY61	Helicopter Landing Pad	Circular concrete pad c.20m diameter. One of the earliest operation landing sites for Sikorsky R4-B Hoverfly helicopters in the UK. In use from 1945.
HY40 / ND39SW 20.11	RN Torpedo, Paravane & Armament Supply Depots	Incredibly intact complex of earth bunded concrete Naval munitions examination, repair, fusing & store areas including a pair of WWI shell platforms served by narrow gauge railway. Stored, overhauled & issued 1314 torpedoes to British & US Fleets as well as Fleet Air Arm.
HY23, 24 & 26 / ND39NW 183	Bungalows	3 felt clad timber bungalows constructed post 1921-pre 1940. Sound wind & water tight condition. Present fine examples of rare pre-war temporary housing. HY23 may have been used during interwar salvage of German Fleet.
HY56	Bomb Crater	Subtle circular depression represents 1 st bomb to be dropped on British soil in WWII during 17/10/39 air raid.

Table 1 - Shortlist of well-preserved sites of Historic or National significance on Hoy

2.2.1 GIS Archaeological Site Database

Task 2 of the Legacies of Conflict Project brief specified the production of a wartime sites catalogue combining information gathered from archive sources, aerial photographic collections and archaeological sites and monuments databases. This catalogue was initially intended as a research aid as part of the desk based assessment which could inform the fieldwork programme. Additionally, over the course of the project the GIS has been developed into a far more extensive and useful resource and now forms a substantial output from the project to be used alongside this development document. The most suitable format for the wartime sites catalogue was identified as being a Geographical

Information Systems (GIS) database which offered the capacity of combining multiple layers of spatial data in one software program and displaying it using a map based interface.

Working with two base layers of 1:25,000 and 1:10,000 Ordnance Survey mapping data, comma delimited excel spreadsheets were created containing site location data gathered from historical documents (described in Section 2.0.1) which was then imported into GIS and displayed graphically. A catalogue of WWII sites recorded in the RCAHMS Canmore database was also imported into the GIS database in this way. Military defence maps and aerial photographs were imported as raster datasets and georeferenced so that they formed overlays on the Ordnance Survey base maps (see Appendix 3). This process facilitated the allocation of National Grid coordinates to features depicted on the maps and photographs (described in Section 2.0.2). In this capacity the GIS served a significant role in streamlining the fieldwork elements of the project.

The main development of the GIS catalogue has been its expansion to include the sites recorded as part of the island-wide survey programme thus creating a comprehensive site database of all of the known WWII sites on Hoy. The database combines a detailed excel spreadsheet containing site location and description data with the fieldwork photographic archive. The spreadsheet is a more extensive version of the information contained in Appendix 4 and can be found on the IoHDT Wartime Heritage laptop PC (file location C:\Users\Gavin\Documents\ArcGIS\WWII Site Excel Files). Each recorded site is represented by a point on the map which can be selected using the 'HTML Pop-up tool' (). This tool will display information about each site or feature (see Figure 12). The 'Hyperlink tool' () can also be used to bring up information about each site. When the tool is selected, sites with interactive data will appear with a blue dot at their centre on the map. Clicking on any of the dots using the hyperlink tool will bring up photographs of each site (see Figure 12). The fieldwork photographic record is otherwise stored in C:\Users\Gavin\Pictures\ Hoy & Walls WWII Site Photo Database on the IoHDT Wartime Heritage Laptop PC.

It is hoped that the GIS site database will provide a useful resource for IoHDT, informing future site management and the development of interpretation initiatives to make the island of Hoy's wartime heritage more accessible and engaging for local residents and visitors. It is also hoped that the GIS database may form a user friendly local resource for the

community and other interested parties to conduct their own research into Hoy's extensive WWII archaeology.

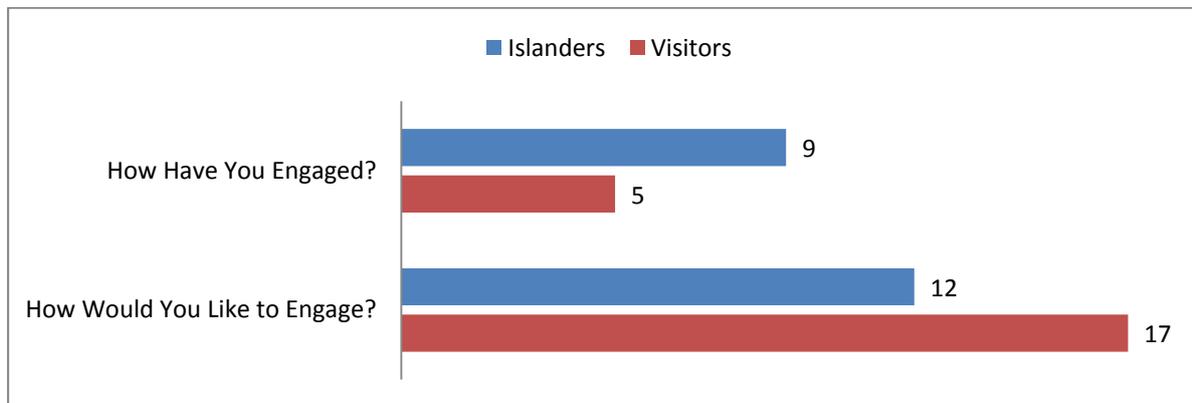


Figure 12 - Graph showing Archaeological Fieldwork Engagement Trends (data taken from questionnaires)

2.2.2 Fieldwork as an Effective Educational & Engagement Device

Aside from the remarkable state of preservation and the great number of sites discovered across Hoy, the fieldwork programme has also indicated the value of archaeological survey as an educational device and a means of engaging members of the local community and the wider general public in wartime heritage. As previously described in the summaries of the Rackwick and Wee Fea Survey events (Sections 2.1.3 & 2.1.4), archaeological fieldwork has proved a popular activity. High numbers of participants may not have been achieved (14 in total) but those who were involved demonstrated great enthusiasm, interest & enjoyment whilst taking part and offered feedback both verbally and written via questionnaire indicating that they had learnt something new from the activity and developed a greater awareness of and appreciation for the wartime heritage of Hoy.

A particularly interesting detail that has been revealed from the results of the broader participant feedback is that although the numbers of people involved in archaeological fieldwork during the project was relatively low, the questionnaire returns suggest that more visitors and islanders would like to engage with wartime heritage through fieldwork in the future (see Figure 13). This is a very encouraging result and would indicate that if small scale fieldwork activities were well advertised and conducted at weekends to appeal to working aged island residents and on mid-week days to attract retired residents and island visitors then archaeological fieldwork could continue to be a valuable way of actively engaging with both islanders and residents in the future.

Hoy & Walls WWII Archaeological Sites Database - ArcMap

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

1:5,000

Table Of Contents

Layers

- WWII_Hoy&Walls_Sur
- RCAHMS_Canmore_W
- GeoCache_Trail_Objec
- RAF APs1948
- RAF APs1946
- RAF APs1949
- RAF APs Oct 1946 Higl
- ADM239_296 Chart Z4
- 1:10,000 OS
- 1:25,000 OS

HY51

FID	80
FID_1	81
SHAPE_1	Point
SITE	REME Workshop
DESCR	Large cement rendered red brick vehicle workshop for Royal Electrical Mechanical Engineers. Double upward opening garage shutter doors on S gable wall with partitioned workshop space at N end. White and red enamel coated bricks used for main interior par
ADDITIONAL	
PARISH	WALLS AND FLOTTA
ENTRYDATE	03/09/2014
NGS	ND
NGRE	30348
NGRN	93434
X	330348
Y	993434
Z	36.605
COUNCIL	Orkney Islands
COUNTY	Orkney
DISTRICT	ORKNEY
REGION	ORKNEY ISLANDS AREA
PERIOD	20TH CENTURY
CLASSSUB	MILITARY DEPOT
ENTER_BY	GJ_LINDSAY
URL	
PHOTOS	C:\Users\Gavin\Pictures\Hoy & Walls WWII Site Photo Database\Site HY51 -

Ore Burn Cottage

Ore Farm

MS Hillcrest

HY46

HY54

HY53

HY50

HY51B

HY52A

HY52B

Site HY51 - RE... Picture Tools

File Home Share View Manage

Clipboard Organize New Open

Clipboard Organize New Open

Search Sit...

Favorites

- Desktop
- Downloads
- SkyDrive
- Recent places

Homegroup

- This PC
- Desktop
- Documents
- Downloads

7 items

HY51 (1)

HY51 (2)

HY51 (3)

HY51 (4)

Figure 13 - Screenshot of GIS Archaeological Site Database

Section 3. Summary of Project Activities

A broad range of activities have been undertaken as part of Legacies of Conflict in order to gather data that could feed directly into Output 3. Throughout the project, data has been collected through a number of different means but primarily through questionnaires which all participants were encouraged to complete following their involvement in a particular event or activity. 115 questionnaire returns were received in total. Informal conversations, discussions and the observation of participant attitudes and responses have also been key in gauging public perceptions and response to particular activities. This section offers a summary of each activity followed by a results component which includes a number of conclusions that have been drawn from each activity. Section 3 concludes with an overview of qualitative and quantitative data collected primarily from the questionnaire returns.

3.0 North Walls Community School Wartime Heritage Project

3.0.1 Activity Summary

The North Walls Community School (NWCS) Project was conducted between 19th February and 2nd May 2014 with a 3 week break over the Easter school holiday period and an exhibition launch of the pupils' work on 21st May. The teaching programme involved the delivery of 16 lessons of 90 minutes taught two days a week over 8 weeks during which the pupils learnt and then applied archaeological skills to the investigation and interpretation of the wartime landscape surrounding their school (Figures 14 & 15).

The Project involved teaching the full school compliment in a single, combined class of 20 pupils with an age range of 5-11. The principal author led the combined class in practical field and classroom based lessons with both classroom teachers present at all times and serving in a facilitating and disciplinary role. During field based lessons a further member of staff was also in attendance. Both the teaching and support staff of NWCS have been incredibly encouraging and enthusiastic from the outset volunteering significant time and resources to the delivery of the project.



Figure 14 - Field-based active learning in practice: identifying a barrage balloon site



Figure 15 - School-based active learning in practice: learning how a barrage balloon worked as part of a WWII defence system.

The lessons were formatted to enable young people's perceptions of wartime heritage to be evaluated whilst also assessing the potential of WWII archaeological sites as educational resources. In order to achieve these goals the project was structured around a baseline and end point assessment exercise which involved the pupils walking a predetermined route along the road leading to Rinnigill passing WWII archaeological sites close to the school. Very little informative input was offered by the teaching staff during these exercises and the

pupils were provided with paper, stationery and cameras and encouraged to draw, write about or take photographs of anything along the route that they found interesting. Back in the classroom after the walks the pupils were tasked with creating posters based on their field records illustrating the route taken and what they had observed. Class 1 (the younger pupils) produced combined class Baseline & End Point posters and Class 2 pupils created individual posters or worked in pairs.

The core lessons that were laid out between the evaluation exercises were a variety of classroom sessions including historical document & photograph research, presentations and practical activities relating to specific wartime themes and field-based lessons including archaeological surveying, recording and artefact investigation. The intent of these lessons was to develop a new set of observation skills and knowledge base which the pupils could use to investigate, interpret and engage with the landscape around them. Archaeology was introduced as a form of detective work with topographic features, standing buildings, artefacts and historic documents serving as clues to what may have happened in the past. The pupils were directed towards the archaeological remains of an anti-aircraft searchlight battery (HY72) and a barrage balloon site (NMRS: ND39SW 72) on a second walk of the baseline evaluation route where they had the opportunity to utilise their recently acquired 'detective' skills. The subsequent lessons used the remains discovered and recorded by the pupils at these sites (searchlight emplacement, anti-aircraft light machine gun emplacement, hut bases & balloon anchor points) to inform further learning about Hoy's role in WWII. Complex concepts such as depth of time, measuring, descriptive writing, poster presentation, personal & group research, local & European geography, weapons technology (i.e. how barrage balloons, searchlights & anti-aircraft guns work), the origins of WWII and World conflict were all covered. A significant contribution to the project came from Mr Jim Sinclair, a past island resident who had spent periods of his childhood living along the road being researched by the pupils during WWII. Travelling up from the south of England to attend two of the project sessions, Mr Sinclair generously guided the pupils on a walk past many of the sites he remembered, sharing stories and answering questions about what it was like to grow up and attend school during WWII. The learning experience was also augmented by a visit to the nearby Scapa Flow Visitor Centre & Museum (SFVC&M) to conduct further research using the wartime collections held there.

The teaching elements of the school project concluded in the first week of May and three weeks later a summer exhibition was opened by the pupils at the SFVC&M where representatives from both Class 1 and Class 2 summarised the project and their findings to an audience of 30 visitors, island residents and proud parents. A more detailed breakdown of each lesson and the project timetable can be found in Appendix 6.

3.0.2 Summary of Activity Results

With such a varied interdisciplinary approach, the school project was perfectly suited for the Scottish Curriculum for Excellence (CfE) and successfully covered 38 experiences and outcomes across 7 curriculum areas providing opportunities for pupil development in all four capacities of Successful Learners, Confident Individuals, Responsible Citizens and Effective Contributors (see Appendix 7). The project also incorporated outdoor and active learning with 50% of the pupil contact time taking place outside of the classroom.

A comparison of work completed as part of the baseline and end point evaluations indicates a marked development in observation skills in both the older and younger aged pupils. As evidenced in Figure 16, during the baseline survey pupils had a deep viewing range selecting points of interest in the far distance such as the oil flare on Flotta and the Martello tower at Hackness. The selection of distant features could be a result of not seeing anything of interest nearer at hand. The foreground points of interest that were selected tended to focus on plants, animals or familiar modern features such as a post box. Figure 17, produced by the same Class 2 pupil as Figure 16 displays a clear change in viewing range with far more close proximity features selected. Each of the illustrations has been labelled with an interpretation and all of them relate to sites investigated or visited as part of the project.

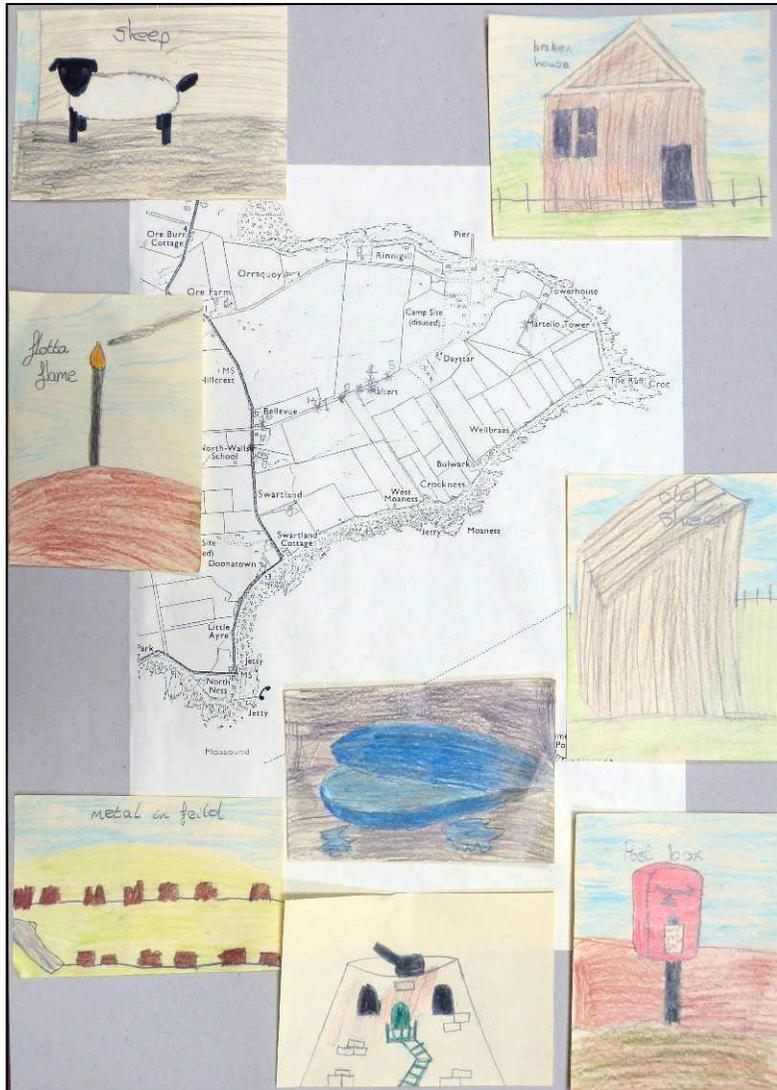


Figure 16 - Base Line Evaluation Poster

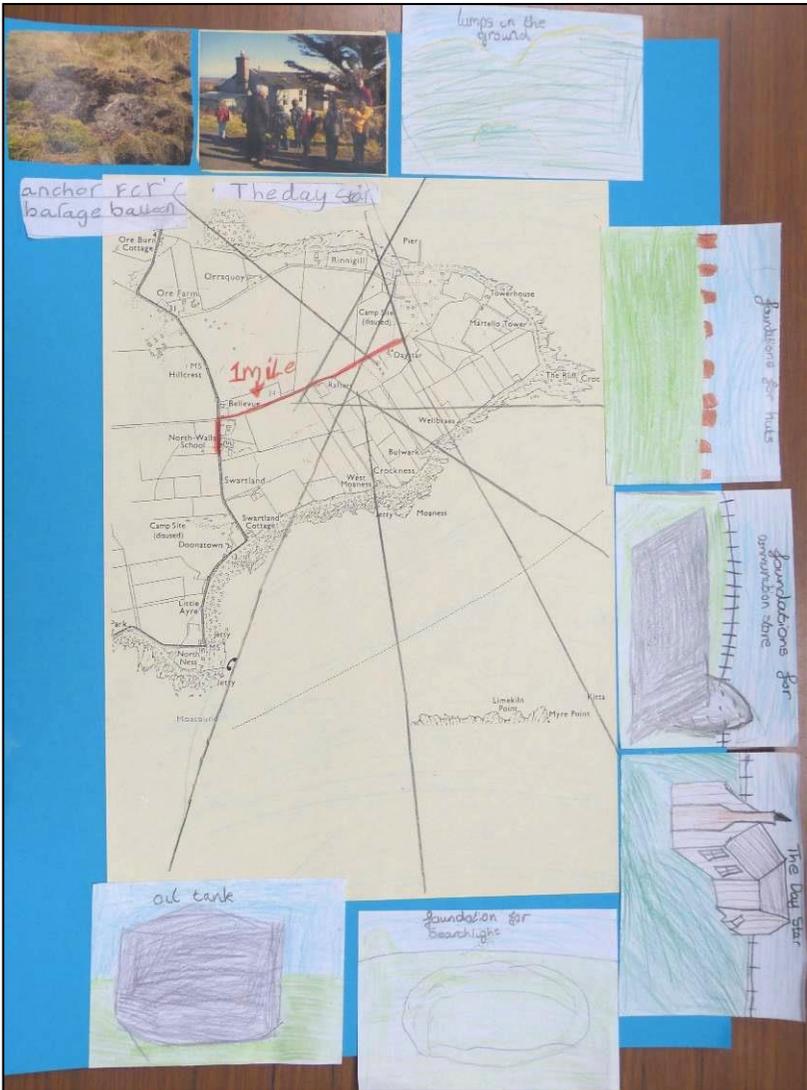


Figure 17 - End Point Evaluation Poster

Skills developed over the course of the project were put into practice by all pupils during the end point assessment to a greater or lesser degree depending on the age and ability of the individual. Generally speaking pupils were able to identify far more sites of interest (and notably World War Two archaeological remains) in the immediate vicinity to where they were walking than they had during the baseline evaluation and demonstrated high levels of information recall from previous classroom and outdoor lessons. The complexity and detail of knowledge retained was exceptional and evidenced through answers to questions, poster content public delivery at the exhibition launch and statements voiced during the end point evaluation.

Formal feedback has been received from parents and teachers via questionnaires that were distributed in the closing weeks of the project. The response and comments have been very positive indeed indicating that the teaching approach has been well received by parents (Figure 18). Parental feedback also indicated that in all seven cases where the questionnaire had been returned, children had spoken about what they had been learning as part of the project and since participating in the project had demonstrated a greater interest in the past. In 5 cases parents had recorded that children appeared more interested in the activities associated with this project than other school activities and all agreed that projects like this should be run in the future and be expanded into other Orkney schools.

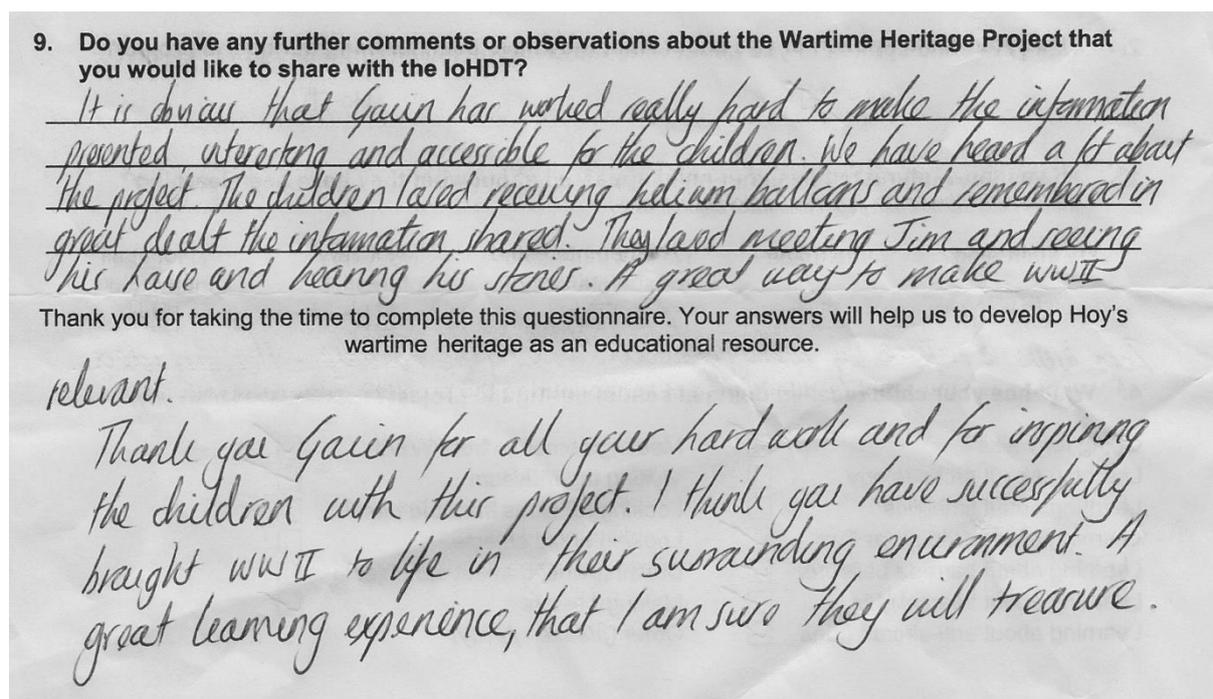


Figure 18 - Extract from North Walls School Project Parent Questionnaire

Teacher feedback was equally positive and emphasised the suitability of the applied teaching approach for primary level pupils with one teacher commenting that *“the levels of discussions and insights from the pupils have been amazing.”* The benefits brought from the project being delivered by an external individual such as the graduate heritage officer was also noted and although two members of staff indicated that they would be confident independently delivering a similar project in the future, all staff highlighted the value of having access to external expertise. All responses indicated that if a heritage officer was not available in the future then it would be worth exploring the possibility of staff and/or resource assistance from OIC’s Arts, Museums & Heritage Service.

The results from pupil, parent and teacher evaluation all indicate that the primary school wartime heritage project has been a tremendous success. It has demonstrated that wartime archaeological remains, whether they are concrete bases, subtle earthworks or broken rusting artefacts, provide an invaluable physical source for educating and engaging the next generation about the wartime heritage of their island home. An archaeological approach has also shown its suitability for use with the Scottish Curriculum for Excellence enabling even the youngest pupils to engage with complex concepts and issues. As a final point, it is worth highlighting that during the project, the games of soldiers and pretend fighting that so often accompany the teaching of war themes at primary school level were entirely absent both in and outside of the classroom. This response would suggest that themes relating to conflict can be taught at an early stage in schools and processed by pupils in a mature way that doesn’t encourage violence or confrontational behaviour.

3.1 Wartime Heritage Geocache Orienteering Trail

3.1.1 Activity Summary

With no secondary school on Hoy it has been difficult to identify a means of interacting with the teen age bracket of the community. In an effort to explore the potential of wartime heritage as an educational device for secondary school pupil’s, contact was made with OIC’s outdoor education team who carry out a wide variety of outdoor activities with school groups visiting Hoy from Mainland. With full co-operation from the outdoor education team, a GPS based orienteering exercise was created which could be delivered by the OIC Outdoor Education as part of their orienteering programme. The exercise was based on the

globally popular GPS game known as Geocaching which involves the seeking of containers hidden at predetermined grid coordinates. The boxes normally contain a logbook or log sheet for discoverers to record that they have found the cache and sometimes 'treasure' objects which can be retained by the finder on the condition that they leave something in their place for the next person. The geocache orienteering exercise was a variation on this theme and consisted of seven weatherproof plastic ammunition-style boxes being located at wartime archaeological sites previously identified on Wee Fea during the fieldwork programme (see Appendix 8 for locations). Each cache box had laminated interpretive material placed inside which relating to the wartime site on which it was located and two of the boxes also contained mapping exercises to encourage the outdoor groups to seek out other wartime sites nearby and record their location (Figure 19).



Figure 19 - Geocache Trail Boxes with Interpretation & Activity Materials

On Thursday 8th May the boxes were installed on Wee Fea and the following morning the trail was tested by a visiting primary 6 class from Papdale Primary School. The pupils were below the secondary school age that the exercise was pitched at and they had not undergone map and compass training ahead of time but with a little more staff support than originally planned, they were able to carrying out the exercise. Upon arrival at a prearranged position half way up the hill road, the outdoor group was disembarked from

their transport and were issued with 'sealed orders' that introduced the exercise and provided them with the grid coordinates of the first cache box. Each subsequent box contained the coordinates for the next box and by using maps, compasses and GPS's the groups moved around the trail before returning to the point of origin for collection.

3.1.2 Summary of Activity Results

Owing to additional time being required at the beginning of the exercise to teach the primary 6 pupils rudimentary map reading skills, it was not possible to complete the whole trail within the allotted activity time period and only two out of the seven boxes were utilised. In spite of this, the pupils remained engaged and focused on task for the duration of the exercise and demonstrated a high level of ability in being able to undertake such a challenging task. At both of the cache locations the pupils participated in reading aloud the interpretive material which generated interesting discussion and questions about 'what it must have been like to be a soldier sitting in a small, wet hole half way up a hill watching and waiting for the enemy.' Observations carried out during the exercise and conversations with school and outdoor education staff afterwards would indicate that the wartime geocache trail provided a positive and effective means of engaging young people with WWII history in a real and tangible way. The trail has been left in-situ on Wee Fea as the OIC Outdoor Education have indicated a keen interest in making further use of it in the future.

Interest in the trail by local geocache enthusiasts has highlighted the potential of wartime heritage geocache trails as a means of encouraging tourist and local engagement with more remote wartime heritage sites on Hoy. The orienteering exercise has therefore been developed into a multicache geotrail available to the wider geocaching community via www.geocaching.com. The launch of the trail has occurred too late in the project to gather any data regarding its success in this respect but its potential as a low cost, low maintenance interpretation resource which could encourage a new type of tourist to Hoy is very high indeed. Monitoring of website hits and logbook comments in the forthcoming year would offer a good indication as to the success of the trail and whether it is worth expanding into other parts of the island.

3.2 Drop-In/Open Door Sessions

3.2.1 Activity Summary

As a means of providing visitors and island residents with opportunities to interact with wartime heritage on an informal level, a drop-in/open door event was created. This event provided a relaxed venue where archive materials could be consulted, presentations viewed, artefacts brought for identification or stories and information shared (Figure 20). The event ran from March until the first week in June and was deliberately conducted over a short trial period so as to allow sufficient time for other engagement activities and the fieldwork programme to be carried out during the better weather of the summer months. Drop-in sessions were carried out at the Hoy Kirk in the north of the island on a Friday and at The Royal Hotel in the south of the island on Monday evenings (later changed to Wednesday evenings). An open door was also offered at the IoHDT Office once it became available for use at the end of May. The drop-in sessions were held on a twice monthly basis throughout the trial period with the evening sessions reducing to once monthly owing to a poor response.



Figure 20 - Mixed media resources made available to the public at the Hoy Kirk Drop-In

3.2.2 Summary of Activity Results

The daytime drop-in at the Hoy Kirk was well supported with a total of 39 people attending the sessions throughout the trial period. Although 5 island residents travelled the distance from their homes in the south to attend the Hoy Kirk drop-in, the majority of the Friday daytime sessions were supported by Hoy parish residents. It was also encouraging to welcome passing visitors to the Hoy Kirk either on their way to Rackwick or returning to the ferry terminal at Moaness. All visitors came across the drop-in accidentally but found the displays and archive material very stimulating and interesting.

The figures for the Hoy Kirk contrast with the evening drop-in at the Royal Hotel where only 12 people engaged across the sessions and of this number only 1 person had come along especially. The remaining 11 represent the bar clientele who expressed a passive interest in the photographic resources that had been brought along and contributed to wartime related conversation during the evening. The open door at the IoHDT office began very late in the trial period and therefore had less time for local awareness to build up. It is therefore not surprising that there was no deliberate attendance at these sessions.

It is clear from the results that this activity was received quite differently at either end of the island. It is possible that the figures indicate a distinction between how Hoy parish residents and how North & South Walls parish residents choose to engage. Nonetheless, variables such as day of the week, time and venue should also be recognised as strong contributing factors influencing the levels of engagement. In addition, there were many other engagement opportunities on offer across the same time frame as the drop-in's and the attendance figures may simply indicate busy social calendars where islanders have had to make a choice between one activity over another. As will be discussed more fully in Section 3.3, the evening talks which took place in North Walls parish were very well attended throughout the project. The figures may therefore illustrate a preference in North & South Walls to engage more passively through attending an evening talk rather than more actively at a drop-in. Historic materials made available for viewing before and after talks proved very popular and a better solution for the future in North & South Walls may be a regular evening event which combines evening talk with drop-in. Very similarly to the archaeological fieldwork feedback, what has certainly been made evident is that there is an

enthusiasm from islanders and visitors to engaging more through drop-in sessions in the future (Figure 21).

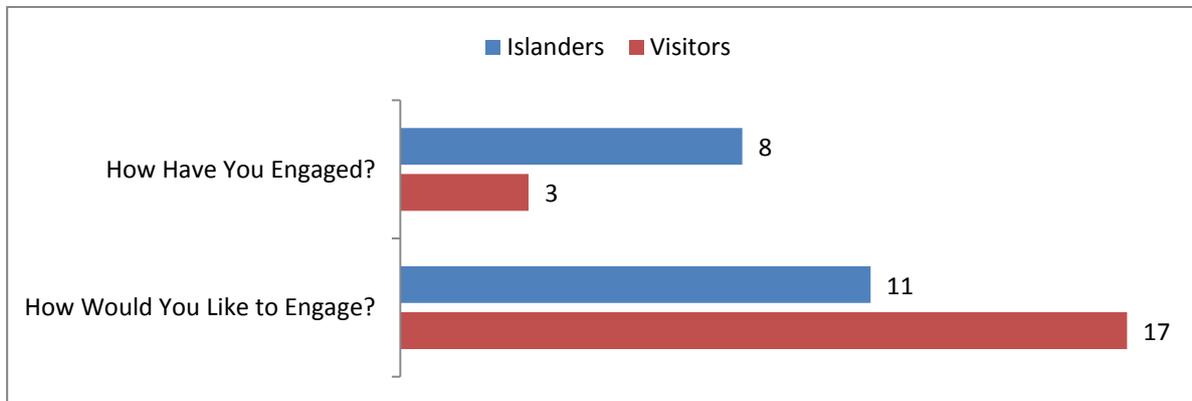


Figure 21 - Graph showing Drop-In/Open Door Engagement Trends (data taken from questionnaires)

3.3 Evening Talks

3.3.1 Activity Summary

The evening talks programme began in March 2014 and ran until June with a final presentation providing a summary of the project and some of the results being given in late September. The talks followed a regular monthly pattern beginning at 8pm on a Wednesday night at The Gable End Theatre, a popular and well established venue for evening entertainment. Each talk followed a theme and endeavoured to share some of the information that had been researched during the desk based consultation of archive sources during the first four months of the project. The talk titles were as follows:

GT1 - An Introduction to Legacies of Conflict: Hoy & Walls Wartime Heritage Project

GT2 - Hoy at War: A Photographic Journey

GT3 - Rinnigill Revisited: Digging Deeper in the Text

GT4 - Hoy and D-Day

GT5 - Legacies of Conflict: Taking the Past into the Future

3.3.2 Summary of Activity Results

Other than the guided walks, the evening talks have been the most popular and well attended of the events offered during the Legacies of Conflict project. 'Hoy at War: A Photographic Journey' drew a staggering 42 islanders and visitors, nearly filling the venue to capacity. The attendance figures for all of the talks were high and never dropped below 17.

Each talk was followed by a number of questions from the audience and the general response afterwards has indicated that talks were found to be interesting and engaging. Members of the Gable End Theatre organisational committee have also commented that the talks drew members of the community who wouldn't normally attend events at the theatre. This is a particularly interesting observation as it would suggest that the evening talks have provided a community enhancing activity, encouraging individuals to mix in an environment where they wouldn't normally meet.

A handful of visitors also attended talks in May & June which would indicate that this type of event is of interest to tourists as well as residents. This point is further substantiated through the questionnaire returns (Figure 22). If a greater number of visitors could be encouraged to stay overnight on Hoy for short breaks then feedback would suggest that the evening talks could provide a popular means by which they could engage with Hoy's wartime heritage.

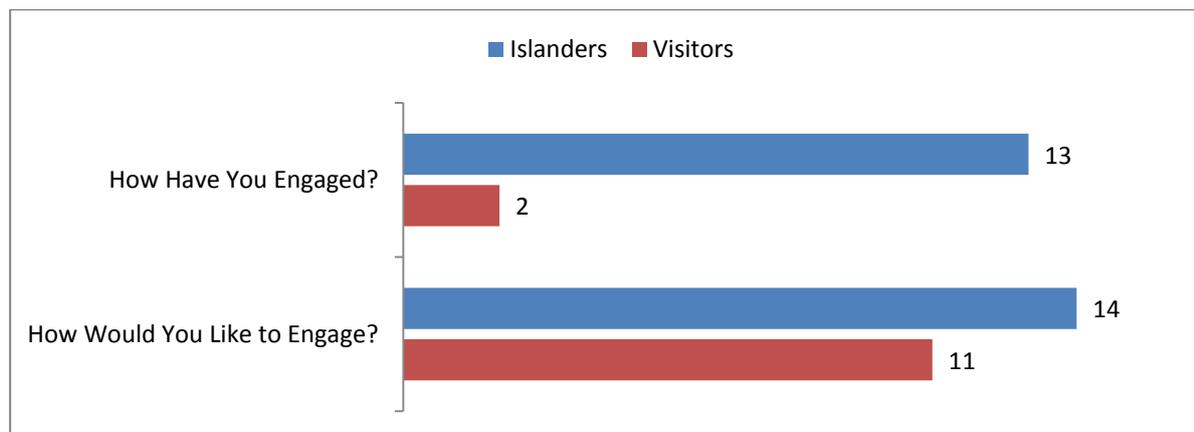


Figure 22 - Graph showing Evening Talk Engagement Trends (data taken from questionnaires)

3.4 Guided Walks

3.4.1 Activity Summary

As part of the project's second and third aims relating to the collection of data regarding visitor interaction with Hoy's wartime heritage, a guided walk around the WWII naval base at Lyness was established. The walk followed a 2 mile circular route that allowed the story of the naval base, the personnel and their role in WWII to be told through archive images and the extant archaeological remains that are found in abundance around Lyness today.

The route was designed to integrate with the Scapa Flow Landscape Partnership Scheme's Lyness Wartime Trail leaflet which the principal author extensively contributed towards in a previous employment. Since its release, the leaflet has proved a popular resource for encouraging visitors to explore the wider Lyness environs and it was hoped that a free 2 hour tour within walking distance of the Lyness ferry terminal and the Scapa Flow Visitor Centre & Museum (SFVC&M) would complement the leaflet and build on the already established interest base. The guided walks began on Thursday 3rd of April 2014 and ran every week without fail until 4th September 2014. Each walk included 18 stops or points of interest (POI), beginning and ending at SFVC&M. In the majority of cases the stops were positioned so as to tie in with the location from which an archive photograph had been taken, allowing the group to relate what they could see with what a site or location looked like during WWII (see Figure 23 for an example).



Figure 23 - Point of Interest 17 & the WWII archive image shown to visitors to bring the scene to life

The timeframe, route and content of the guided walk were developed in close co-operation with OIC's Arts, Museums & Heritage Service (AM&H) and notably the staff from SFVC&M (Appendix 9). Discussions with the museum service have been very positive throughout the

project and both management and operational levels of AM&H have been very supportive of all aspects of the project. The guided walks provide an excellent example of how mutually beneficial a close working relationship between OIC and IoHDT can be. Staff members of the SFVC&M successfully led the walks over a one month trial period starting in July to ascertain the sustainable potential of running guided walks as a regular component of the AM&H visitor service at SFVC&M. The trial proved so successful that when the official walk evaluation period ended on 4th September, AM&H continued the walks until the end of the month which marked the close of their summer season at SFVC&M. The opportunity to work so closely with OIC in the production and delivery of the walks has been incredibly encouraging and the positive outcome of the AM&H trial offers the potential for this component to continue after the close of the LoC Project at the end of September 2014.

3.4.2 Summary of Activity Results

Over the 26 weeks that the Lyness guided walks ran for (including the extension of the OIC led walks at the end of September) a total of 189 people engaged with the archaeological legacy of the WWII naval base. As illustrated in Figure 24, the highest tour numbers were recorded between June and August which correlates with the busiest months for Orkney tourism as a whole. The highest percentage of walk participants were visitors with a small number of islanders attending during the quieter months; in the majority of cases, island residents were accompanying family members or friends who were visiting. These results would suggest that the guided walks were an activity that particularly appealed to tourists and island visitors as a means of engaging with wartime heritage but provided less of an attraction to islanders. Feedback from the questionnaires support this interpretation showing a marked difference between islanders and visitors both in how they have engaged with the wartime heritage of Hoy and how they would ideally like to engage in the future (see Figure 25).

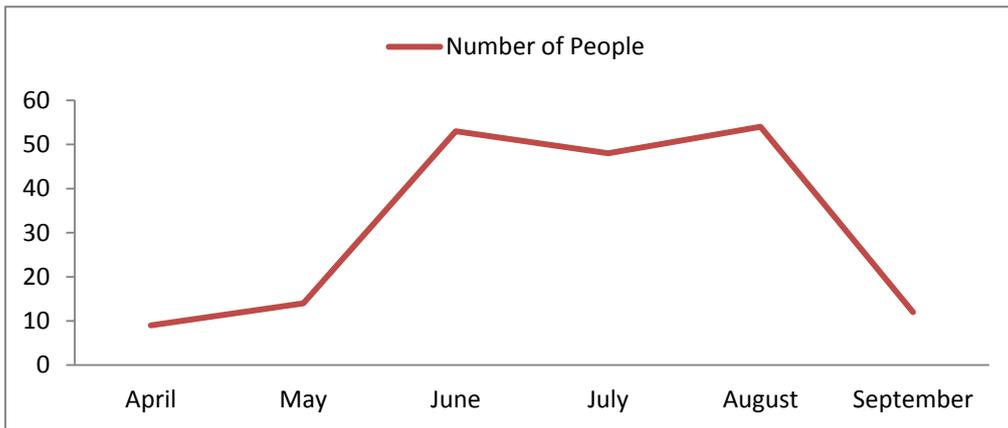


Figure 24 - Graph showing Guided Walk Monthly Attendance (data taken from questionnaires)

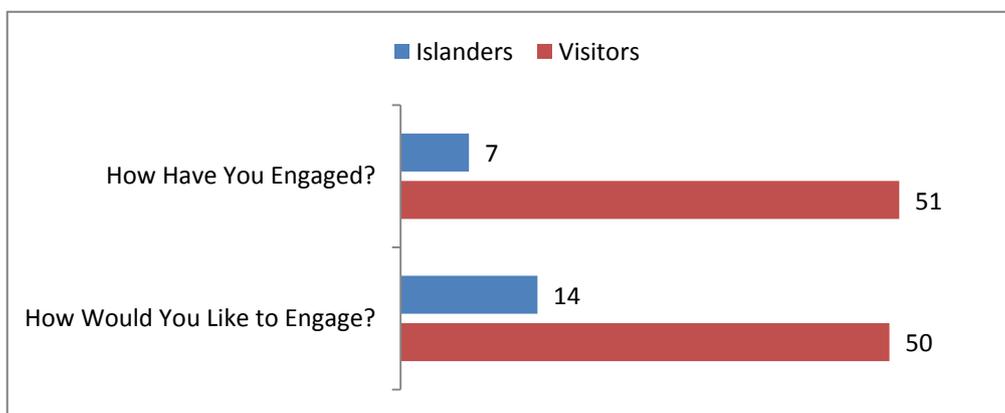


Figure 25 - Graph showing Guided Walk Engagement Trends (data taken from questionnaires)

The questionnaire returns revealed a particularly interesting trend between first time visitors and those visiting Hoy specifically for its wartime heritage (see Figure 26). The figures clearly show that the majority of walk participants were first time visitors who had made a special trip to Hoy to take part in the guided walks. This correlation not only demonstrates a wealth of interest amongst visitors to engage in World War related tourism but also that the Lyness walk has provided an attraction for visitors who would otherwise not have made a trip across to Hoy as part of their holiday in Orkney. The guided walks could therefore be seen as drawing a new tourist market for the island. The figures for those likely to revisit Hoy are also encouraging as 50% of those who provided feedback indicated that they would be keen to revisit in the future. Most of those selecting 'no' or 'unsure' had travelled to Orkney from out with Scotland and so should not be seen as a lack of interest but more a matter of geography.

By operating the walks in an easily accessible location close to other mutually supporting attractions and amenities such as the exhibitions, displays, café and conveniences of the SFVC&M, visitors have been offered a package of indoor and outdoor activities making a day visit more appealing to them and the travel time & costs more justifiable. The active approach of seeing and experiencing sites, hearing their stories and moving through a landscape still filled with the remains of past conflict can therefore be considered a highly effective means of interpreting the past to the visiting public creating a greater appeal, deeper sense of engagement and more tangible link to past events in turn making it a more successful learning environment.

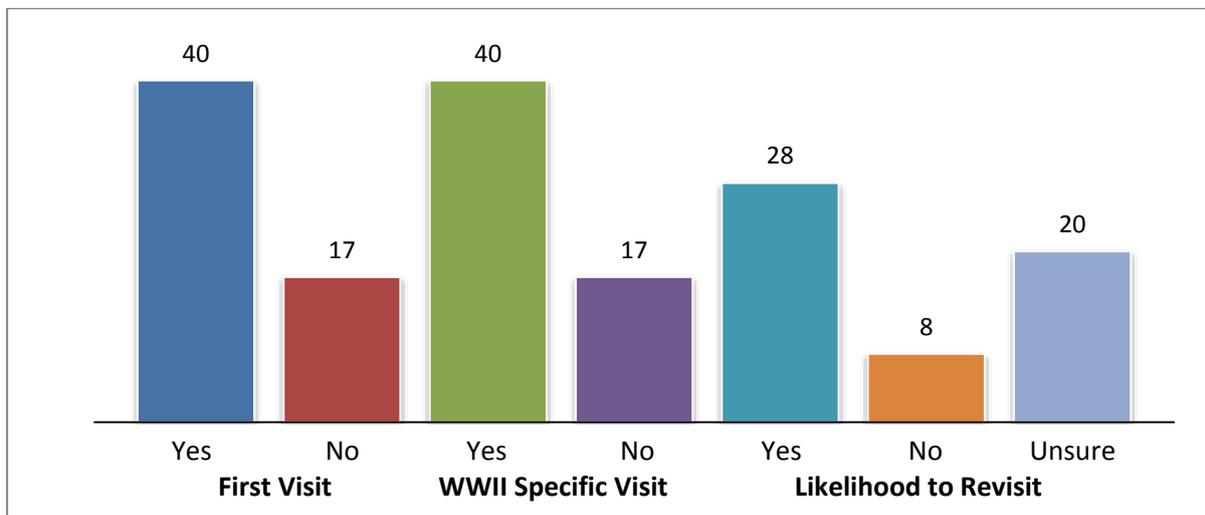


Figure 26 - Visitor Trends (data taken from questionnaires)

3.5 Project Evaluation Analysis

The intention of this subsection is to present a broader analysis of quantitative and qualitative evaluation data collected through participant questionnaires, conversations and observations recorded over the past 12 months. It is intended that through the following datasets and discussion, trends will be highlighted that may prove useful for informing future heritage interpretation and management initiatives.

3.5.1 Engagement Figures & Trends

Based on the attendance figures from the activities detailed above, a conservative figure for the number of people who have directly engaged with Hoy's wartime heritage through the Legacies of Conflict project has been calculated at 432. That figure does not include

individuals who may have tuned in to radio interviews, read newspaper articles, Orkney Archaeology Society newsletter articles or the Island of Hoy 'Blether' newsletter articles.

Participant Age

Of those who completed a participant evaluation questionnaire 50% were aged over 60 with a further 41% aged between 26 and 59. There were subtle differences in the percentage figures between islanders and visitors (shown in Figure 27) but both indicate that the main age group engaging with wartime heritage was the over 60's. The narrow difference between the two principal groups is encouraging as it confirms that the range of activities offered over the past 12 months has appealed to a mixed age audience. These figures also emphasise how broad the public interest is in WWII history and its material legacy. The higher percentage of island residents under 16's engaged reflects the success of the North Walls School Project and it is anticipated that further use of the Geocache Orienteering Trail by OIC Outdoor Education and island based summer school schemes would increase the number of under 16 and 16-18 year olds engaging with wartime heritage. Archaeological fieldwork provided an excellent opportunity to involve 19-25 year olds and 36% of the fieldwork volunteers fell into this category. As discussed in Section 2.2.2, the WWII archaeological sites on Hoy form an incredible educational resource and further development of links between higher education institutions such as Orkney UHI in Kirkwall (University of the Highlands and Islands) could increase the number of 19-25 year olds engaging with Hoy's wartime heritage in the future.

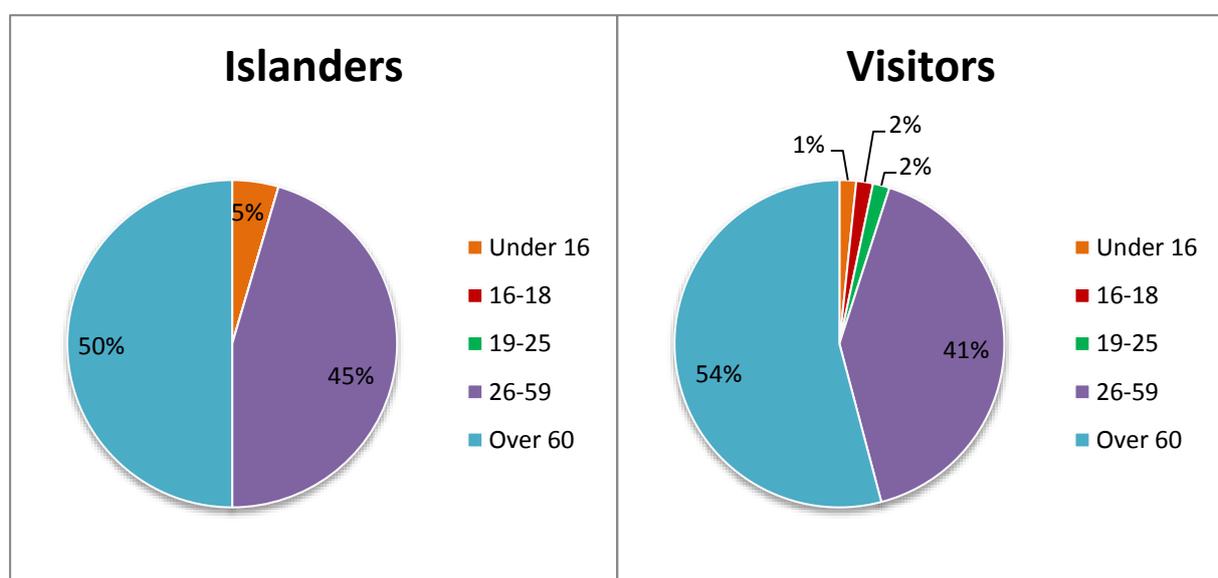


Figure 27 - Comparative charts showing percentage age of activity participants

Experiencing Hoy's Wartime Heritage

As part of the participant questionnaire, islanders and visitors were asked to record how they had engaged or experienced Hoy's WWII heritage and indicate how they may wish to ideally experience or engage with it in the future. The responses to these questions are displayed in Figures 28 and 29 and broadly show an increase in interest and a desire to engage more with WWII heritage. It is encouraging to note that all of the main activities delivered as part of the project display a rise in interest indicative their potential for further development and delivery in the future.

Private bus tours are the only category that shows a decline in interest. This may imply that a more active way of experiencing the wider wartime landscape would be preferred for or a more individual vehicle tour such as by private car. The decline may also suggest a difference in the type of tourist that visits Hoy compared to Mainland Orkney where large coach tours are a mainstay of the summer tourist season. It should also be acknowledged that the results for private coach tours will have been biased by a bespoke guided mini-bus tour that the principle author assisted in leading on 10th June 2014. The group consisted of architects, conservation and heritage professionals attending the Institute of Historic Building Conservation's (IHBC) annual school and as such the clientele had a keen interest in exploring sites in detail as opposed to driving past them. Stops allowing admission to sites occurred at various points of interest along the tour route with a visit to the SFVC&M and a guided walk around some of the wartime sites at Lyness also included. For the members of the IHBC tour, the mini-bus was more a means of transport between points of interest as opposed to the main event and as such did not rank as highly in their questionnaire returns.

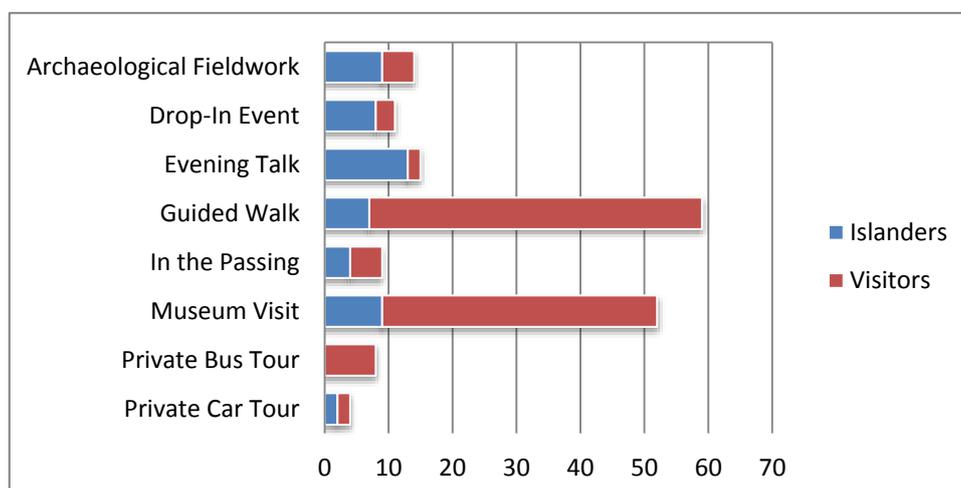


Figure 28 - How Participants Have Experienced/Engaged with Hoy's WWII Heritage

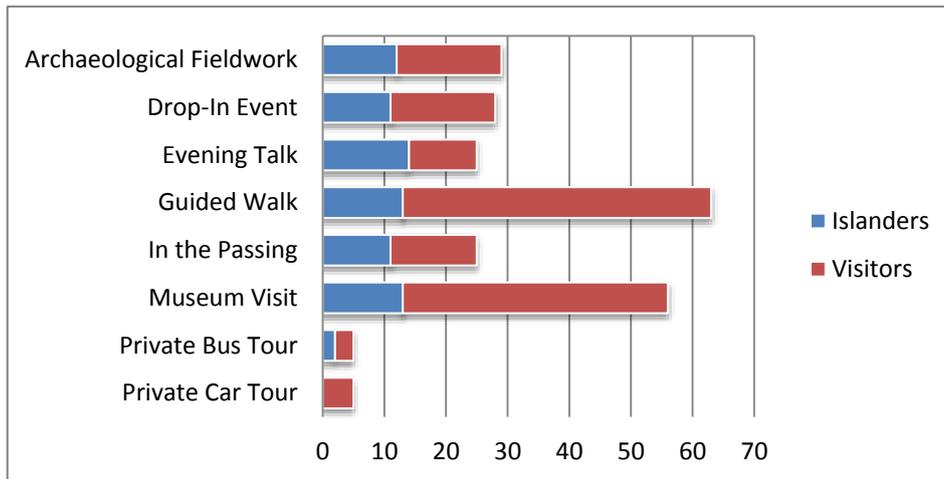


Figure 29 - How Participants Would Ideally Experience/Engage with Hoy's WWII Heritage

An interesting correlation can be observed between those attending the guided walks and visiting the museum. Although this link can be attributed to the Lyness walks beginning and ending at the SFVC&M, it is encouraging to observe that the combination of museum interpretation and a directed tour of the surrounding wartime landscape has proved very popular with visitors and islanders indicating a keenness to combine these two activities again in the future.

A comparison of Figures 28 & 29 also reveals a heightened expression of interest for '*in the passing*' engagement. Unlike other categories, this was not a form of engagement delivered as part of the project but it is clear from participant feedback that this is an approach that would be welcomed in the future. A recurring conversation topic raised by project participants and other members of the community and visitors has been the question of identifying buildings and remains located by the roadside. Frequently the principal author was asked what a building used to be or what went on in a particular place. This curiosity and desire to make sense of the landscape as it is traversed is what appears to manifest itself through the '*in the passing*' category in the questionnaire returns. This selection also demonstrates a value being placed on the material remains from WWII with places in the landscape, regardless of condition, retaining importance to the local population and visitors. People may not know what something is or what it was used for but they are keen to find out and it is this desire to learn more about sites and appreciate them with a new level of understanding as they pass by them that is such an important point to have come out of the project evaluation.

3.5.2 Education & Perception

An important component of the project aims has been to gain a better understanding of the educational resource value of WWII heritage. The results of younger generation learning initiatives have been discussed in 3.0 and 3.1 and the benefits of archaeological fieldwork as an educational activity has been covered in Section 2.2.2. The participant questionnaires included a number of statements to gauge the learning potential of other activities conducted as part of the project. When asked to indicate whether they agreed with the statement “I have found out something new as a result of my visit/involvement”, all visitors and islanders stated that they strongly agreed, agreed or were indifferent (shown in Figure 30). As questionnaires were returned from all of the main project activities this result would suggest that individuals have grown in their understanding of Hoy’s role in WWII by their attendance at an event.

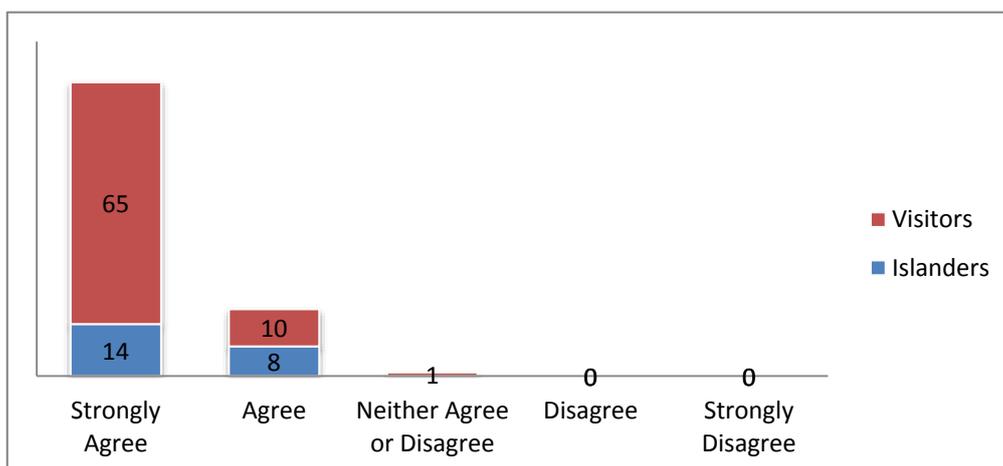


Figure 30 - Educational Value: ‘I have learnt something new as a result of my visit/involvement’

Participants were also asked to identify ways in which they may like to learn in the future and indicate their preference between active and passive forms of learning. Practical activities such as archaeological fieldwork, visiting sites, guided walks and research at drop-in sessions were classified as active learning experiences and sedentary activities such as reading interpretive literature, listening to a talk or going on a vehicle-based tour were classified as passive learning experiences. Figure 31 displays the learning preferences of visitors and islanders. Visitor preferences are very well balanced suggesting an interest in a wide range of learning experiences. Island residents show a slight bias towards passive forms of learning which correlates with the high levels of interest in evening talks as a means of engaging/experiencing wartime heritage.

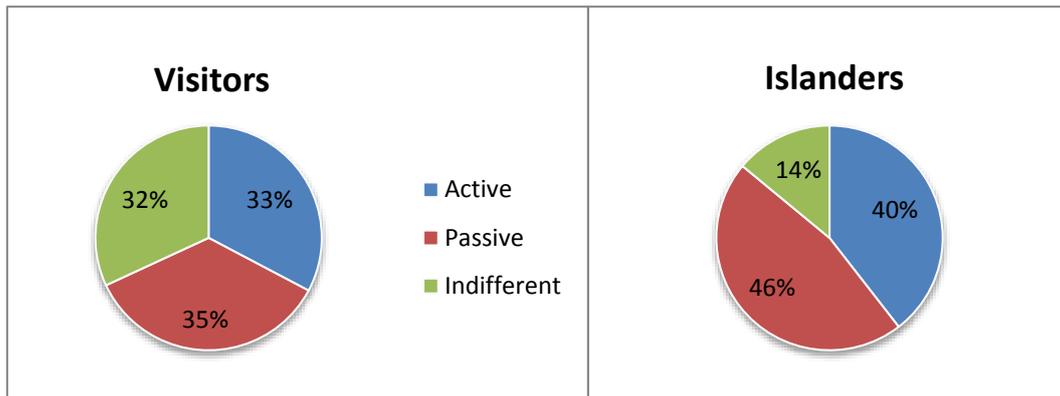


Figure 31 - Charts displaying the learning preferences of Visitors and Islanders

The matter of how the island community and visitors view the material remains of conflict has already been touched upon in Section 3.5.1 through discussion of the responses to ‘*in the passing*’ engagement. However, a more direct question relating to perceptions of WWII heritage was asked in the questionnaires. Participants were requested to indicate whether they felt that WWII sites were important in making Hoy a special place and the responses (shown in Figure 32) revealed a majority opinion that WWII sites were a significant addition to the island and contributed to its appeal as a valued place. As the data was only collected from those attending events it is a consideration that a bias may exist as those who do not value wartime heritage and the sites that remain would be unlikely to participate in the activities offered during the project. Regardless of this factor there was always potential for participants to appreciate the WWII history of Hoy but not place value on the archaeological remains of it. What these results show is that there is a majority who recognise the importance of sites as a link to past events and see them as being as valuable in making Hoy a special place as the stories that were formed around and in them.

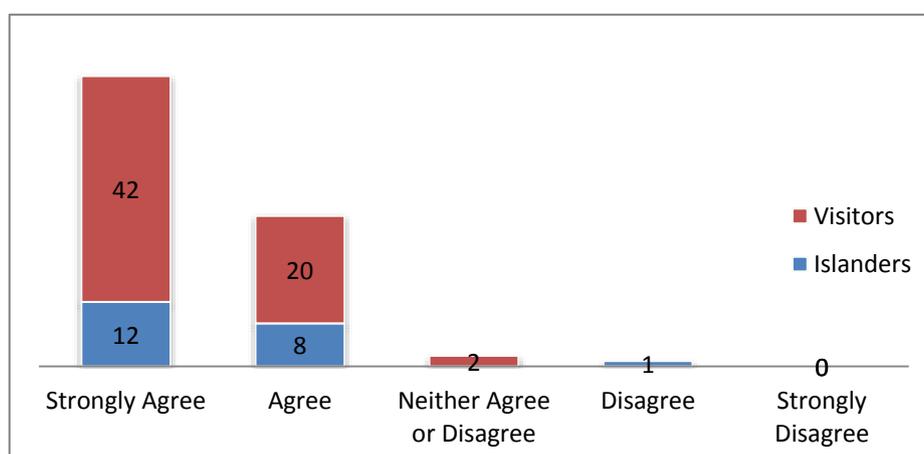


Figure 32 - Graph of Perceptions: WWII sites contribute to making Hoy a special place

The single islander response indicating a disagreement at the idea of WWII sites contributing to making Hoy a special place reflects a percentage of the resident population who hold a more negative perception of the decaying remains from past conflict. In mid-August 2014 the principal author attended a meeting of the Hay Hope Club, a group where elderly residents can meet once a week, share a meal together and socialise. Listening to the opinions of those present it was clear that for many elderly islanders the standing remains from WWII are considered to be unsafe eyesores. For some who had lived through the war, could recall the buildings in use and had since watched them fall into steeper and steeper decline, it was felt that the remains should be cleared away. A desire to return the island landscape to how it appeared prior to the imposition of concrete and brick buildings was voiced by one elderly resident and another remarked on how unappealing and unwelcoming the collapsing buildings were to arriving visitors. In this case, the WWII remains were seen as an inhibitor of further island tourism growth as opposed to a potential source for it. There was a general consensus from the discussions held with the members of the Hay Hope Club that it was important to remember ‘the War’ and educate future generations about what happened and that some of the sites that tell an important story and are in the best condition should be retained for that purpose. It was however felt that the rest should be cleared away to improve the island’s aesthetics, make it a safer place and to allow the land to be put back to use again.

3.5.3 Future Management of Wartime Heritage on Hoy

The participant questionnaires have provided a range of useful insights into the perceptions, attitudes and views of islanders and visitors with regards to the rich material legacy of conflict that is so prevalent on Hoy. As discussed in previous sections, a number of questions were posed to the public regarding the future of the archaeological resource and one particularly important question was *“Who do you think is the most appropriate group or organisation to manage the sustainable preservation and use of wartime heritage sites on Hoy?”*. Participants had the option of selecting more than one category and placing them in priority order. The chart in Figure 33 shows the combined tally of priority one and two selections.

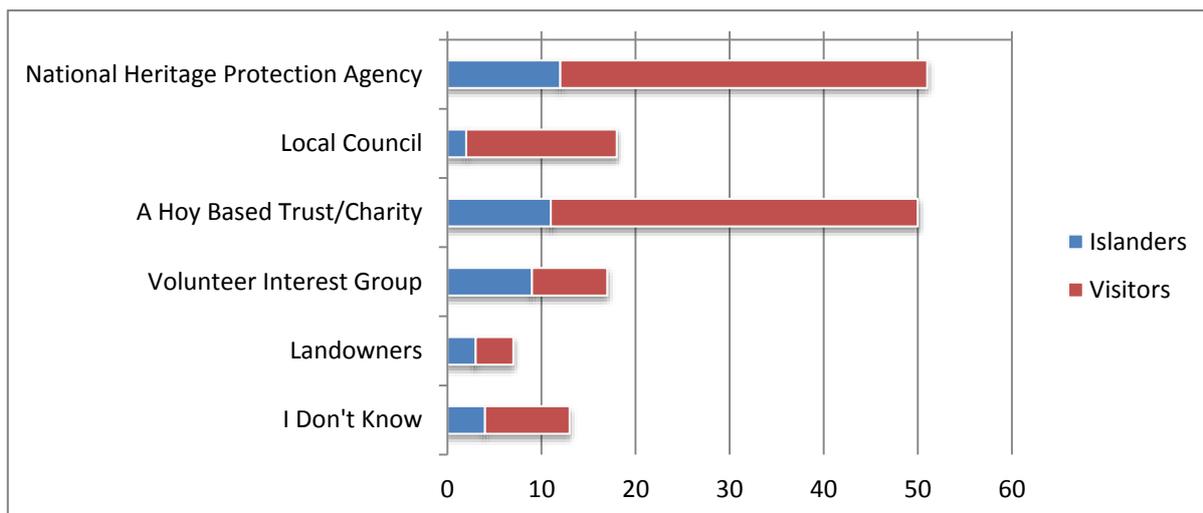


Figure 33 - Feedback on who should manage & maintain Hoy's wartime heritage

It is very clear from both islander and visitor responses that a National Heritage Protection Agency such as Historic Scotland or a Hoy based trust or charity such as loHDT were perceived to be the most appropriate long term managers of Hoy's wartime heritage. The choice of National Heritage Protection Agency could be attributed to Historic Scotland's perceived excellent reputation for safeguarding Scotland's heritage, interpreting it and making it accessible to the public. It may also indicate an acknowledgment by participants that Hoy's wartime heritage is of National importance and therefore warrants a greater level of recognition, protection and management than it is currently afforded. The equally high response for a Hoy based Trust or charity to manage the wartime resource can be viewed as a strong display of support for the work of loHDT and how positively the graduate project has been received both locally and by those visiting Hoy. This selection as well as the Volunteer Interest Group category (which was often prioritised third after national heritage organisation and Hoy based trust) demonstrates a value placed on keeping local control over island assets. It also reflects the ethos of Archaeology Scotland's 'Adopt a Monument Scheme' which encourages communities and groups to take an active responsibility for the maintenance and interpretation of their local archaeological sites.

Perhaps the most contrasting of opinions lies within the 'Local Council' category where very few island residents felt that Orkney Islands Council were the best choice as managers of wartime heritage on Hoy whereas visitors had a more positive view. Conversations with individuals from both groups have shed more light on the dichotomy of opinions. In the

majority of cases visitors to Hoy attended the Lyness guided walk and explored the SFVC&M as part of their trip. Many of the participant questionnaires that were returned with the Local Council category placed as priority 1 occurred whilst the guided walks were being led by staff from SFVC&M. Visitors have always been quick to praise the staff, displays and interpretation at the SFVC&M and have often remarked in wonder at how much there is to see both at the museum and around Lyness. The combination of a positive museum experience and a pro-active approach to interpreting the wider historic landscape through the walks has therefore reflected well on OIC encouraging visitors to identify Arts, Museums & Heritage in particular as good custodians of the wartime past.

“The walking tour led by John was interesting and informative. As well as enjoying that, the views around were well worth the walk. Thank-you John.” - Anonymous Female Visitor

“I liked the slightly homespun nature of the museum in particular, make do and mend and recycle anything still usable were the philosophy of both wartime Britain and I suppose living on an island, so it was all very appropriate, especially the artefacts in the big drum, complete with buckets for collecting rainwater. The museum catering and shop were excellent too. It would be so easy to throw a lottery grant at it and destroy its character.”

- Anonymous Male Visitor

Island resident attitudes and those of the dive boat community have been markedly different from visitor impressions. Feedback sought from dive boat operators on their engagement with Hoy’s wartime heritage revealed that operators would like to land their clients at Lyness to visit the SFVC&M once a week but have been seriously discouraged by continued frustration over the mismanagement of docking facilities at the Lyness Wharf. Mr Anderson of the MV Halton for example, commented that poor mooring by marine renewables companies made berthing very difficult.

Conversations with local residents and Orkney Mainland residents attending events have revealed a general lack of confidence in OIC as a manager of wartime heritage which appears to stem from a legacy of demolition, clearance and lack of investment. Memories of the circumstances surrounding the demolition of the Sector Operations Room in Kirkwall, colloquially known as ‘the Black Building’, remain strong amongst those with a passion for wartime history and the subject of its loss was raised on numerous occasions over the past 12 months. Dialogues have also exhibited a general feeling that important places such as the

SFVC&M have been neglected and that many wartime sites have been unnecessarily lost with those that remain being permitted to fall into disrepair. Further clearance of wartime sites and features around the Lyness wharf area as part of the Lyness Development Plan have also not instilled much local confidence in OIC as an appropriate manager for Hoy's wartime heritage. One male islander stated on his questionnaire return that *"The OIC need to get a grip and start taking care of what little is left"*.

Closer co-operation and communication could greatly improve the negative feeling and lack of confidence felt by dive boat operators and islanders for OIC. Resolution is likely to be a process that will take time and positive action from various council departments. It is hoped that the redevelopment plans currently in progress for the SFVC&M will improve local attitudes towards the council in relation to heritage management and the opening of a dialogue between the principle stakeholders and user groups of Lyness Wharf could do much to resolve the issues that dive boat operators currently encounter. Interaction with island-based groups and community involvement in decision making when it concerns the future management of wartime heritage assets and their interpretation on Hoy may also improve local support for the council as a custodian of their island's heritage.

Section 4. Recommendations

This section presents a series of recommendations of potential ways forward for developing new tourism and heritage initiatives on Hoy. Suggestions are based on the data collected during the Legacies of Conflict Project as summarised in the previous two sections of this report. The evaluation of community and islander engagement during the project has demonstrated that Hoy's wartime heritage and its extensive material legacy can serve a highly effective role as an all age education resource, a community enhancing asset, and a means of attracting greater numbers of tourists to Hoy. The recommendations presented in this section have been created to reflect the perceived potential of Hoy's wartime heritage and have been divided into 4 four core output areas of archaeological resource management, education, community enhancement and tourism. These core outputs offer sustainable targets for future development that maximise the use of Hoy's WWII legacy. As perhaps has already been made evident through the activity summaries, a great deal of overlap exists between core areas with the recommendations in one category often serving

to benefit another. As a result, none of the core areas should really be considered entirely in isolation when creating a development plan for the future. A holistic approach moving all of the core areas forward together would therefore be the advised course of action. Table 2 offers a summary of the recommendations with further detail on each development area provided under the relevant numerical sub-headings in the guidance notes section.

The proposals for future development have been divided into three phases representing varying scales of financial and temporal investment.

Continuation of current initiatives (Phase 1 – begun with current project in 2013) – this is a low cost, short term means of maintaining the interest and momentum that has been achieved during the Legacies of Conflict Project. Many of the suggestions involve the continuation of initiatives or lines of enquiry begun during the project where as others require the exploration of new opportunities for further expansion all of which can be achieved at minimal to no cost by staff already employed by IoHDT supported by volunteers.

Phase 2 (Delivery by 2017) - requires middle level investment and therefore the identification of additional funding sources. Phase 2 can generally be characterised as involving the part-time or seasonal employment of either a heritage officer and an education officer or a single, suitably qualified individual and outsourcing for the production of interpretive and educational resources. Investment at Phase 1 level is intended to directly support larger scale activity growth and initial trials of more elaborate methods of engagement and interpretation that could be deployed as part of Phase 3.

Phase 3 (Delivery by 2019) - forms the largest scale of resource commitment and is aimed at making maximum use of Hoy's wartime heritage for education, community and tourism purposes as well as interpreting and preserving it in dynamic and engaging ways. The timescale has been intended to correspond with the 80th anniversary of WWII between 2019 and 2025. This time bracket would provide an opportunity to capitalise on increased levels of general public interest in WWII history for the high profile launch of events, activities and interpretive devices developed as part of Phase 3. Substantial funding will be necessary to realise these recommendations and develop the core areas as well as sustain the produced assets into the future.

The experience of the last 12 months would suggest that there is no one-size-fits-all approach that will engage such a broad audience base with this complex archaeological landscape. Ultimately the most effective and valuable long term development of wartime heritage for Hoy will need to be a combined approach that factors in aspects from all four core areas to form a mutually supportive, dynamic and interconnected utilisation of a unique historic resource. The success of the Legacies of Conflict Project has been in the variety of activities and engagement opportunities that have been offered, and to continue to attract a diverse audience in the future an equally varied approach will be required.

Table 2 – Development Recommendations

CORE AREA	CATEGORY DESCRIPTION	CONTINUATION of PHASE 1	PHASE 2	PHASE 3
Archaeological Resource Management	ARM1 Landscape Designation/ Historical Research	ARM1.1 - Designation of Lyness, Rinnigill & Wee Fea as conservation areas, volunteer heritage coordinator processing archive documents, encouraging fieldwork	ARM.1.2 - Creation of management plans, detailed recording of fragile buildings	ARM.1.3 - Digital mapping of wartime landscape, oral history recording programme
	ARM2 Site Conservation/ Preservation	ARM2.1 - Landowner/land user dialogue, identification of external financial support funding streams, provision of funding guidance	ARM2.2 - Structural conservation surveys of sites, landowner/land user financial support grants/ incentives	ARM2.3 - Land/building purchase/lease, conservation of key sites, conversion & reuse for sustainable purposes
Education	ED1 Schools Education	ED1.1 - Dialogue with other Orkney Schools	ED1.2 - Production of school resource packs	ED1.3 - Part-time education officer delivering CPD & schools programmes
	ED2 Future Generations	ED2.1 - Dialogue with outdoor youth groups	ED2.2 - Part-time education officer delivering/supporting children & youth activities	ED2.3 - Production of child friendly interactive trails & interpretation
Community Enhancement	CE1 Passive Events Programme	CE1.1 - Volunteer heritage coordinator arranging visiting speakers for an evening talks programme, permanent accessible wartime heritage archive	CE1.2 - Part-time/seasonal Heritage Officer delivering evening talks programme, development of mobile exhibitions	CE1.3 - Full-time Heritage Officer delivering year round talks, workshops, film nights & roadshows
	CE2 Active Events Programme	CE2.1 - Volunteer heritage coordinator encouraging fieldwork, access & updating of archives	CE2.2 - Part-time/seasonal Heritage Officer delivering drop-in sessions, site visits, walks & fieldwork	CE2.3 - Full-time Heritage Officer delivering drop-in sessions, fieldwork, walks & site visits
Tourism	T1 Guided Walks	T1.1 - Continuation of Lyness walks by SFVC&M staff, local volunteers to help lead walks	T1.2 - Part-time/seasonal Heritage Officer developing & leading walks to other sites	T1.3 - Site tours using location activated audio & visual handheld devices
	T2 Interactive Trails	T2.1 - Monitoring/maintenance of Wee Fea geocache trail, dialogue with The Russian Arctic Convoys Museum Project	T2.2 - Expansion of geocache trail to other areas, pilot study of GPS/App interpretive trails, boost local wifi/mobile phone infrastructure	T2.3 Island wide GPS & App digital trails incorporating Google HUD technology, boost wifi/mobile phone infrastructure
	T3 Interpretation	T3.1 - Introduction to wartime heritage pages on loHDT website with site access guidance	T3.2 - Mobile exhibition, web-based virtual museum, downloadable site guides	T3.3 - Cycloramic experience/interpretation centre(s)
	T4 Publicity/Promotion	T4.1 - Orkney wide publicity of events & activities, strong web presence, BBC coverage of historical importance	T4.2 - Contracted marketing plan, guidance on how best to publicise wartime heritage to attract visitors	T4.3 - delivery of marketing and advertising plan, deployment as part of wider island tourism plan

4.0 Recommendation Guidance Notes

ARM1 – Landscape Designation/Historical Research

ARM1.1 Conservation Areas

In addition to the Lyness area, which has retained a dense concentration of wartime sites in spite of clearance efforts, two high concentrations of WWII archaeological sites were noted during the island wide walkover survey. NMRS sites were noted in both the Wee Fea and Rinnigill areas during the desk based assessment and subsequent walkover survey revealed these areas to be very densely populated with a range of exception WWII site types. The unprecedented assemblage of prepared defence positions on Wee Fea has already been discussed in Section 2.1.4 and requires no further emphasis of its importance as a preserved military landscape of national importance.

The area around Rinnigill contains a mix of standing, earthwork and concrete foundation remains from an array of military site types ranging in function from early anti-aircraft defence to hydrogen production and synthetic training. Site numbers HY57-74 fall within this area as well as NMRS numbers HY39SW 16, 18.00-05 & 72. The buildings and foundations associated with barrage balloon hydrogen production, radar training, repair & installation, firefighting training, synthetic weapons & battle scenario training, equipment storage and elementary helicopter landing all fall within the confines of the Rinnigill Military Complex where roads, trackways, service pipework and associated ablutions infrastructure also still in existence.

The importance of the Lyness, Wee Fea and Rinnigill sites not only lies in their remarkable individual levels of preservation but in their close proximity to one another to form virtually intact defence landscapes. This character and context into which the individual sites are set is incredibly important and should be considered a vital element for appreciating, understanding and interpreting the wartime historic environment. Designation of the militarised landscapes around Lyness, Wee Fea and Rinnigill as places of particular historic interest would afford a degree of non-statutory protection placing planning controls over future development and demolition (Historic Scotland, 2011). As well as maintaining the integrity of these historically important landscapes, Conservation Area status has the potential to unlock opportunities for additional funding to develop and interpret Hoy's

wartime heritage through initiatives such as the Historic Scotland operated Conservation Areas Regeneration Scheme.

ARM1.1 Volunteer Heritage Coordinator

- A volunteer heritage coordinator could maintain the momentum achieved during Legacies of Conflict encouraging volunteers to remain actively involved whilst continuing archive research tasks begun during the project.
- Dr Iain Crommarty has already expressed an interest in taking on such a role and would be willing to continue adding to the GIS site database, liaising with other volunteers to continue fieldwork activities and summarising archive documents to extract historical information which could feed into later phase site interpretation material.

ARM1.2 Management Plans

- The creation of management plans for the designated conservation areas in collaboration with OIC would form an effective and mutually beneficial strategy for maintaining and developing the wartime archaeological resource in the future.
- Continued collaboration with OIC Development and Planning through Historic Environment Officer Tom Hunter is strongly encouraged.

ARM1.2 Recording Fragile Sites

- Prior to any stabilisation or redevelopment work, archaeological sites should be fully recorded in order to gather any additional information that may be beneficial to the maintenance and interpretation of the site.
- It is also recognised that many of the standing remains are in a fragile condition. Recording of these monuments prior to their complete collapse should be considered a high priority.

ARM1.3 Digital Mapping

- Airborne Laser Scanning technology provides the opportunity to record entire landscapes at an unprecedented level of detail.
- A LiDAR survey of Hoy could be used to record, monitor and digitally represent the wartime historic environment. This data could be particularly useful for interpreting the landscape to the wider public forming a basis for graphic visualisations and reconstructive fly through imagery.

ARM1.3 Oral History Recording

- Over the course of the project it became apparent that many of the older island residents retained vivid memories of what it was like to live on Hoy during WWII. Although some have previously been captured through the Fortress Orkney Project, a more extensive programme of oral historical documentation would provide further valuable insight into the impact of WWII on the island.

ARM2 – Site Conservation/Preservation

ARM2.1 Establishing a Landowner/Land User Dialogue

- WWII sites are situated on land owned by many individuals which is used for a variety of purposes. Prior to any further development of wartime sites or the creation of resources that encourage visitor access, a dialogue should be opened with the relevant owners and current land users. A principle aim of this dialogue would be to establish landowner/land user interest in the stabilisation, conservation & development of WWII sites for heritage interpretation purposes.

ARM2.1 External Financial Support & Guidance

- A landowner guidance and advice service could be created to identify and support applications for grants to carry out repairs on wartime buildings. A catalogue of external funding sources for conservation work would need to be created in order to deliver this. It may transpire that IoHDT could serve as a facilitator applying for larger conservation grants on behalf of landowners

ARM2.2 Building Surveys & Landowner Financial Support

- Following the creation of a short list of standing buildings for redevelopment or stabilisation, structural condition surveys should be carried out to inform further works.
- Building on the advice service established in ARM2.1, the next step could be to create a Trust controlled conservation fund which could support landowners with stabilisation & conservation of wartime buildings. This step would be subject to the availability of both island generated finances and sufficient external grant sources which could feed the conservation fund.

ARM2.3 Land & Building Purchase or Rent

- Wartime sites of particular historic merit with reuse potential could be purchased or leased from landowners, stabilised and redeveloped to form interpretation centres or revenue generating community resources. Examples could include:
 - The renovation of bungalow sites HY23, 24 & 26 / ND39NW 183 into wartime themed eco self-catering units.
 - The conversion of the RN Recreation Centre (site ND39SW 20.12) into a marine renewables servicing area with community function, facility & entertainment rooms in the lower east end.
 - Surviving concrete hut foundations from any one of the military accommodation camps (HY64 - Rinnigill, HY75 - Crockness, HY88 - Lower Garson, ND29NE 8 - Burnhouse, ND39SW 69 - Lythes or ND39SW 118 - Olig Cottage) could be used as foundations for the construction of timber or Nissen type holiday homes forming a WWII themed self-catering/residential camping park. Some of the camp sites located near the shoreline such as those mentioned above may also lend themselves to development in conjunction with marina facilities.
 - Re-glazing of Coast Artillery Searchlight emplacements such as those at (ND39SW 46 - South Walls, HY20NW 25 - Skerry & HY20SE 2 - Scad) and the Battery Observation Posts of Skerry & Scad could make effective marine wildlife observatories.

ED1 Schools Education

ED1.1 Dialogue with Orkney Schools

- The North Walls Community School (NWCS) Project demonstrated the value and effectiveness of using archaeology sites and research techniques as a means of educating primary aged children about past conflict and the role that Orkney played in WWII. Feedback from parents and teachers has indicated that a similar approach should be deployed across other schools. Opening a dialogue with the education department of OIC and other Orkney schools to determine interest should be the first step in any plan to develop any school resources

ED1.2 Production of School Resource Packs

- Following on from the discussions with other Orkney Schools, it is anticipated that there would be sufficient interest to warrant the production of a teaching resource pack providing support and guidance for teachers wishing to deliver a similar project to that taught at NWCS. Funding would be beneficial in order to employ someone to produce a high quality schools resource.

ED1.3 Part-time Education Officer

- As discussed in Section 3.0.2, teacher feedback from the NWCS Project identified that although staff felt confident delivering a similar project in the future if provided with the resources, they greatly appreciated the added benefits that came through the expertise of the graduate heritage officer. It is likely that other schools would feel similarly, especially if the subject and approach was entirely new to them. An education officer would provide valuable teaching support for schools running a wartime heritage project giving the capacity to attend classroom and outdoor sessions as well as offer CPD staff training. Further development of the schools programme up to secondary age level could also be carried out by an education officer.

ED2 Future Generations

ED2.1 Dialogue with Outdoor Youth Groups

- The geocache orienteering trail has demonstrated potential as an effective means of engaging the next generation of Orcadians with the material legacy of WWII on Hoy

(see Section 3.1). Greater use of the trail could be encouraged through dialogues with youth organisations such as the Scout & Guide Associations, the Boys Brigade, the Duke of Edinburgh's Award and the British Cadet Force. Raising awareness with these groups and facilitating expeditions in liaison with OIC Outdoor Education could significantly increase the number of young people learning about WWII through the Wee Fea trail.

ED2.2 Part-time Education Officer

- In the same way that an education officer could greatly benefit the delivery of the formal schools' programme, a part-time position could provide leadership and guidance to youth groups undertaking outdoor educational activities. Additional activities and child friendly site interpretation could also be developed by the education officer.

ED2.3 Production of Child Friendly Interpretation

- The production of child friendly interactive interpretation materials is recommended as part of a broader island-wide digital interpretation scheme suggested under **T2.3**. A separate component to these trails would be advantageous for engaging the increasingly technologically literate youth of today. Producing age group specific interpretive material, puzzles, activities and applications to accompany the digital trails will provide an effective means of engaging younger audiences as well as adults with wartime heritage.

CE1&2 Community Enhancement

CE1.1 & 2.1 Volunteer Heritage Coordinator

- Wartime heritage has proven to be a successful community enhancing resource through bringing people together for activities and events (see Sections 2.2.2 & 3.2-3.5).
- Maintenance of an events and activities programme to provide continued opportunities for community members to meet, interact and learn together is a recommended course of action for the future.

- In the absence of the graduate heritage officer, a volunteer heritage coordinator post could be created to manage volunteers as well as plan and advertise events.
- As previously described in **ARM1.1**, the heritage coordinator could organise and encourage active community involvement through archive consultation & research and archaeological fieldwork.
- The establishment of an evening talks programme is encouraged so as to maintain the current level of interest and create a relatively regular event for island residents to attend. Inviting visiting speakers would offer a means of delivering the talk programme without a full time heritage officer. Some suggestions for speakers with excellent knowledge of Orkney's WWII history are presented below:
 - Geoffrey Stell – Independent Researcher & Author
 - Andrew Hollinrake – Ness Battery & Stromness Tours
 - Brian Budge – Royal British Legion Researcher
 - Tom Muir – OIC Arts, Museums & Heritage Service
 - Jude Callister – OIC Arts, Museums & Heritage Service
 - Keith Johnson – Birsay Heritage Trust
 - Kevin Heath – SULA Diving & Aviation Research Group Orkney & Shetland
 - William Shearer – Aviation Research Group Orkney & Shetland
 - David Cowley – RCAHMS
 - Kevin Munro – Historic Scotland

CE1.2 & 2.2 Part-time/Seasonal Heritage Officer

- Phase 2 of Community Enhancement would build on what had been achieved in Phase 1 by creating a part-time or seasonal heritage officer post.
- A paid heritage officer would be able to deliver a much larger range of active and passive community events as well as being able to prepare and deliver evening talks and lead guided walks.

- The **Community Enhancement** core area is closely linked with the **Tourism** core area as many of the active and passive activities and events delivered by the heritage officer would also appeal to island visitors and tourists. **CE1.2** ties in with **T3.2** as the heritage officer would be responsible for the creation of a mobile interpretation resource which may include pop-up display stands, computer projected image slideshows and artefact displays. The creation of the mobile exhibition could in itself become a community enhancing activity with volunteers assisting in its production. The mobile nature of the displays would allow the resource to be moved to different venues across Hoy making wartime heritage accessible to a greater percentage of the island population as well as providing an additional point of interest for visitors.

CE1.3 & 2.3 Fulltime Heritage Officer

- Phase 3 increases the heritage officer position to full time requiring a greater financial commitment but in turn facilitating the delivery of a much broader range of events and activities all year round.
- With more time, the heritage officer would have the capacity to expand on the activity areas delivered as part of the project introducing workshops, handling sessions, roadshows, film nights and themed social events.
- The full time position could also incorporate the education officer responsibilities outlined in **ED1.3 & 2.2** as well as maintaining **T3.2**, delivering **T4** and providing a staffed presence as part of **T3.3**.

T1 Guided Walks

T1.1 Continuation of Lyness Guided Walks

- Section 3.4 has summarised the success of the Lyness guided walks for attracting a new category of tourists to Hoy. Legacies of Conflict has also demonstrated that once established, the walks can be delivered with minimal resources.
- Maintaining the guided walks into 2015 and beyond would provide an excellent, low cost starting point for continued tourist engagement with Hoy's wartime heritage.

- In the absence of the graduate heritage officer, cooperation with OIC's Arts, Museums and Heritage Service is advised in order to discuss the potential of SFVC&M staff leading the walks more permanently in future seasons. Joint operations during the project have demonstrated the value brought from working closely with OIC departments and continued close collaboration is recommended so as to manage and interpret the wartime resource more effectively.
- With elementary training from SFVC&M staff and use of the walk crib sheet, community volunteers could also lead walks, sharing the weekly running demands.

T1.2 Part-time/Seasonal Heritage Officer

- Operating in conjunction with the Community Enhancement core area responsibilities, a part-time heritage officer position would provide a valuable asset for delivering the Lyness guided walk alongside OIC Arts, Museums & Heritage.
- The heritage officer could also research, plan and run further walks around other areas of the wartime landscape such as Rinnigill, Lyrawa, Scad Head and the Heavy Anti-Aircraft Gun Batteries on South Walls (NMRS sites ND38NW 23 & 24).
- A part-time or seasonal position could also facilitate the development of active engagement through Guided Hikes, taking groups of more adventurous visitors across upland areas to explore sites such as those on Wee Fea and the many air crash wrecks in the hills of Hoy parish.

T1.3 Location Activated Audio & Visual Trails

- Experience and comments received from the Lyness walks has shown that visitors respond more and retain information better when it is audibly and visually transmitted rather than presented as written text in the form of a guidebook, leaflet or interpretation panel (see Section 3.4 & 3.5).
- Although led walks offer a low tech, low cost, small scale means of introducing tourist groups to WWII archaeological sites, if interest was to grow and walk routes expand to

other sites, delivery of such a popular and interactive form of interpretation is likely to become too demanding for a part-time or permanent heritage officer.

- In order to provide a system that can cater for large numbers of visitors and which allows engagement on more sites through audio and visual interpretation, a system of handheld or mobile phone app-based digital audio tours is suggested.
- An excellent example of the kind of GPS-triggered multimedia interpretation system envisaged for Hoy is currently employed at Culloden Battlefield near Inverness and offers an excellent demonstration of how effective modern digital guidance systems can be in providing audio and visual information across a large landscape area. The Culloden Battlefield Mobile Guidance System incorporates maps, text, audio narration & sound effects, still images and video clips all of which are preloaded onto a handheld device issued to visitors prior to their departure onto the battlefield (Pfeifer, T., Savage, P. & Robinson, B., 2009). Each device determines its (and therefore the visitor's) position using GPS triangulation and once in close proximity to a prearranged Point of Interest the relevant interpretation content is activated (*ibid.*).
- Where sufficient mobile phone signal is available, smart phone applications activated by location or landmark positioned Quick Response (QR) codes could form an alternative means of providing similar interpretive information for visitors as they move through a landscape or around a site. Podcasts and downloadable mp3 audio guides are also viable options through smart phone technology. QR codes are currently in operation as part of the onsite interpretation developed by the Commonwealth War Graves Commission at Lyness Naval Cemetery. However visitors have already encountered difficulties accessing the additional QR information as a result of poor phone reception. If a mobile phone based system such as this were to be developed for Hoy then consideration would need to be given to boosting local mobile phone coverage in areas where it was deployed.

- Two companies who can be recommended for their work with GPS-triggered and App-based multimedia interpretation systems are Zolkc Limited (www.zolkc.com) and Audio Trails (www.audiotrails.co.uk).

T2 Interactive Trails

T2.1 Maintaining the Wee Fea Geocache Trail

- As discussed in Section 3.1.2, the geocache orienteering trail originally created as a youth education device has shown a great deal of potential as a means of encouraging tourism. There are 6 million geocachers and over 2 million active geocache listings worldwide with game players often selecting holiday destinations that contain interesting geocache sites. Hoy could therefore stand to gain from a global pool of tourists who may not otherwise choose to visit the island.
- Phase 1 should consist of a close monitoring of the geocache trail on WeeFea to determine the frequency of its use and the opinions of those exploring the WWII sites on the hillside via the trail. This can be done through examination of the logbook located at Trail Point 1 and regular checks of the geocaching.com website where comments may be left by discoverers.
- Hoy's WWII story ties in with global narratives that impacted communities across the European Theatre of war. The small local communities around Loch Ewe in the North West Highlands of Scotland have particularly strong links with Hoy and Scapa Flow through the important staging and supply role that Loch Ewe played for the Arctic Convoys.
- Geocaching and Smart Phone Apps offer the opportunity to link geographically separate locations into broader interpretive trails and a particularly strong and engaging option that could be explored is the development of a digital trail connecting WWII sites around Loch Ewe with those on Hoy. Opening a dialogue and exploring the potential of forming interpretive links with the Russian Arctic Convoy Museum Project is therefore encouraged as a starting point for planning such an initiative ahead of **T2** Phase 2.

T2.2 Expansion of Geocache Trails and GPS/Smart Phone Pilot Study

- If the WeeFee geocache trail was found to be effective in encouraging additional visitors to Hoy and engaging them with wartime heritage then consideration should be given to the expansion of the trail to include other sites across the island.
- In addition to the multicache trail that is currently installed, geocache sites can be combined to form GeoTours. Geocaching.com offers a support service for organisations looking to create a GeoTour. Tours require a minimum project budget of c.£2500 which pays for help with developing and heavily marketing the GeoTour with special features such as trackable game pieces and player passports as well as a dedicated webspace. The geocaching.com website currently receives 1.5 billion page views per year and provide a Hoy Wartime GeoTour with an exception publicity opportunity. Orkney is already part of a GeoTour focusing on Norse Thing site heritage which includes 29 geocache locations on the Isle of Man, mainland Scotland, Orkney, Shetland, Norway, the Faeroes and Iceland. An Arctic Convoy GeoTour could be equally expansive in its locations linking with Loch Ewe as well as other relevant locations in Iceland and Russia. Further information can be found at www.geocaching.com/travel.
- GPS-triggered multimedia interpretation systems and smart phone apps have already been mentioned in relation to **T1.3**. **T2.2** recommends a pilot study to explore the potential of these interpretive devices as part of an island wide digital trail which could be delivered fully in Phase 3 if found to be successful. Feedback from participant questionnaires revealed a high level of interest in engaging with wartime heritage ‘in the passing’ and a flexible, low maintenance App-based or GPS-triggered system could achieve this.
- A further alternative that could be investigated as part of a pilot study is the use of Garmin ‘Chirp’ beacons. These small wireless beacons are programmable and can transmit basic site interpretation text wirelessly to compatible mobile devices within close proximity of the beacon as well as recording site visitor numbers. These small units are waterproof and affordable with a long battery life and would be worth

exploring as a way of presenting basic information about the purpose and use of sites to passers-by without the need for expensive or intrusive interpretation panels.

T2.3 Island-wide Digital Trails & Apps

- Building on the evaluative work carried out in **T2.2** and linking with **T1.3**, Phase 3 would expand the smaller scale trails into an island-wide interpretive scheme.
- Collecting and depositing their digital devices from central interpretation centres such as the SFVC&M or those created as part of **ARM2.3 & T3.3**, islanders and tourists would be able to explore the wartime landscape of Hoy at their leisure. Whether heading north to visit Rackwick and the Old Man of Hoy or south to Osmondwall Cemetery and Cantick, GPS-triggering would allow visitors to decide which WWII sites to explore and learn about as they pass them. For those who prefer more structure, wish to discover more about a particular theme or have a limited time scale different routes could be selected and the device used to navigate between the Points of Interest in addition to providing onsite interpretation and audio commentary whilst enroute.
- With the recent launch of Google Smart Glass augmented reality technology, Hoy could also make use of this new optical head up display system to create a dynamic cutting edge immersive interpretive experience combining the functionality of the previously described GPS-triggered system with the potential to superimpose archive photographs and digital reconstructions over a real-time view of the present day landscape and the archaeological sites within it. Google is currently evaluating their new technology in different environments and it may be possible for an IoHDT interpretation project (perhaps in cooperation OIC) to act as a trial for Google. Dialogue with Google on the potential use of Smart Glass for heritage interpretation would be the first step required in taking this option further.

T3 Interpretation

T3.1 Wartime Heritage Online

- One of the requests to emerge from the evaluation was for an online resource where tourist could find an introduction to what attractions Hoy offered and learn about the role the island played in WWII.
- A significant web presence would raise the international awareness of the incredible archaeological legacy of war that can be found on Hoy. This may in turn encourage an increase in tourism capturing the interest and imagination of prospective holiday makers at that critical phase when they are still at home planning their next vacation.
- An initial and relatively low cost option would be to include several pages of historical summary and brief site interpretation on the IoHDT website.

T3.2 Mobile Exhibition & Virtual Museum

- Phase 2 would develop on **T3.1** with the expansion of the web presence into a virtual museum which would include downloadable site guides, walking trails and an online interactive map database following a similar format to the project GIS database. This resource would not only allow people in other geographic regions to explore the WWII archaeology of Hoy but also permit less able island residents to find out more about their island and places that they otherwise would not be able to visit.
- Phase 2 & 3 ties in with the recommendations for **CE1.2** & **CE2.2** which suggests the creation of a heritage officer position. Through this position a mobile interpretation resource could be created which may include pop-up display stands, computer projected image slideshows and artefact displays. The mobile nature of the displays would allow the resource to be moved to different venues across Hoy making wartime heritage accessible to a greater percentage of the island population as well as providing an additional point of interest for visitors. The development of this resource could alternatively be put out to tender if a heritage officer position wasn't created.

T3.3 Cycloramic Experience & Interpretation Centre

- Tourism 3, phase 3 links with the conservation and reuse of wartime buildings covered in **ARM2.3**. Still containing large portions of the original plaster rendered cycloramic dome, the submarine torpedo attack teacher (TAT) forms the most intact of two rare synthetic trainers surviving at Rinnigill (NMRS site ND39SW 18.01).
- Utilising interactive touch screen technology, reconstructive digital imagery, historic photographs, site histories, location and current condition data the TAT could provide a research and interpretation installation where the island of Hoy's WWII story could be told. 360° visualisation systems have been successfully deployed at heritage venues such as the Imperial War Museum Duxford in Cambridge (Figure 34) or on a much grander scale at Stonehenge where a 15m radius 360-degree cinema is currently under construction. Global technology company Barco installed a 360° visualisation system with a 5m radius and 3.15m height as part of the National Air Traffic Service (NATS) 3D Tower Simulator at London Heathrow Airport in 2005 (Barco, 2005). Here, trainees can interact with the visualised content through consoles and computer terminals (Figure 34). This example highlights further potential of this technology where the domed interior of the TAT at Rinnigill could be used as part of an interactive learning, wartime landscape exploration tool as well as a film screen for projecting interpretive presentations.



Figure 34 - NATS 3D Tower Simulator (left) and IWM Duxford 90 Degree Cinema (right)

- Located just off the main community bus route within the Rinnigill Complex and with commanding views over Lyness and Longhope, the TAT would be well situated to serve

as a centre launch location for introducing visitors to Hoy's wartime heritage and issuing digital trail devices such as those developed as part of **T1.3, 2.2 & 2.3**. Rinnigill also offers potential for expansion with a second large synthetic training building (HY59) extant next to it.

- With OIC Arts, Museums & Heritage currently exploring options for the redevelopment of the SFVC&M it is most important that any planned development of wartime sites as interpretation centres be discussed with OIC so that future plans may be mutually supporting. A collaborative approach between IoHDT and OIC may be worth considering for future large developments and grant applications.

T4 Publicity & Promotion

T4.1 Orkney Wide Publicity & BBC Coverage

- Event and activity planning during the project highlighted the importance of publicity for informing the general public as to what was happening and how they can get involved. Regular articles were published in the island newsletter 'The Blether' to raise local interest and events were advertised via the IoHDT online events calendar, Facebook posts, local radio broadcasts and posters. No single type of publicity was revealed as being more effective than others and so a wide range of mediums is encouraged for notifying islanders and visitors of what is taking place in the future.
- The archaeological fieldwork programme has proved what has long been suspected which is that Hoy has an exceptionally well preserved and dense concentration of WWII archaeological remains. Many of the sites are rare examples with unique stories to tell and contact with the BBC and national press should be established to raise greater awareness of how exceptional Hoy's wartime heritage is.

T4.2 Marketing Plan

- A marketing plan would identify particular selling points, attractions, target audiences and layout the most effective ways of informing the widest possible audience of what can be seen and experienced on Hoy. The plan developed in phase 2 would then be implemented in phase 3.

T4.3 Deployment of Marketing Plan

- With sufficient funding in place the marketing plan developed in phase 2 would be put into operation. This plan could involve a multimedia campaign to raise awareness of new digital trails and interactive experiences that have been produced through other phase 2 and 3 categories as well as highlight the importance of Hoy's wartime remains. The marketing plan would most likely be best carried out in conjunction with wider Hoy tourism initiatives so as to provide a full package of attractions and amenities to prospective tourists.

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This document is dedicated to the memory of all the men and women who lived worked and served on Hoy during the Second World War. Hoy's wartime heritage is their legacy, telling the story of their bravery and perseverance through adversity. It is our hope that this project and the recommendations set out for further development may form a fitting and long lasting tribute to their actions and create sustainable opportunities for their story to be told to future generations who have not lived through such a time of world conflict.

Appendices

Appendix 1. ADM116/5790 Chronology

CHRONOLOGY OF THE DEVELOPMENT OF THE FLEET BASE AT
SCAPA FLOW, 1937 - 1945.

1937.

In 1937 the positions of the main A/S Booms were designed as follows:-

- Boom A. HOXA - from Hoxa Head to the shore a short distance south of Quoyness.
- Boom B. SWITHA - Innan Kneb to Hackness.
- Boom C. HOY - Houton Head to Scad Head.

1938.

Commander Hopkinson appointed Boom Defence Officer, Scapa, living at Rysa Lodge. 2 Boom Vessels and s.s. "TEUCER", in all, three Boom Vessels were sent to Scapa.

June. Work of laying commenced. The Boom Shed, slab and workshops were in course of erection by C.E.-in-C. at this date at Lyness.

September. Boom A completed. Work started on underground fuel tanks by Messrs. Baldry, Yerburch & Hutchinson.

1939.

February. R.N.A.S. Hatston airfield commenced. 23rd.- Commander O.M. Frewen appointed as S.N.O. and K.H.M., Scapa. 28th. - "MADJA" sunk as blockship in Water Sound.

March, 15th. "SCRIANO" sunk as blockship in Kirk Sound.

April. Boom B completed. 11th.- S.N.O. arrived at Lyness and "found the whole quay cluttered up by B.D.O. and three civilian contractors". S.N.O. took up residence and established his offices at Kirkwall Hotel. At this date the Army were reconnoitering gun sites. S.N.O. possessed no boat due to lack of funds. The Stanger and Flotta Port War Signal Stations were being constructed. 16 tanks to hold approx. 100,000 tons of oil fuel were built above ground. The contractors were Messrs. Balfour Beatty. Metal Industries built their own camp. Metal Industries had been employed between the wars in raising the sunken German Fleet.

May. Boom C completed. K.H.M. required separate quay for small craft and for colliers at a cost of £38,000, to clear oil fuelling jetty of small craft. Request was not implemented. H.M.S. "SCOTT" surveyed Eastern Sounds for blockships. She revealed channels up to 400 ft. wide and a depth of 2 fathoms at Low Water were available. Treasury limit was

1939 May (contd.)

£10,000. Later an old ship with market value of £12,000 was available. The request for this vessel was refused. Civil Engineering was under the direction of S.C.E., Invergordon. First Aircraft Landings at Hatston. Rear-Admiral Halifax appointed Rear-Admiral (D), Home Fleet. 27th S.N.O. informed that not "another penny" was to be spent on blockships for Scapa.

June. Military reconnaissance carried out by A.A. generals including Sir Alan Brooke, of which visit S.N.O. was not informed. A.A. defences of Lyness at this time consisted of an agreement by S.N.O. with local military to transport 4 A.A. guns (2 from Kirkwall and 2 from Scrabster). French Squadron visited Scapa, comprising Battle Cruisers DUNKERQUE, ADMIRAL GENSOUL, and STRASBOURG, and Cruisers GEORGES LEYGUES, MONTCALM, and GLOIRE. S.N.O. had to borrow a speed-boat from the R.A.F. to go on board.

16th. Admiral French, A.C.O.S. designate, arrived for a preliminary reconnaissance. K.H.M. (S.N.O.) took him through Skerry and Kirk Sounds in B.D.O. picket boat.

July. Boom Offices and workshops completed. Above-ground oil fuel storage tanks completed. Fleet mooring buoys laid. Teleprinter to S.N.O. from Rosyth connected. At this date the spare accommodation in situ at Lyness in the event of mobilisation amounted to 85, apart from the old Paravane Store, space for 120, which C. in C. H.F. desired for Fleet Canteen. Estimated essential incoming personnel by Admiral French 1,200. Admiralty stated that "nothing could be done pending a fall in the price of hutting".

August. Battle Squadron under Admiral Sir Charles Forbes arrived, comprising NELSON, RODNEY, RESOLUTION, and ROYAL SOVEREIGN. N.O.I.C. Kirkwall arrived being a Captain, R.N. Flotta Summit Signal Station completed. 21st. - RAMILLES and ROYAL OAK ordered to Scapa. 26th IRON DUKE arrived as Flagship and accommodation ship. Telephone and teleprinter cable circuit being laid round Flow, the centre of Naval Communications being IRON DUKE. It was not known at that time whether, as in the last war, it was intended to keep the greater majority of accommodation afloat. Admiral French took command as A.C.O.S. S.N.O. - now K.H.M. - moved to Lyness. s.s. "VOLTAIRE" (12,000 tons) arrived at Lyness as accommodation ship, but owing to her size had to

1939 August (contd.)

be secured to a buoy some considerable distance from shore.

September. 2nd. - Machine guns for Royal Marines landed with A.A. defences of Lyness. 3rd. - War declared. 6th German reconnaissance flight to the East of the Flow. 8th. - Blockship CAPE ORTEGAL sunk in Skerry Sound. 16th. - The First Lord (Mr. Winston Churchill) visited Scapa. DUNLUCE CASTLE withdrawn from the shipbreakers on the Clyde and refitted. Dockyard Cash Office opened. S.C.E. appointed to Lyness. Drifter Pool opened. Large Contraband Control Staff, together with M.C.'s Staff, arrived at Kirkwall.

October. B.E.O. and staff accommodated ashore from s.s. "VOLTAIRE". Victualling ship s.s. "BONNIFACE" arrived. Vice-Admiral, Northern Patrol, (Sir Max Horton) and Staff arrived at Kirkwall. 7th. - His Majesty the King inspected the Base. The only landing place was a wooden pier, condemned as unsafe 5 years earlier. 14th. - ROYAL OAK torpedoed. (Chart and account of sinking by Captain of submarine Page 60, Part III.) At this time 4 B.D.V.'s at Scapa. Sites for Radar Stations selected. "VEGOL" (tanker) refloated from Cava. Military H.Q. established at McKay's Hotel, Stromness. Fleet Base evacuated by Home Fleet. 17th. - First air-raid on Scapa. Near-miss to IRON DUKE and she was beached. Telephone communication was moved ashore, but W/T communication was kept aboard H.M.S. "GREENWICH" until February, 1941. "VOLTAIRE" sent South with remainder of IRON DUKE's complement. Committee under Admiral Sir E. Drax visited Lyness and Scapa to investigate the sinking of IRON DUKE. No copy of their report is available. After the bombing of IRON DUKE, K.H.M.'s launch was commissioned as H.M.S. "PROSERPINE" and H.Q. organisation of A.C.O.S. and the Fleet Base moved ashore (Page 1.). The only accommodation available was a small accounts office on B.D.V. slab which accommodated the Admiral, Chief of Staff, Flag Lieutenant and Secretary, as well as the S.D.O. and Teleprinter Room. Secret and personal interviews had to take place in the W.C. The Captain's Secretary, H.M.S. "PROSERPINE" slept on a table in a small hut that served as Wardroom. The majority of the Ship's Company slept in the Canteen. Shortly afterwards Rysa Lodge was requisitioned for A.C.O.S. and R.A., Scapa, and Orgill Lodge for the Senior Naval and Civil Officers. The remainder were accommodated at Longhope Hotel. 21st. Blockship LAKE NEUCHATEL sunk in Kirk Sound.

1939 (cont.)

November. Captain Jermain appointed C.O. "PROSERPINE" and Maintenance Captain. Number of communication ratings 80. Church of Scotland Hut opened near Wooden Pier, Lyness. Royal Marines, B.D.O. M.N. Ship No. 1 "MASHROBA" arrived for building of piers and construction of gun sites.

21st.- Areas of Orkney and Shetland declared a protected area. Lyness Naval Base scheduled a protected place within that area. Security measures and Movement Control at Lyness. Security Officer appointed.

December. Vice-Admiral Binney was appointed as A.C.O.S. with Rear-Admiral Lyster as Rear-Admiral, Scapa, and Admiral Superintendent, vide Schedule A Command, p290, Lyness. The duty of R.A., Scapa, was the erection and maintenance of defences of Scapa Flow, and the accommodation for the personnel required to man such defences, and for the Fleet Base; also for general administration, and administration of the gradually growing Dockyard personnel and repair facilities - vide "Command" Schedule A - 1940-42.

Captain R.D. Oliver, late Captain of "IRON DUKE", and his committee produced the "R" Plan for the defences of the Fleet anchorage. No details of the production of this most able and comprehensive piece of planning are now available at Lyness; but it proved to be most far-sighted and complete.

To all practical purposes it was completed in 1943 and is embodied in the Most Secret Defences Chart of that date - C.B. 004094/43/10 -

K. Presumably the work was largely aided by assistance from the General, Orkney and Shetland Defence Force - Major-General Kemp (1940) - and Wing Commander Jackson, R.A.F., - Balloon Command. Also by :-

Captain Taylor, R.N., Boom Defence Officer.
 Captain Field, R.N., Controlled Mining.
 Captain Heath, R.N., Extended Defences Officer.

Group-Captain, R.A.F., appointed to Wick for R.A.F. Fighter Command operational control of 13 Group. Controlled Mining Base Ships "MANCHESTER CITY" and "RINGDOVE" arrived, followed by Controlled Mining Party. 11th IRON DUKE towed to Longhope and beached. 12th- Blockship "GAMEHIRA" sunk in Kirk Sound. 24th A.E.S. I. (Radar Station), Sumburgh Head, Shetland, working.

~~5~~

1940

January. Advance Party of R.A.F. Balloon Squadrons arrived. The original layout of sites provided for 12 balloons, 8 of which were water-borne, being flown from Steam Trawlers manned by Naval personnel. The Balloon H.Q. was situated at Lyness. 23rd - Quoyness Controlled Mining Base opened with caravan accommodation.

February. A.C.O.S. and R.A., Scapa, moved into newly constructed office block at the Head of Right at Lyness, with communication ratings in three old huts nearby. Lyness cinema opened in last war P.V. Store after Metal Industries had moved out. 17th.- Blockship "BUSK" sunk in Kirk Sound. Army Gun Operations Room established. 18th.- Blockship "ILSENSTEIN" sunk in Skerry Sound. System of Barrage A.A. Firing over Fleet anchorage adopted. Work commenced on Heldale Water Pumping Station and pipelines. 26th.- A.E.S. II and III (Radar Stations), Fair Isle, working. A/T Baffles commenced.

March. Three R.A.F. Fighter Squadrons ready to operate. They took over the operational control of Naval Squadrons 803 (Skuas and Roos) at Wick, and 804 (Gladiators) at Hatston. H.M.S. "DUNLUCE CASTLE" arrived at a buoy off Lyness and took over duties as accommodation and transit ship, terminus of ferries, Base Ship for balloon and A/S trawlers, Fleet Mail Office, and a multitude of other duties. (Description on Pp. 8-10.) Decision to block Eastern entrances to Flow by causeways made. Haybrake Camp for Naval ratings opened. 3rd.- Blockship "CARRON" sunk in Water Sound. 6th.- "IRON DUKE" bombed again. 8th.- Royal Marines Auxiliary Battalion arrived. 16th.- 35 German aircraft attacked Fleet anchorage and aerodromes. H.M.S. "NORFOLK" bombed. A fire occurred in DUNLUCE CASTLE and she was beached, being refloated after the fire had been extinguished. H.M.S. "VASNA", "AMARAPOORA", and "ISLE OF JERSEY" arrived at Scapa. Indicator Loops laid off Hoxa. Switha and Cantick Minefields laid. 21st.- Blockship "CONDOLIER" sunk in Water Sound.

April. Norwegian Campaign - many ships and transports in Scapa Flow. Commander Lee-Morris, R.N.V.R., appointed in charge of Drifter Pool. North Pier, Lyness commenced, being built of fabricated steel by Sir Wm. Arrol & Co. Work on construction of D.G. Ranges commenced. Civilian D.G. Party opened temporarily at Lyness. D.G. Mobile Wiping Unit - Drifter "AQUISITION"

1940.

April (contd.)

arrived. "BURLINGTON" (minesweeper) beached to avoid sinking. MIKOL (tanker) refloated from Fara. H.M.S. "SUFFOLK" (cruiser), bombed off Norway, beached and repaired. 8th.- 60 Enemy aircraft attacked Scapa. 10th. - Bombing attack with 50-60 enemy aircraft involved. This was the last big attack on Scapa Flow, and it is understood that the Germans lost most of their attacking force in this raid. 16th.- Special Service train (named the Jellicoe) commenced running from London to Thurso under Naval direction. s.s. "ST. NINIAN" and "MARIALTO" were Naval ferries from Scrabster to Lyness. Fleet returned to Scapa. 17th.- Blockship JUNIATA sunk in Water Sound. Incinerator built.

May. Controlled Mining Base, St. Margaret's Hope, opened, and Captain C/M appointed. New Wardroom opened (PROSERPINE), the old Wardroom being turned over to Dockyard and Civil Officers. 2nd.- Blockship REDSTONE sunk in Kirk Sound.

June 1st.- Metal Industries appointed Admiralty Salvage Department. Wick repair base opened. Loop Station at Stromness established. Torpedo Depot completed in Lyness Base. Work on Northern A.A. Range commenced. 14th.- Blockship MARTIS sunk in E. Weddel Sound. ARAMA (troopship) refloated from Cava. R.N.A.S. Twatt and R.A.F. Skeabrae airfields commenced. First Battalion of R.M.E.'s arrived in Lyness. 30th.- Blockship EMPIRE SEAMEN sunk in E. Weddel Sound.

July. South Pier, Rinnigill commenced, built of fabricated steel by Sir Wm. Arrol & Co. West Pier, Lyness, being built of concrete to Bath design, commenced. Balloon sites established on Fara, Cava, and Flotta. 13th.- Blockship EMERALD WINGS sunk in Skerry Sound.

August.- Commencement of R.A.F. hydrogen plant at Rinnigill. 26th.- Floating Dock (A.F.D.12) for destroyers arrived in Gutter Sound. Rear Admiral P. Macnamara relieved Rear Admiral Lyster as R.A. Scapa and Admiral Superintendent Lyness.

September. A.E.S. IV (Radar Station) Unst, North Shetland, working. R.M.E. Detachment established on Flotta. 24th.- Lyness S.Q. opened. S.C.E. (CS) Camp completed.

October. 1st. Sick Quarters, Northness opened with accommodation for 64

1940.

October (contd.)

patients. A.E.S. V (Radar Station) at South Ronaldsay opened. Anchorage allocated for Ammunition ships and some of the necessary buoys laid. North and West of Cava.

November. H.M.S. "MENDIP" (destroyer) damaged by depth charge - the whole of her stern being blown off. Docked in A.F.D.12. Permanent Naval D.G. Party established at Lyness to take over from Civilian party. Nevi-Skerry Boom completed. C.C.'s Base workshop, Lyness, completed. Stanger Port War Signal Station completed.

December. A.E.S. VI (Radar Station) at Dummet Head working. 30 ton Floating Crane arrived at Lyness. Admiral Sir John C. Tovey appointed C. in C. H.F. During the course of 1940 the following Camps were opened, the figures in brackets representing the accommodation :-

Civil Officers' Mess (Old Wardroom)	(12)
Subordinate Officers' Mess, Haybrake	(65)
" " " French Road	
D. Mess -	(96)
Coalies' Mess - Canteen	(40)

1941

January. North Pier, Lyness, finished. Shredding machine for destroying confidential papers established. Much additional hutting completed. Pattern and foundry workshops completed. Vice-Admiral, Northern Patrol, left Kirkwall with most of his Staff. D.E.M.S. Base, Lyness, opened.

February. W/T Station, South Walls, in operation with remote control from A.C.O.S. Office. CALSHOT (Ferry Tender) ashore in gale - she had to be beached before being repaired and was then refloated. Heldale Pumping Station finished. 'A' Generating Station for Lyness Base in use. R.A.F. Balloon Trawler Base, St. Mary's, completed. 19th.- Blockship LYCIA sunk in Skerry Sound.

March. No. 1 Camp opened with accommodation for 169 civilian personnel. C.P.O.'s Billiard Room and Recreation Centre opened. 23rd.- Blockship TABARKA sunk in Kirk Sound.

April. Balloon Trawler Base established at St. Mary's. Dental Surgery opened in Lyness.

May. Captain Amery-Parkes relieved Captain Jermain as C.O. "PROSERPINE" and Maintenance Captain.

1941.

May. (contd.) NAY Mobile De-perming Unit - MAGIC CIRCLE - arrived.

Maryland Aircraft from Hatston discovered that the German Battleship "BISMARCK" had sailed from Bergen. 22nd.- F/C Pontoon sunk as blockship in Skerry Sound.

June. First squadrons arrived at Twatt airfield. No. 2 Camp opened with accommodation for 468 civilian personnel. 16th.- Lyness Fire-fighting School opened.

July. Auxiliary A.W.O. Welfare Ship "AUTOCARRIER" arrived at Lyness. "WAR PINDARI" bombed and temporarily repaired.

August. Admiralty took over all Air Ministry civil engineering works in Orkney Mainland; the Air Ministry assuming responsibility over all Admiralty works in the Shetlands. Staff Huts and Office, South Road, opened with accommodation for 54 civilian personnel. 'A' Generating Station, Lyness, completed, after having been used since February, 1941. Lighter K.178 fitted as a floating workshop for B.E.O. 4th.- A.C. 6 (Barge) sunk as Blockship in Skerry Sound.

September. Northern A.A. Range opened. "DANMARK" (Tanker of 10,000 tons) torpedoed in Ingness Bay. Education Centre, Lyness, opened. N.O.I.C. re-appointed to Kirkwall and as S.O. Northern Patrol Trawlers. A/T Baffles completed.

October. Scrabster repair base for drifters opened. H.M.S "YELLOWHAMMER" (Mobile Workshop) completed. R.N.F.F. ratings arrived at Lyness to strengthen local fire brigades. South Pier, Rinnigill, completed.

November. RAVENSPOINT (Ammunition Ship) refloated from Rysa. SPANKER (collier) refloated from Cava. Isolation S.Q. at Howton opened. Convalescent Home at Woodwick House opened.

December. Owing to heavy bombing of U.K., instructions were received that camps were to be dispersed, and a Nissen Camp with accommodation for 300 naval ratings (later used for transit ratings) was laid out. This was situated on an isolated site near Mill Bay and later became Burn Camp. SARDIS (Ammunition Ship) refloated from Rysa. TRYDALE (Ammunition Ship) refloated from Cava. WELSH ROSE and BRITTEN refloated from Kirkwall. Lyness Fire Fighting School opened.

1942

January. Vice-Admiral L.V. Wells relieved Admiral Sir H. Binney as A.C.O.S. EDENSIDE and EMPIRE FIRTH (cargo and colliers) ashore and refloated.

February. Squash Courts completed.

March. Victualling Ship DEMETER arrived to replace BONNIFACE. F.R.U. 771 Squadron transferred from Hatston to Twatt. Rear-Admiral Burnett appointed R.A. (D) H.F. 28th.- Blockship COLLINGDOC sunk in Water Sound.

April. DINARD (Hospital Ship) refloated from Longhope. Lyness Laundry commenced working with a staff of 20 naval ratings. 8th.- Blockship CAROLINA THORNDEN sunk in Water Sound.

May. Re-organisation of Command vide Schedule B, p290. A.C.O.S., in addition to Fortress Commander and operational control, took over administration of Naval Units. Independent Commands were created of R.M.A.B. and Drifter Pool - they became 19th Battalion, R.M., and H.M.S. "PLEIADES" respectively. B.D.O. became C.O. H.M.S. "POMONA". Admiral Superintendent, Lyness, remained with the rapidly increasing Dockyard, Store and B.E.O. repairs, etc., responsibilities, and became responsible for the technical side of Boom Defence, Radar, Fire Fighting Instruction, etc. vide Schedule 'B' Command. Captain Amery-Parkes became M.C. on A.C.O.S. Staff with a separate Captain for C.C. "PROSERPINE". Last of Contraband Control Staff left Kirkwall. Gun Repair Workshops completed. Burn Naval Camp completed.

June . Barber's shop opened.

July. Burn Camp opened as Transit ratings camp. Enlarged Fire-Fighting School opened. Second H.D.A. at Hoxa placed.

August. H.M.S. "EXMOUTH" arrived as accommodation ship. Became M/S Depot Ship and for transit ratings. Greek destroyer ADRIAS ashore on Strona and refloated. L.C.T.s for A/T close protection of Fleet arrived.

September. First of underground fuel tanks ready for use. Mobile Workshop S.S. VIC 14 completed. Tubular Scaffold Pier at Northness completed.

October. H.M.S. "ARGONAUT" (cruiser) ashore and refloated. 'B' Generating Station, Lyness, opened. "View Camp" opened with accommodation for 63 civilian officers. West Pier completed.

1943

January. W.R.N.S. arrived in Lyness. VARDEFF JELL (Norwegian tanker) torpedoed off Kirkwall - after part taken to Inganess Bay. Rear-Admiral Glennie appointed R.A. (D) H.F. DINARD (Hospital Ship) refloated from Longhope for the second time. Radar Repair and Servicing Centre opened at Rinnigill. BRUNSWICK (tanker) refloated from Orphir.

April. 12th.- Fighter direction instructional station at Hesta Geo commenced operating. 24th.- R.M. Stevedores formed officially.

May. Admiral Sir Bruce A. Fraser appointed C.-in-C., H.F.

June. W.A.A.F.'s joined R.A.F. Balloon Command. The Balloon barrage at this time could operate a maximum of 81 balloons. Floating Dock turned to head North. Hill Camp and Spiers' Camp opened with a combined accommodation for 226 civilian employees.

July. Kirkwall minefields abandoned. R.A.F. airfield at Grimsetter turned over to the Admiralty. 18 fourth-class moorings now laid in Gutter Sound and 18 fourth-class moorings in Longhope. H.M.S. "CHASER" (aircraft-carrier) ashore on Fara and refloated. Gibraltar Pier, Flotta, completed. Fleet Theatre completed.

August. Sixth and last underground fuel tank completed, total 100,000 tons. Machine Shop (Engineering) completed.

September. Completion, and occupation by A.C.O.S., of Naval Communications and Operational Centre at Wea Fea. 4th.- Communications ratings moved with A.C.O.S. to Wea Fea. Extension of 'A' Generating Station opened.

October. 25th.- A.E.S. VI (Radar Station) at Dumnet Head turned over to R.A.F.

November. Captain Chatwin relieved Captain Fogg-Elliott as C.O. "PROSERPINE" who became M.C.

December. H.M.S. "EXMOUTH" became depot ship for A/S Patrol. Staff Recreation Hut opened for civilian employees. Officers' Club opened.

1944.

- January. Larger Dental Surgery opened.
- February. Three A.A. Battalions withdrawn - this marked the commencement of the decrease in A.A. Defences of Fleet anchorage. Third H.D.A. established at Hoxa. S.S. "MAPLETON" ashore on Flotta and refloated.
- March. Large St. Ninian's Church Hut opened. R.C. Canteen and Church Hut opened. Golden Wharf completed.
- April. Close protection L.C.T.'s left. Bower R.N. H/F D/F Station opened.
- May. R.A.F. Airfield, Dounreay, taken over by Admiralty and additional runway constructed. Naval ratings occupied Haybrake II Camp ex Messrs Balfour Beatty and R.N.E.'s. (Camp under "PROSERPINE") 30th.- Blockship INVERLANE sunk in Burra Sound.
- June. Balloon Barrage moved South for protection of London. H.M.S. "WIZARD" (destroyer) docked after severe damage by own depth charges. Admiral Sir Henry Moore appointed C.-in-C. H.F. Scrabster Repair Base closed.
- July. N.S.O. and C.C.'s boat repair shops completed. GOLDMOUTH (tanker) ashore on Little Skerry and refloated. 27th.- TABARKA, refloated from Kirk Sound, sunk as blockship in Burra Sound.
- August. ALEXANDER RAMSAY ashore on Holborn Head and refloated. CHARLES D. McIVER and ZANE GREY in collision - beached in Longhope, repaired and refloated. H.M.S. "NABOB" (Aircraft-carrier) torpedoed and temporarily repaired. Tanker LORENZO ALVARA adrift from Lyness Oiling Wharf ashore in Ore Bay and refloated.
- September. Golden Wharf commenced to be used. Number of communication ratings now in Lyness Base 270. Fleet Club Flotta completed.
- October. Burn Camp evacuated, the personnel moving to the newly-evacuated R.A.F. Balloon Squadron Camp. Extension of 'B' Generating Station opened. Captain Thelwell, R.N.R., relieved Captain Lee-Morris, R.N.V.R. as C.O. H.M.S. "PLEIADES", Drifter Pool. Drifter slip-way completed. Kirkwall Base ceased as an operational unit. 17th.- R.N.O. Wick abolished.

1945.

January. Radar Instructional Centre opened at Rinnigill.

March. Re-organisation of Command. Commodore (D) and Staff carrying out operational functions under C.-in-C. H.F., and moving ashore later.

Admiral Superintendent, Lyness, became Flag Officer, Orkney, with administration of all Naval Units vide Schedule 'C' Command, p

May. Sth.- V.E. DAY. Plans submitted for reduction of Fleet Base. Reduction of Base to be carried out by a succession of phases, with "POMONA" gradually absorbing "PROSERPINE" and other independent Commands.

June. "PLEIADES" absorbed by "PROSERPINE". Floating Dock (A.F.D.12) left Gutter Sound en route for the Far East having docked 343 ships. Wick repair base closed.

July. FORT LA PRAIRIE ashore on Pentland Skerries and refloated.

August. EUGENE T. CHAMBERLAIN ashore on Skerry and refloated.

November. "PROSERPINE" absorbed by "POMONA".

The following Dockyard Camps and Messes closed during the course of 1945:-

D. Mess
Coalies' Mess
No. 1 Camp.
Staff Huts
View Camp
Hill Camp
Spiers' Camp.

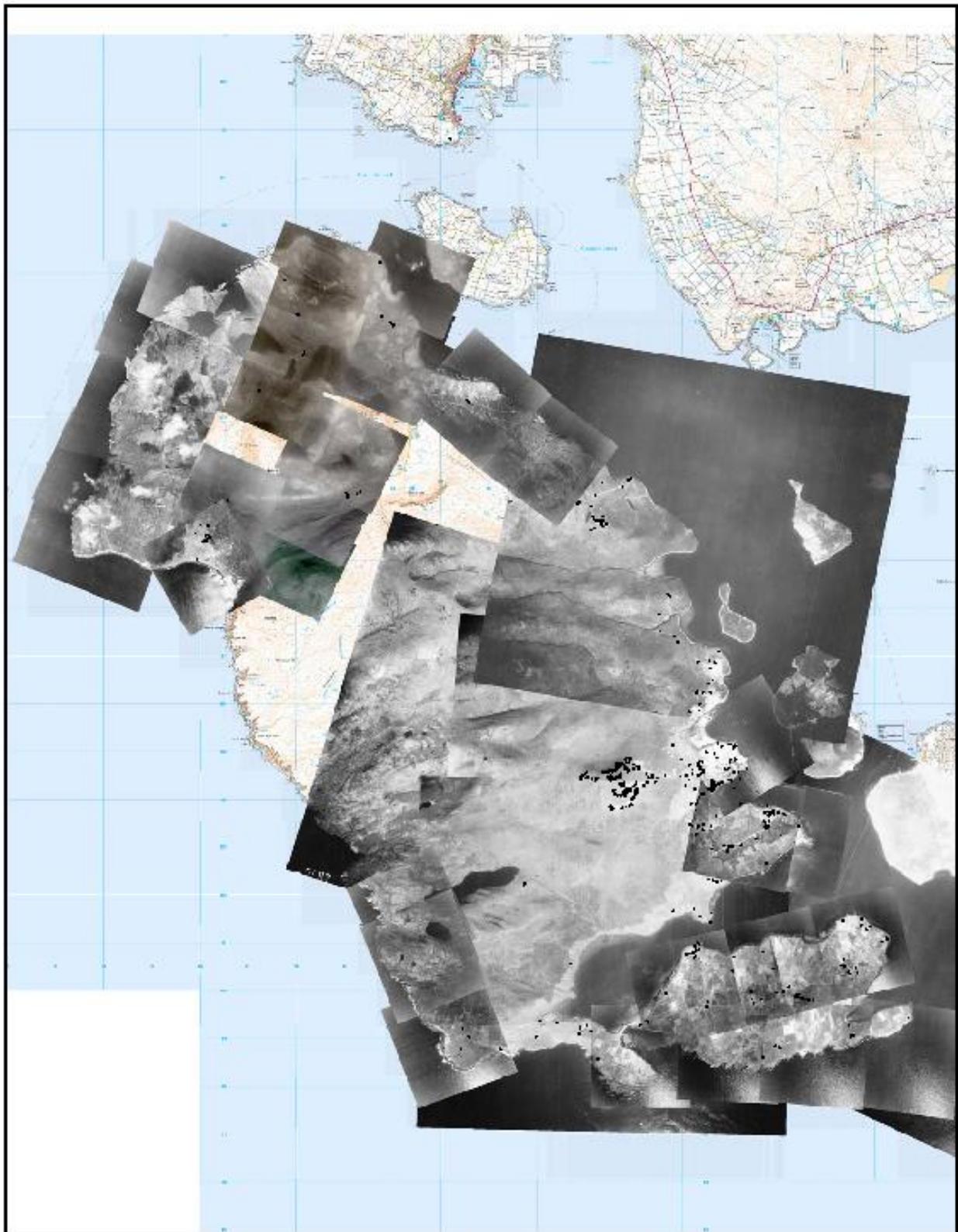
Appendix 2. Armed Forces Units Deployed to Hoy during WWII

UNIT NAME	TNA REFERENCE	ARRIVED HOY	DEPARTED HOY	LOCATION
59 AA Brigade	WO 166/2312 WO 166/7416 WO 166/11232 WO 166/14668	Formed on Hoy 20/06/1940	22/01/1945	Melsetter House
Heavy Ant-Aircraft (HAA) Units				
95 HAA Regiment	WO 166/2385	20/06/1940	20/09/1940	Schoolhouse, Longhope
81 HAA Regiment	WO 166/2372	20/09/1940	06/06/1941	Longhope
115 HAA Regiment	WO 166/2405 WO 166/7483	16/05/1941	09/09/1942	Schoolhouse, Longhope
122 HAA Regiment	N/A	09/09/1942	06/10/1943	Longhope
196 HAA Regiment	N/A	06/10/1943	20/05/1944	Longhope
7 HAA Regiment	N/A	14/05/1944	16/12/1944	Longhope
128 HAA Regiment	N/A	16/12/1944	End of WWII	Longhope
226 HAA Battery	WO 166/2507	25/08/1939	26/09/1940	H5 & H6
204 HAA Battery	N/A	29/12/1939	17/09/1940	H4 & H7
293 HAA Battery	N/A	30/12/1939	20/09/1940	H1 & H3
255 HAA Battery	WO 166/2536	19/09/1940	30/05/1941	H4 & H7
253 HAA Battery	WO 166/2534	21/09/1940	30/05/1941	H1 & H3
254 HAA Battery	WO 166/2535	22/09/1940	23/5 & 06/06/1941	H5 & H6
361 HAA Battery	N/A	29/05/1941	09/09/1942	H1 & H3
365 HAA Battery	N/A	05/06/1941	23/09/1942	H5 & H6
367 HAA Battery	N/A	05/06/1941	23/09/1942	H4 & H7
401 HAA Battery	N/A	09/09/1942	22/09/1943	H1 & H3
400 HAA Battery	N/A	23/09/1942	22/09/1943	H4 & H5
453 HAA Battery	N/A	23/09/1942	06/10/1943	H6 & H7
351 HAA Battery	N/A	22/09/1943	20/05/1944	H1 & H3
661 HAA Battery	N/A	22/09/1943	03/06/1944	H4 & H5
662 HAA Battery	N/A	06/10/1943	17/06/1944	H6 & H7
27 HAA Battery	N/A	20/05/1944	16/12/1944	H1,H3 & LOP5
10 HAA Battery	N/A	03/06/1944	30/12/1944	H4 & H5
13 HAA Battery	N/A	17/06/1944	23/12/1944	H6,H7 & LOP3
407 HAA Battery	N/A	16/12/1944	End of WWII	H3,H4 & LOP5
436 HAA Battery	N/A	28/12/1944	End of WWII	H6,H7 & LOP3
Light Ant-Aircraft (LAA) Units				
2 Troop, 39 LAA Battery	WO 166/2788	24/10/1939	01/02/1940	LH1 - LH4
142 LAA Battery	WO 166/2884	01/02/1940	19/10/1940	Haybrake, LH1-6
421 Troop, 99 LAA Battery	WO 166/2842	09/03/1940	17/10/1940	LH1, LH2 & LH5
54 LAA Battery	N/A	17/10/1940	06/06/1941	Haybrake, LH1-6
101 LAA Battery	WO 166/2844	05/06/1941	20/05/1942	Haybrake, LH1-6
282 LAA Battery	N/A	20/05/1942	07/04/1943	Haybrake, LH1-6
485 LAA Battery	N/A	07/04/1943	End of WWII	Haybrake, LH1-6

Anti-Aircraft Searchlight (S/L) Units				
434 S/L Battery	WO 166/3279	04/11/1939	13/09/1940	HY1.1,2,3,4,5,6 HY2.1,2,3,4 HY3.1,2,3,4,5,6
4 Trp, 437 S/L Battery	WO 166/3277	23/01/1940	28/03/1940	HY1.1,2,3,4,5,6
One troop of 432 S/L Battery	WO 166/3282	28/03/1940	08/06/1940	HY1.1,2,3,4,5,6
Two troops of 353 S/L Battery	WO 166/3196	13/09/1940	18/04/1941	HY1.1,2,3,4,5,6
350 S/L Battery	WO 166/3193	14/09/1940	24/4/1941	HY2.1,2,3,4 HY3.1,2,3,4,5,6
427 S/L Battery	N/A	24/4/1941	01/07/1942	HY1.1,2,3,4,5,6 HY2.1,2,3,4
One Troop of 428 S/L Battery	N/A	24/4/1941	01/07/1942	HY3.1,2,3,4,5,6
385 S/L Battery	WO 166/7856	01/07/1942	22/09/1943	HY1.1,2,3,4,5,6,7 HY2.1,2,3,4,5,6 HY3.1,2,3,4,5
314 S/L Battery	N/A	22/09/1943	23/04/1944	HY1.1,2,3,4,5,6,7 HY2.1,2,3,4,5,6 HY3.1,2,3,4,5
313 S/L Battery	N/A	23/04/1944	End of WWII	HY1.1,2,3,4,6,7 HY2.1,4,5 HY3.2,3,5
RAF Barrage Balloon Units				
No 20 Balloon Centre	AIR29/71	26/08/1940	26/12/1941	Ore Brae
950 (BB) Squadron	AIR 27/2297 AIR 27/2298	20/01/1940	21/08/1944	Ore Brae
960 (BB) Squadron	AIR 27/2311	28/08/1940	22/05/1941	Ore Brae
Coast Artillery Units				
145 Coast Battery	WO 166/1774	07/03/1940	31/05/1941	Scad Battery
268 Coast Battery	WO 166/1794	31/05/1941	14/02/1942	Scad Battery
142 Coast Battery	WO 192/265	14/02/1942	04/08/1950	Scad Battery
144 Coast Battery	WO 192/272	12/07/1940	13/01/1945	Skerry Battery
224 Coast Battery	N/A	09/11/1943	End of WWII	Walls Battery
Infantry Units				
19 Battalion (Btn) Royal Marines	ADM116/5790	08/03/1940	End of WWII	Lyness
11 Cameronians (Scottish Rifles)	WO 166/4182	18/08/1940	09/02/1941	Haybrake
B Company (Coy), 10 Royal Scots Fusiliers	WO 166/4593	09/02/1941	27/07/1941	Haybrake
No2 Orkney (Lyness) Home Guard	WO 199/2725	17/07/1941	02/11/1944	Lyness
B Coy, 8 Btn Kings Own Scottish Borderers	WO 166/4370	27/07/1941	17/01/1942	Haybrake
B Coy, 30 Btn Kings Own Scottish Borderers	WO 166/8752	17/01/1942	01/03/1943	Haybrake
9 Btn South Lancashire Regt	WO 166/12669	01/03/1943	11/05/1943	Haybrake, Wateringhouse

2 Btn Gordon Highlanders	WO 166/12554	11/05/1943	28/07/1943	Haybrake, Wateringhouse
7 Btn North Staffordshire Regt	WO 166/12714	28/07/1943	16/10/1943	Haybrake, Wateringhouse
7 Btn Kings Own Scottish Borderers	WO 166/12598	16/10/1943	10/11/1943	Haybrake, Wateringhouse
13 Btn Highland Light Infantry	WO 166/12577	11/11/1943	16/12/1943	Haybrake, Wateringhouse
C Coy, 1 Btn South Wales Borderers	WO 166/12730 WO 166/15167	16/12/1943	02/09/1944	Haybrake, Wateringhouse
2 Btn East Surrey Regt	WO 166/15168	02/09/1944	06/11/1944	Haybrake, Wateringhouse
2 Independent (Local Defence) Coy, Cameron Highlanders	N/A	06/11/1944	End of WWII	Haybrake
Support Units				
205 Field Coy, Royal Engineers (RE)	WO 166/3675	Pre-WWII	04/11/1939	Longhope
279 Field Coy, RE	WO 166/3748	03/05/1940	25/06/1940	Longhope
131 Coy, Auxilliary Military Pioneer Corps	WO 166/5615	21/06/1940	22/08/1940	Longhope
696 Artisan Works Coy, Royal Engineers	WO 166/3880	26/06/1940	15/09/1941	Longhope
Royal Army Medical Corps (RAMC)	N/A	July 1940	End of WWII	Longhope
Royal Army Service Corps (RASC)	N/A	July 1940	End of WWII	Longhope
Royal Army Ordnance Corps (RAOC)	N/A	July 1940	End of WWII	Ore
Royal Electrical & Mechanical Engineers	N/A	July 1940	End of WWII	Ore
144 Coy, Aux Military Pioneer Corps	WO 166/5628	23/08/1940	16/12/1940	Longhope
119 Road Construction Coy, Royal Engineers	WO 166/3618	7/09/1940	10/09/1941	Longhope
147 Coy, Pioneer Corps	WO 166/5631	17/12/1940	11/08/1941	Longhope
62 Company Pioneer Corps	WO 166/5548 WO 166/9966 WO 166/13805	11/08/1941	06/04/1943	Longhope
114 Road Construction Coy, Royal Engineers	N/A	09/09/1941	18/10/1942	Longhope
669 Artisan Works Coy, Royal Engineers	N/A	15/09/1941	07/04/1943	Longhope
71 Company Pioneer Corps	WO 166/13810 WO 171/3066	06/04/1943	01/01/1944	Longhope
684 Artisan Works Company, RE	N/A	07/04/1943	November 1944	Longhope
836 Company Pioneer Corps	N/A	01/01/1944	End of WWII	Longhope

Appendix 3. Georeferenced Aerial Photograph Overlays in ArcGIS



Appendix 4. Archaeological Survey Register of Sites

SITE CODE	SITE DESCRIPTION	RCAHMS CLASSIFICATION	ENTRYDATE
HY01	LAA Gun Emplacement	ANTI AIRCRAFT BATTERY	26/08/2014
HY02	AASL Battery Concrete Hut Base	CONCRETE PLATFORM	26/08/2014
HY03A	AALMG Emplacement	SEARCHLIGHT BATTERY	26/08/2014
HY03B	AASL PAD Shelter	AIR RAID SHELTER	26/08/2014
HY03C	AASL Battery Concrete Hut Base	CONCRETE PLATFORM	26/08/2014
HY04	AASL Battery & Troop HQ Accommodation Camp	MILITARY CAMP	26/08/2014
HY05A	AASL PAD Shelter	AIR RAID SHELTER	26/08/2014
HY05B	AALMG Emplacement	SEARCHLIGHT BATTERY	26/08/2014
HY05C	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	26/08/2014
HY05D	AASL PAD Shelter	AIR RAID SHELTER	26/08/2014
HY06	AASL Battery Accommodation Camp	MILITARY CAMP	26/08/2014
HY07A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	26/08/2014
HY07B	AASL PAD Shelter	AIR RAID SHELTER	26/08/2014
HY08A	Concrete Water Storage Tank	WATER REGULATION INSTALLATION	27/08/2014
HY08B	Fresh Water Storage Tank	WATER REGULATION INSTALLATION	27/08/2014
HY08C	Concrete Water Storage Tank	WATER REGULATION INSTALLATION	27/08/2014
HY09A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	27/08/2014
HY09B	AALMG Emplacement	SEARCHLIGHT BATTERY	27/08/2014
HY10	Decoy HAA Gun Battery	DECOY SITE	27/08/2014
HY11	AASL Battery Accommodation Camp	MILITARY CAMP	27/08/2014
HY12	HAA Gun Battery Accommodation Camp	MILITARY CAMP	27/08/2014
HY13	Foxhole Firing Position	WEAPONS PIT	27/08/2014
HY14	Slit Trench	SLIT TRENCH	27/08/2014
HY15	HAA Gun Battery Equipment Hardstanding	INDETERMINATE MILITARY STRUCTURE	27/08/2014
HY16	Weapons Pit	WEAPONS PIT	27/08/2014
HY17A	Concrete Hut Bases	CONCRETE PLATFORM	27/08/2014
HY17B	Hardstanding	INDETERMINATE MILITARY STRUCTURE	27/08/2014
HY18	Military Building	MILITARY BUILDING	27/08/2014
HY19A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	27/08/2014
HY19B	LAA Gun Emplacement/Hardstanding	ANTI AIRCRAFT BATTERY	27/08/2014
HY19C	AALMG Emplacement	SEARCHLIGHT BATTERY	27/08/2014
HY19D	AASL PAD Shelter	AIR RAID SHELTER	26/08/2014
HY20	LAA Gun Emplacement	ANTI AIRCRAFT BATTERY	27/08/2014
HY21	Concrete base of RN Naval Base Garage	CONCRETE PLATFORM	29/08/2014
HY22A	Brick Explosives Store	EXPLOSIVES STORE	29/08/2014
HY22B	Stone Quarry	STONE QUARRY	29/08/2014
HY23	Lyness Bungalow No9 (WWI)	BUNGALOW	29/08/2014
HY24	Lyness Bungalow No10 (WWII)	BUNGALOW	29/08/2014

HY25A	ACOS Signalling Mast Base - Group 1	RADIO MAST	29/08/2014
HY25B	ACOS Signalling Mast Base - Group 2	RADIO MAST	29/08/2014
HY26	Lyness Bungalow No2 (WWII)	BUNGALOW	29/08/2014
HY27	Concrete Hut Bases	CONCRETE PLATFORM	29/08/2014
HY28	Breeze Block Building	INDETERMINATE MILITARY STRUCTURE	29/08/2014
HY29A	Timber Accommodation Hut	HUT	29/08/2014
HY29B	PAD Shelter	AIR RAID SHELTER	29/08/2014
HY30	Concrete Hut Bases	CONCRETE PLATFORM	29/08/2014
HY31	PAD Shelter	AIR RAID SHELTER	29/08/2014
HY32A	Haybrake Camp Ablutions Block	ABLUTIONS BLOCK	29/08/2014
HY32B	Haybrake Camp Ablutions Block	ABLUTIONS BLOCK	29/08/2014
HY33	AASL Battery Emplacement & Hut Base	SEARCHLIGHT BATTERY	29/08/2014
HY34	RN Naval Church of St Ninian	CONCRETE PLATFORM	29/08/2014
HY35	Royal Artillery Accommodation Camp	MILITARY CAMP	29/08/2014
HY36	General Post Office	POST OFFICE	29/08/2014
HY37	Underground Air Raid Shelter	AIR RAID SHELTER	29/08/2014
HY38	Officer's Quarters (WWI)	HUT	29/08/2014
HY39	Boom Netting	BOOM DEFENCE	29/08/2014
HY40A	RN Torpedo Depot	MILITARY DEPOT	29/08/2014
HY40B	RN Torpedo Depot - PAD Shelter	MILITARY DEPOT, AIR RAID SHELTER	29/08/2014
HY40C	RN Torpedo Depot - PAD Shelter	MILITARY DEPOT, AIR RAID SHELTER	29/08/2014
HY40D	RN Torpedo Depot - Warhead Examination Room	MILITARY DEPOT	29/08/2014
HY40E	RN Torpedo Depot - Laboratory Examination Rooms	MILITARY DEPOT	29/08/2014
HY40F	RN Torpedo Depot - Warhead Store	MILITARY DEPOT	29/08/2014
HY40G	RN Torpedo Depot - Explosives Store	MILITARY DEPOT	29/08/2014
HY40H	RN Torpedo Depot - Expense Magazine	MILITARY DEPOT	29/08/2014
HY40I	RN Torpedo Depot - Septic Tank	MILITARY DEPOT	29/08/2014
HY40J	RN Torpedo Depot - Mobile Pump Store	MILITARY DEPOT	29/08/2014
HY40K	RN Torpedo Depot - Shell Platform (WWI)	MILITARY DEPOT	29/08/2014
HY40L	RN Torpedo Depot - PAD Shelter	MILITARY DEPOT, AIR RAID SHELTER	29/08/2014
HY40M	RN Torpedo Depot - Generator/Gas Shed	MILITARY DEPOT	29/08/2014
HY40N	RN Torpedo Depot - Shell/Armament Store (WWI)	MILITARY DEPOT	29/08/2014
HY41	Fire Station	MILITARY SUPPORT BUILDING	29/08/2014
HY42	PDO Decontamination Centre	DECONTAMINATION BUILDING	29/08/2014
HY43	Recreation and Dining centre	HUT	29/08/2014
HY44	RN Laundry	MILITARY SUPPORT BUILDING	29/08/2014
HY45	RME Store	CONCRETE PLATFORM	29/08/2014

HY46	Timber Accommodation Hut (WWI)	HUT	29/08/2014
HY47	Water Ring Main Inspection Chamber	INSPECTION CHAMBER	31/08/2014
HY48	Concrete Engine/Generator House	ENGINE HOUSE	02/09/2014
HY49	Water Storage Tank	WATER REGULATION INSTALLATION	02/09/2014
HY50	AASL Battery	SEARCHLIGHT BATTERY	02/09/2014
HY51	REME Workshop	MILITARY DEPOT	03/09/2014
HY51B	PAD Shelter	MILITARY DEPOT, AIR RAID SHELTER	03/09/2014
HY52A	REME Garage	MILITARY DEPOT	03/09/2014
HY52B	REME Boiler House	MILITARY DEPOT	03/09/2014
HY53	RAF Accommodation Camp	MILITARY CAMP	03/09/2014
HY54	Barrage Balloon Repair Centre	BARRAGE BALLOON CENTRE	03/09/2014
HY55	Large Concrete Base	CONCRETE PLATFORM	03/09/2014
HY56	Bomb Crater	BOMB CRATER	03/09/2014
HY57	Synthetic Training Complex - RYPA Attack Teacher	MILITARY TRAINING SITE	03/09/2014
HY58	Synthetic Training Complex - Dome Teacher	MILITARY TRAINING SITE	03/09/2014
HY59	Synthetic Training Complex - Night Attack Teacher	MILITARY TRAINING SITE	03/09/2014
HY60	RN Radar Repair & Servicing Centre	RADAR SITE	03/09/2014
HY61	Helicopter Landing Pad	HELICOPTER LANDING PLATFORM	03/09/2014
HY62A	Hydrogen Production Plant Gasometer	HYDROGEN WORKS	03/09/2014
HY62B	Hydrogen Production Plant Gasometer	HYDROGEN WORKS	03/09/2014
HY63	Barrage Balloon & Caustic Soda Store	HYDROGEN WORKS	03/09/2014
HY64	Rinnigill Accommodation Camp	MILITARY CAMP	03/09/2014
HY65A	RN Firefighting School - Double Deck Fire Hut	MILITARY TRAINING SITE	03/09/2014
HY65B	RN Firefighting School - Single Deck Fire Hut	MILITARY TRAINING SITE	03/09/2014
HY65C	RN Firefighting School - First Aid Fire Hut	MILITARY TRAINING SITE	03/09/2014
HY65D	RN Firefighting School - Water Storage Tank	MILITARY TRAINING SITE	03/09/2014
HY66	Synthetic Training Complex - Depth Charge Driller	MILITARY TRAINING SITE	03/09/2014
HY67	Hydrogen Plant Vehicle Pool Fuel Store	CONCRETE PLATFORM	03/09/2014
HY68	L/T Hut	TELECOMMUNICATIONS BUILDING	03/09/2014
HY69	LAA Gun Emplacement	ANTI AIRCRAFT BATTERY	03/09/2014
HY70	Concrete Hut Bases	CONCRETE PLATFORM	03/09/2014
HY71	LAA Gun Battery Camp	MILITARY CAMP	03/09/2014
HY72A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	03/09/2014
HY72B	AASL PAD Shelter	AIR RAID SHELTER	03/09/2014
HY72C	AALMG Emplacement	SEARCHLIGHT BATTERY	03/09/2014
HY72D	AASL Hut Base	HOUSE PLATFORM	03/09/2014

HY73	AA Magazine/Ammo Dump	AMMUNITION STORAGE HUT	03/09/2014
HY74A	LAA Gun Emplacement	ANTI AIRCRAFT BATTERY	03/09/2014
HY74B	LAA Battery Hut Crew Shelter	CONCRETE PLATFORM	03/09/2014
HY75	Crockness Camp	MILITARY CAMP	03/09/2014
HY75A	Crockness Camp - Mess & Cookhouse	MESS	03/09/2014
HY75B	Crockness Camp - Mess & Cookhouse	MESS	03/09/2014
HY76	L/T Hut	TELECOMMUNICATIONS BUILDING	03/09/2014
HY77	RN Hospital North Ness	HOSPITAL	03/09/2014
HY78	Civilian PAD Shelter	AIR RAID SHELTER	03/09/2014
HY79A	AASL Emplacement/LAA Gun Emplacement	SEARCHLIGHT EMPLACEMENT, ANTI AIRCRAFT BATTERY	05/09/2014
HY79B	AASL/LAA Battery Feature	INDETERMINATE MILITARY STRUCTURE	05/09/2014
HY79C	AASL/LAA Battery Camp	MILITARY CAMP	05/09/2014
HY80A	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80B	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80C	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80D	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80E	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80F	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80G	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY80H	Concrete Nissen Type Hut Base	CONCRETE PLATFORM	05/09/2014
HY81	Coastguard Watchers Hut	OBSERVATION POST	05/09/2014
HY82A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	05/09/2014
HY82B	AASL Hut Base	CONCRETE PLATFORM	05/09/2014
HY82C	AALMG Emplacement	SEARCHLIGHT BATTERY	05/09/2014
HY82D	AASL PAD Shelter	AIR RAID SHELTER	05/09/2014
HY82E	AASL PAD Shelter	AIR RAID SHELTER	05/09/2014
HY83	L/T Hut	TELECOMMUNICATIONS BUILDING	05/09/2014
HY84A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	05/09/2014
HY84B	AASL Hut Base	CONCRETE PLATFORM	05/09/2014
HY84C	AASL PAD Shelter	AIR RAID SHELTER	05/09/2014
HY84D	AALMG Emplacement	SEARCHLIGHT BATTERY	05/09/2014
HY85A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	05/09/2014
HY85B	AASL Hut Base	CONCRETE PLATFORM	05/09/2014
HY86	Barrage Balloon Winch Lorry Hardstanding	BARRAGE BALLOON SITE	05/09/2014
HY88	Accommodation Camp	MILITARY CAMP	05/09/2014
HY89	LOP3	RADAR SITE	05/09/2014
HY90	Coastguard Watchers Hut	OBSERVATION POST	05/09/2014
HY91A	Bomb Crater	BOMB CRATER	05/09/2014
HY91B	Bomb Crater	BOMB CRATER	05/09/2014
HY92A	AASL Emplacement	SEARCHLIGHT EMPLACEMENT	05/09/2014
HY92B	AASL Feature	CONCRETE PLATFORM	05/09/2014

HY92C	AASL PAD Shelter	AIR RAID SHELTER	05/09/2014
HY93	AAOP Accommodation Camp	MILITARY CAMP	05/09/2014
HY94	AA Observation Post	OBSERVATION POST	05/09/2014
HY95	AAOP Communications Array	MILITARY OBSERVATION SITE	05/09/2014
HY96	L/T Hut	TELECOMMS BUILDING	05/09/2014
HY97A	Witter Quarry	STONE QUARRY	05/09/2014
HY97B	Quarry Explosives Store	EXPLOSIVES STORE	05/09/2014
HY97C	Quarry Explosives Store	EXPLOSIVES STORE	05/09/2014
HY97D	Concrete Quarry Control Bunker	BUNKER	05/09/2014
HY97E	Quarry Camp	MILITARY CAMP	05/09/2014
HY98	Type 22 Pillbox	PILLBOX	29/08/2014
R050	AASL Emplacement/LAA Gun Emplacement	SEARCHLIGHT BATTERY, ANTI AIRCRAFT BATTERY	02/06/2014
R050a	AASL Ablutions Block Concrete Hut Base	ABLUTIONS BLOCK	03/06/2014
R050b	AASL PAD Shelter	AIR RAID SHELTER	03/06/2014
R052	AASL PAD Shelter	AIR RAID SHELTER	03/06/2014
R053	AASL Timber Accommodation Hut Base	HOUSE PLATFORM	03/06/2014
R053a	Site of AASL Cookhouse	MESS	03/06/2014
R054	AASL Battery Emplacement	SEARCHLIGHT BATTERY	03/06/2014
R054a	AASL PAD Shelter	AIR RAID SHELTER	03/06/2014
R054b	AASL PAD Shelter	AIR RAID SHELTER	03/06/2014
R054c	Slit Trench	SLIT TRENCH	03/06/2014
R054d	AALMG Emplacement	ANTI AIRCRAFT BATTERY	03/06/2014
R055	AASL Power Generator Building	ENGINE HOUSE	03/06/2014
R056	Site of Mobile GL Radar Mk3 (LOP5)	RADAR SITE	03/06/2014
R057	AASL Timber Accommodation Hut	HUT	03/06/2014
R058	AASL PAD Shelter	AIR RAID SHELTER	04/06/2014
R059	4.5" Howitzer Hardstanding	PRACTICE BATTERY	04/06/2014
R080	Machine Gun Pit	WEAPONS PIT	04/06/2014
R080a	Machine Gun Pit	WEAPONS PIT	04/06/2014
R080b	Machine Gun Pit	WEAPONS PIT	04/06/2014
TRK01A	Vehicle Access Track Start	ROAD	31/08/2014
TRK01B	Vehicle Access Track Middle	ROAD	31/08/2014
TRK01C	Vehicle Access Track End	ROAD	31/08/2014
TRK02A	Vehicle Access Track Start	ROAD	31/08/2014
TRK02B	Vehicle Access Track Middle	ROAD	31/08/2014
TRK02C	Vehicle Access Track End	ROAD	31/08/2014
TRK03A	Narrow Gauge Railway Line Start	RAILWAY CUTTING	31/08/2014
TRK03B	Narrow Gauge Railway Line Middle	RAILWAY CUTTING	31/08/2014
TRK03C	Narrow Gauge Railway Line End	RAILWAY CUTTING	31/08/2014
TRK04A	Narrow Gauge Railway Line Start	RAILWAY CUTTING	31/08/2014
TRK04B	Narrow Gauge Railway Line End	RAILWAY CUTTING	31/08/2014
TRK05A	Narrow Gauge Railway Line Start	RAILWAY CUTTING	31/08/2014
TRK05B	Narrow Gauge Railway Line End	RAILWAY CUTTING	31/08/2014
TRK06A	Vehicle Access Track Start	ROAD	31/08/2014

TRK06B	Vehicle Access Track Middle	ROAD	31/08/2014
TRK06C	Vehicle Access Track End	ROAD	31/08/2014
TRK07A	Narrow Gauge Railway Line Start	RAILWAY EMBANKMENT	31/08/2014
TRK07B	Narrow Gauge Railway Line Middle	RAILWAY EMBANKMENT	31/08/2014
TRK07C	Narrow Gauge Railway Line End	RAILWAY EMBANKMENT	31/08/2014
TRK08A	Vehicle Access Track Start	ROAD	31/08/2014
TRK08B	Vehicle Access Track Middle	ROAD	31/08/2014
TRK08C	Vehicle Access Track End	ROAD	31/08/2014
TRK09A	Vehicle Access Track Start	ROAD	31/08/2014
TRK09B	Vehicle Access Track Middle	ROAD	31/08/2014
TRK09C	Vehicle Access Track End	ROAD	31/08/2014
W001	AASL/LAA Battery Timber Accommodation Hut Bases	HOUSE PLATFORM	30/08/2014
W002	AASL Feature	SEARCHLIGHT BATTERY	30/08/2014
W003	AASL Battery Emplacement	SEARCHLIGHT BATTERY	30/08/2014
W004	PAD Shelter	AIR RAID SHELTER	30/08/2014
W005	Slit Trench	SLIT TRENCH	30/08/2014
W006	Slit Trench	SLIT TRENCH	30/08/2014
W007	Slit Trench	SLIT TRENCH	30/08/2014
W008	Defensive Firing Position	WEAPONS PIT	30/08/2014
W009	Slit Trench	SLIT TRENCH	30/08/2014
W010	Slit Trench	SLIT TRENCH	30/08/2014
W011	Slit Trench	SLIT TRENCH	30/08/2014
W012	Slit Trench	SLIT TRENCH	30/08/2014
W013	Slit Trench	SLIT TRENCH	30/08/2014
W014	Slit Trench	SLIT TRENCH	30/08/2014
W015	Slit Trench	SLIT TRENCH	30/08/2014
W016	Slit Trench	SLIT TRENCH	30/08/2014
W017	LAA Gun Battery	ANTI AIRCRAFT BATTERY	30/08/2014
W018	Slit Trench	SLIT TRENCH	30/08/2014
W019	Concrete Hut Base	CONCRETE PLATFORM	30/08/2014
W020	Slit Trench	SLIT TRENCH	30/08/2014
W021	Slit Trench	SLIT TRENCH	30/08/2014
W022	Slit Trench	SLIT TRENCH	30/08/2014
W023	Slit Trench	SLIT TRENCH	30/08/2014
W024	Slit Trench	SLIT TRENCH	30/08/2014
W025	Slit Trench	SLIT TRENCH	30/08/2014
W026	Slit Trench	SLIT TRENCH	30/08/2014
W027	Slit Trench	SLIT TRENCH	30/08/2014
W029	Concrete Hut Base	CONCRETE PLATFORM	31/08/2014
W030	Railway Embankment Terminus	RAILWAY EMBANKMENT	31/08/2014
W031	UOFS Construction Works - Unknown Feature	CONCRETE WORKS	31/08/2014
W032	UOFS Construction Works - Sand Dump	CONCRETE WORKS	31/08/2014
W033A	UOFS Construction Works - Aggregate Dump	CONCRETE WORKS	31/08/2014

W033B	UOFS Construction Works - Bottom of Cable/Funicular Railway	RAILWAY	31/08/2014
W033C	UOFS Construction Works - Top of Cable/Funicular Railway	RAILWAY	31/08/2014
W034	UOFS Construction Works - Lower Cement Mixing Works	CEMENT WORKS	31/08/2014
W035A	UOFS Rear Access Tunnel	OIL STORAGE TANK(S)	31/08/2014
W035B	UOFS Construction Works - Hardstanding	MINE WORKINGS	31/08/2014
W035C	UOFS Mining Explosives Store	EXPLOSIVES STORE	31/08/2014
W036A	UOFS ADIT 2	ADIT	31/08/2014
W036B	UOFS Mining Explosives Store	EXPLOSIVES STORE	31/08/2014
W036C	UOFS Mining Explosives Store	EXPLOSIVES STORE	31/08/2014
W037	UOFS Construction Works - Upper Cement Mixing Works	CEMENT WORKS	31/08/2014
W038	Slit Trench	SLIT TRENCH	31/08/2014
W039	Slit Trench	SLIT TRENCH	31/08/2014
W040	Slit Trench	SLIT TRENCH	31/08/2014
W041	Slit Trench	SLIT TRENCH	31/08/2014
W042	Slit Trench	SLIT TRENCH	31/08/2014
W043	Slit Trench	SLIT TRENCH	31/08/2014
W044	Slit Trench	SLIT TRENCH	31/08/2014
W045	Defensive Firing Position	WEAPONS PIT	31/08/2014
W046	Slit Trench	SLIT TRENCH	31/08/2014
W047	Slit Trench	SLIT TRENCH	31/08/2014
W048	Slit Trench	SLIT TRENCH	31/08/2014
W049	Defensive Firing Position	WEAPONS PIT	31/08/2014
W050	Mortar Pit	WEAPONS PIT	31/08/2014
W051	Mortar Pit	WEAPONS PIT	31/08/2014
W052	Defensive Firing Position	WEAPONS PIT	31/08/2014
W053	UOFS ADIT 2	ADIT	31/08/2014
W054	Concrete Base	CONCRETE PLATFORM	31/08/2014
W055	Slit Trench	SLIT TRENCH	31/08/2014
W056	Slit Trench	SLIT TRENCH	31/08/2014
W057	Slit Trench	SLIT TRENCH	31/08/2014
W058	Slit Trench	SLIT TRENCH	31/08/2014
W059	Slit Trench	SLIT TRENCH	31/08/2014
W060	Slit Trench	SLIT TRENCH	31/08/2014
W061	Slit Trench	SLIT TRENCH	31/08/2014
W062	Slit Trench	SLIT TRENCH	31/08/2014
W063	Slit Trench	SLIT TRENCH	31/08/2014
W064	Transit/Locomotive Shed	CONCRETE PLATFORM	31/08/2014
W065	Concrete Hut Base	CONCRETE PLATFORM	31/08/2014
W066	W/T Mast Base	RADIO MAST	31/08/2014
W067	W/T Mast Base	RADIO MAST	31/08/2014
W068	W/T Mast Base	RADIO MAST	31/08/2014

W069	Type 22 Pillbox	PILLBOX	31/08/2014
Y001	Slit Trench	SLIT TRENCH	30/08/2014
Y002	Slit Trench	SLIT TRENCH	30/08/2014
Y003	Slit Trench	SLIT TRENCH	30/08/2014
Y004	Slit Trench	SLIT TRENCH	30/08/2014
Y005	Slit Trench	SLIT TRENCH	30/08/2014
Y006	Slit Trench	SLIT TRENCH	30/08/2014
Y007	Slit Trench	SLIT TRENCH	30/08/2014
Y008	Slit Trench	SLIT TRENCH	30/08/2014
Y009	Slit Trench	SLIT TRENCH	30/08/2014
Y010	Slit Trench	SLIT TRENCH	30/08/2014
Y011	Slit Trench	SLIT TRENCH	30/08/2014
Y012	Slit Trench	SLIT TRENCH	30/08/2014
Y013	Slit Trench	SLIT TRENCH	30/08/2014
Y014	Slit Trench	SLIT TRENCH	30/08/2014
Y016	Slit Trench	SLIT TRENCH	30/08/2014
Y017	Slit Trench	SLIT TRENCH	30/08/2014
Y018	Foxhole Firing Position	TRENCH	30/08/2014
Y019	Slit Trench	SLIT TRENCH	30/08/2014
Y020	Slit Trench	SLIT TRENCH	30/08/2014
Y021	Slit Trench	SLIT TRENCH	30/08/2014
Y022	Slit Trench	SLIT TRENCH	30/08/2014
Y023	Slit Trench	SLIT TRENCH	30/08/2014
Y024	Slit Trench	SLIT TRENCH	30/08/2014
Y025	Slit Trench	SLIT TRENCH	30/08/2014
Y026	Slit Trench	SLIT TRENCH	30/08/2014
Y027	Defensive Firing Position	WEAPONS PIT	30/08/2014
Y028	Slit Trench	SLIT TRENCH	30/08/2014
Y029	Slit Trench	SLIT TRENCH	30/08/2014
Y030	Slit Trench	SLIT TRENCH	30/08/2014
Y031	Slit Trench	SLIT TRENCH	30/08/2014
Y032	Slit Trench	SLIT TRENCH	30/08/2014
Y033	Slit Trench	SLIT TRENCH	30/08/2014
Y034	Slit Trench	SLIT TRENCH	30/08/2014
Y035	Foxhole Firing Position	TRENCH	30/08/2014
Y036	Slit Trench	SLIT TRENCH	30/08/2014
Y037	Slit Trench	SLIT TRENCH	30/08/2014
Y038	Slit Trench	SLIT TRENCH	30/08/2014
Y039	Slit Trench	SLIT TRENCH	30/08/2014
Y040	Slit Trench	SLIT TRENCH	30/08/2014
Y041	Slit Trench	SLIT TRENCH	30/08/2014
Y042	Slit Trench	SLIT TRENCH	30/08/2014
Y043	Slit Trench	SLIT TRENCH	30/08/2014
Y044	Slit Trench	SLIT TRENCH	30/08/2014
Y045	Slit Trench	SLIT TRENCH	30/08/2014

Y046	Slit Trench	SLIT TRENCH	30/08/2014
Y047	Slit Trench	SLIT TRENCH	30/08/2014
Y048	Slit Trench	SLIT TRENCH	30/08/2014
Y049	Slit Trench	SLIT TRENCH	30/08/2014
Y050	Slit Trench	SLIT TRENCH	30/08/2014
Y051	Slit Trench	SLIT TRENCH	30/08/2014
Y052	Slit Trench	SLIT TRENCH	30/08/2014
Y053	Slit Trench	SLIT TRENCH	30/08/2014
Y054	Slit Trench	SLIT TRENCH	30/08/2014
Y055	Slit Trench	SLIT TRENCH	30/08/2014
Y056	Slit Trench	SLIT TRENCH	30/08/2014
Y057	Slit Trench	SLIT TRENCH	30/08/2014
Y058	Slit Trench	SLIT TRENCH	30/08/2014
Y059	Defensive Firing Position	WEAPONS PIT	30/08/2014
Y060	Slit Trench	SLIT TRENCH	30/08/2014
Y061	Slit Trench	SLIT TRENCH	30/08/2014
Y062	Slit Trench	SLIT TRENCH	30/08/2014
Y063	Slit Trench	SLIT TRENCH	30/08/2014
Y064	Slit Trench	SLIT TRENCH	30/08/2014
Y065	Defensive Firing Position	WEAPONS PIT	30/08/2014
Y066	Slit Trench	SLIT TRENCH	30/08/2014
Y067	Slit Trench	SLIT TRENCH	30/08/2014
Y068	Foxhole Firing Position	TRENCH	30/08/2014
Y069	Slit Trench	SLIT TRENCH	30/08/2014
Y070	Slit Trench	SLIT TRENCH	30/08/2014
Y071	Slit Trench	SLIT TRENCH	30/08/2014
Y072	Slit Trench	SLIT TRENCH	30/08/2014
Y073	Defensive Firing Position	WEAPONS PIT	30/08/2014
Y074	Slit Trench	SLIT TRENCH	30/08/2014
Y075	Slit Trench	SLIT TRENCH	30/08/2014
Y076	Slit Trench	SLIT TRENCH	30/08/2014
Y077	Slit Trench	SLIT TRENCH	30/08/2014
Y078	Slit Trench	SLIT TRENCH	30/08/2014
Y079	Slit Trench	SLIT TRENCH	30/08/2014
Y080	Slit Trench	SLIT TRENCH	30/08/2014
Y081	Slit Trench	SLIT TRENCH	30/08/2014
Y082	UOFS Construction Tunnel	MINE SHAFT	30/08/2014
Y083	Slit Trench	SLIT TRENCH	30/08/2014
Y084	Slit Trench	SLIT TRENCH	30/08/2014
Y085	UOFS Mining Explosives Store	EXPLOSIVES STORE	30/08/2014
Y086	Transit/Locomotive Shed	CONCRETE PLATFORM	30/08/2014
Z002	Slit Trench	SLIT TRENCH	30/08/2014
Z003	Slit Trench	SLIT TRENCH	30/08/2014
Z004	Slit Trench	SLIT TRENCH	30/08/2014
Z005	Slit Trench	SLIT TRENCH	30/08/2014

Z006	Slit Trench	SLIT TRENCH	30/08/2014
Z007	Slit Trench	SLIT TRENCH	30/08/2014
Z008	Slit Trench	SLIT TRENCH	30/08/2014
Z009	Slit Trench	SLIT TRENCH	30/08/2014
Z010	Slit Trench	SLIT TRENCH	30/08/2014
Z011	Slit Trench	SLIT TRENCH	30/08/2014
Z012	Slit Trench	SLIT TRENCH	30/08/2014
Z013	Slit Trench	SLIT TRENCH	30/08/2014
Z014	Slit Trench	SLIT TRENCH	30/08/2014
Z015	Slit Trench	SLIT TRENCH	30/08/2014
Z016	Slit Trench	SLIT TRENCH	30/08/2014
Z017	Slit Trench	SLIT TRENCH	30/08/2014
Z018	Slit Trench	SLIT TRENCH	30/08/2014
Z019	Slit Trench	SLIT TRENCH	30/08/2014
Z020	Slit Trench	SLIT TRENCH	30/08/2014
Z021	Slit Trench	SLIT TRENCH	30/08/2014
Z022	Slit Trench	SLIT TRENCH	30/08/2014
Z023	Mortar Pit	WEAPONS PIT	30/08/2014
Z024	Mortar Pit	WEAPONS PIT	30/08/2014
Z025	Mortar Pit	WEAPONS PIT	30/08/2014
Z026	Mortar Pit	WEAPONS PIT	30/08/2014
Z027	Slit Trench	SLIT TRENCH	30/08/2014
Z028	Foxhole Firing Position	TRENCH	30/08/2014
Z029	Slit Trench	SLIT TRENCH	30/08/2014
Z030	Slit Trench	SLIT TRENCH	30/08/2014
Z031	Slit Trench	SLIT TRENCH	30/08/2014
Z032	Slit Trench	SLIT TRENCH	30/08/2014
Z033	Slit Trench	SLIT TRENCH	30/08/2014
Z034	Dummy LAA Gun Emplacement	DECOY SITE	30/08/2014
Z035	Slit Trench	SLIT TRENCH	30/08/2014
Z036	Slit Trench	SLIT TRENCH	30/08/2014
Z037	Slit Trench	SLIT TRENCH	30/08/2014
Z038	Slit Trench	SLIT TRENCH	30/08/2014
Z039	Slit Trench	SLIT TRENCH	30/08/2014
Z040	Slit Trench	SLIT TRENCH	30/08/2014
Z041	Slit Trench	SLIT TRENCH	30/08/2014
Z042	Slit Trench	SLIT TRENCH	30/08/2014
Z043	Slit Trench	SLIT TRENCH	30/08/2014
Z044	Slit Trench	SLIT TRENCH	30/08/2014
Z045	Slit Trench	SLIT TRENCH	30/08/2014
Z046	Slit Trench	SLIT TRENCH	30/08/2014
Z047	Slit Trench	SLIT TRENCH	30/08/2014
Z048	Slit Trench	SLIT TRENCH	30/08/2014
Z049	Slit Trench	SLIT TRENCH	30/08/2014
Z050	Slit Trench	SLIT TRENCH	30/08/2014

Appendix 5. Sites in the National Monuments Record of Scotland

NMRS SITE No	NMRS NAME	CLASS SUB	ALTNAME
HY20NW 25	SKERRY BATTERY	COASTAL BATTERY	BU FARM
HY20NW 25.1	BURRA HOUSE, SKERRY BATTERY ACCOMMODATION CAMP	MILITARY CAMP	THE GLEBE
HY20SE 18	SCAD HEAD	GUN EMPLACEMENT	WORLD WAR II, CHALMER'S HOPE
HY20SE 2	SCAD HEAD BATTERY	COASTAL BATTERY, GUN EMPLACEMENT	WORLD WAR II
HY20SE 2.1	SCAD HEAD BATTERY, TRAMWAY	TRAMWAY	WORLD WAR II
HY20SE 2.2	SCAD HEAD BATTERY	MILITARY CAMP	WORLD WAR II, CHALMER'S HOPE
HY20SE 2.3	SCAD HEAD BATTERY	SEARCHLIGHT BATTERY	WORLD WAR II
HY20SE 2.4	SCAD HEAD BATTERY, ENGINE HOUSE	ENGINE HOUSE	WORLD WAR II
HY20SE 2.5	SCAD HEAD BATTERY, ENGINE HOUSE	ENGINE HOUSE	WORLD WAR II
HY20SW 46	SOUTH BURN	GUN EMPLACEMENT, SEARCHLIGHT BATTERY	
HY20SW 47.0	RACKWICK	SEARCHLIGHT EMPLACEMENT	
HY20SW 49	BURN OF REDGLEN	AIRCRAFT	
ND28NE 15	THE AYRE	PILLBOX	SOUTH WAAS
ND28NE 17	MELSETTER HOUSE	MILITARY CAMP	
ND28NE 34	MELBERRY	PONTOON POSSIBLE)	
ND28NE 4	MELSETTER HOUSE	COUNTRY HOUSE	
ND28NE 4.2	MELSETTER HOUSE, LODGE	GATE LODGE, GATE PIER(S)	
ND29NE 13	PEGAL HILL	GUN EMPLACEMENT (POSSIBLE)	LH 2
ND29NE 14	PEGAL HILL	BUILDING	PEGAL BAY
ND29NE 2	LYRAWA HILL BATTERY	ANTI AIRCRAFT BATTERY	H7
ND29NE 2.1	LYRAWA HILL BATTERY	PILLBOX	
ND29NE 2.2	HOY, LYRAWA HILL BATTERY	MILITARY CAMP (20TH CENTURY)	
ND29NE 2.3	LYRAWA HILL DUMMY ANTI-AIRCRAFT BATTERY	DECOY SITE	
ND29NE 3	PEGAL BURN	BARRAGE BALLOON SITE	PEGAL BAY
ND29NE 4	PEGAL HILL	BARRAGE BALLOON SITE	
ND29NE 5	SHELL HILL	BUILDING, ENGINE HOUSE	THE PINNACLES
ND29NE 8	ROYAL NAVAL OIL TERMINAL, MILITARY CAMP	MILITARY CAMP	BURNHOUSE, SCAPA FLOW
ND29NW 9	RACKWICK	GUN EMPLACEMENT, SEARCHLIGHT BATTERY	LOWER REUMIN
ND29SE 2	WEE FEA NAVAL COMMUNICATIONS AND OPERATIONAL CENTRE	NAVAL SIGNAL STATION	HMS PROSERPINE, ROYAL NAVAL SIGNAL STATION, SCAPA FLOW
ND29SE 2.1	WEE FEA	BUILDING(S), WATER TANK(S)	
ND29SE 2.2	WEE FEA, ROYAL NAVY SIGNAL STATION	BUILDING(S), WATER TANK(S)	HMS PROSERPINE, SCAPA FLOW

ND29SE 4	WEE FEA, UNDERGROUND OIL FUEL TANKS	BUILDING (20TH CENTURY), OIL STORAGE TANK(S) (20TH CENTURY), TUNNEL(S), WATER TANK	ROYAL NAVAL OIL TERMINAL, LYNESS BASE, UNDERGROUND OIL TANKS, SCAPA FLOW
ND29SE 5	LYNESS, ROYAL NAVAL OIL TERMINAL, OFFICERS QUARTERS	HUT(S), OFFICERS QUARTERS	LITTLE SCEWS, SCAPA FLOW
ND29SE 9	WEE FEA	GUN EMPLACEMENT(S) (POSSIBLE), HUT(S)	LH 4, SCAPA FLOW DEFENCES
ND38NW 22	GALLOW TUAG, ROYAL NAVAL WIRELESS STATION	RADIO STATION	SOUTH WAAS
ND38NW 23	SOUTH WALLS, STROMABANK	ANTI AIRCRAFT BATTERY	H4, HILL OF WARDS, SOUTH WAAS
ND38NW 23.1	SOUTH WALLS, STROMABANK	MILITARY CAMP	H4, HILL OF WARDS, SOUTH WAAS
ND38NW 23.2	SOUTH WALLS, STROMABANK	RADAR SITE (20TH CENTURY)	H4, HILL OF WARDS, SOUTH WAAS
ND38NW 24	QUOY	ANTI AIRCRAFT BATTERY	H3, EASTBISTER, SOUTH WAAS
ND38NW 24.1	QUOY	MILITARY CAMP	H3, EASTBISTER, SOUTH WAAS
ND38NW 24.2	QUOY	RADAR SITE	H3, EASTBISTER, SOUTH WAAS
ND38NW 67	SNELSETTER	BARRAGE BALLOON SITE	SOUTH WALLS, SOUTH WAAS
ND39NW 161	RYSA LODGE BATTERY	ANTI AIRCRAFT BATTERY	H6
ND39NW 161.1	RYSA LODGE BATTERY	GUN EMPLACEMENT(S)	
ND39NW 161.2	RYSA LODGE BATTERY	MILITARY CAMP	
ND39NW 161.3	RYSA LODGE BATTERY	RADAR SITE	
ND39NW 162	MUCKLE RYSA	BARRAGE BALLOON SITE	
ND39NW 163	LYNESS, ROYAL NAVAL OIL TERMINAL	PUMPING STATION	SCAPA FLOW
ND39NW 164	GREENGEARS	BARRAGE BALLOON SITE	
ND39NW 165	MUCKLE RYSA	MILITARY CAMP	
ND39NW 169	MUCKLE RYSA	NISSAN HUT(S)	
ND39NW 170	ROYAL NAVAL OIL TERMINAL	HUT(S)	RYSA LODGE, SCAPA FLOW
ND39NW 174	MUCKLE RYSA	BARRAGE BALLOON SITE	
ND39NW 175	RYSA LODGE	BARRAGE BALLOON SITE (20TH CENTURY)	RYSA BAY
ND39NW 176	RYSA LODGE	HUT(S)	
ND39NW 6	RYSA LODGE	FARMSTEAD, LODGE	CLETTS
ND39SW 10	MARTELLO TOWER	MARTELLO TOWER (19TH CENTURY)	CROCKNESS
ND39SW 100	NORTH NESS, JETTY	JETTY	MOASOUND, MELSETTER,
ND39SW 101	NORTH NESS, JETTY	JETTY	MOASOUND, HOY

ND39SW 103	LONGHOPE, ROYAL HOTEL	HOTEL	LONGHOPE, ROYAL HOTEL
ND39SW 117	CHUCCABY	GUN EMPLACEMENT(POSSIBLE)	SOUTH WAAS
ND39SW 118	LONGHOPE, MORVEN	MILITARY CAMP	OLRIG COTTAGE
ND39SW 119	POINT OF HACKNESS	BARRAGE BALLOON SITE, NISSEN HUT(S)	SOUTH WAAS
ND39SW 121	HACKNESS	PILLBOX (POSSIBLE)	SEAVIEW
ND39SW 127	LYNESS, ROYAL NAVAL OIL TERMINAL	BUILDING	
ND39SW 129	LYNESS, ROYAL NAVAL OIL TERMINAL	AIR RAID SHELTER	LY NESS
ND39SW 130	LYNESS, ROYAL NAVAL OIL TERMINAL	AIR RAID SHELTER(S)	LY NESS
ND39SW 131	LYNESS, ROYAL NAVAL OIL TERMINAL	AIR RAID SHELTER	LY NESS
ND39SW 132	LYNESS, ROYAL NAVAL OIL TERMINAL	SLIPWAY	LY NESS
ND39SW 133	LYNESS, ROYAL NAVAL OIL TERMINAL	SLIPWAY	LY NESS
ND39SW 134	LYNESS, ROYAL NAVAL OIL TERMINAL	FOUNDRY, JOINERY WORKS, MAINTENANCE WORKSHOP	LY NESS
ND39SW 135	LYNESS, ROYAL NAVAL OIL TERMINAL	MILITARY SIGNALLING SITE, NAVAL SIGNAL STATION	
ND39SW 136	LYNESS, ROYAL NAVAL OIL TERMINAL	MILITARY OBSERVATION SITE	LY NESS
ND39SW 16	RINNIGILL, FLOATING CRANE	CRANE	LYNESS, SCAPA FLOW
ND39SW 17	LYNESS, ROYAL NAVAL OIL TERMINAL, ORE BAY	CRANE, PIER	SCAPA FLOW
ND39SW 18	LYNESS, RINNIGILL GAS PLANT	BUILDING(S), MILITARY CAMP	SCAPA FLOW
ND39SW 18.1	LYNESS, RINNIGILL GAS PLANT, GUNNERY TRAINING ROOM	BUILDING	SCAPA FLOW
ND39SW 18.2	RINNIGILL GAS PLANT	BUILDING	SCAPA FLOW
ND39SW 18.3	RINNIGILL GAS PLANT	BUILDING	SCAPA FLOW
ND39SW 18.4	RINNIGILL GAS PLANT, PIER	PIER	SCAPA FLOW
ND39SW 18.5	RINNIGILL GAS PLANT	HUT	SCAPA FLOW
ND39SW 20.1	ROYAL NAVAL OIL TERMINAL, SCAPA FLOW MUSEUM	BOILER BUILDING, MUSEUM	BOILER AND PUMP HOUSE, SCAPA FLOW
ND39SW 20.10	LYNESS, ROYAL NAVAL OIL TERMINAL, ROMAN CATHOLIC CHURCH	CHURCH	SCAPA FLOW
ND39SW 20.11	LYNESS, ROYAL NAVAL OIL TERMINAL, AIR RAID SHELTERS AND ENGINE HOUSE	AIR RAID SHELTER(S), ENGINE HOUSE	HAYBRAKE, SCAPA FLOW
ND39SW 20.12	LYNESS, ROYAL NAVAL OIL TERMINAL, REPAIR SHOPS AND NAAFI	BUILDING	SCAPA FLOW
ND39SW 20.13	LYNESS, ROYAL NAVAL OIL TERMINAL	BUILDING, HUT(S)	MOORLANDS, SCAPA FLOW
ND39SW 20.14	LYNESS, ROYAL NAVAL OIL TERMINAL, PIER	PIER	

ND39SW 20.3	LYNESS, ROYAL NAVAL OIL TERMINAL, BURN OF ORE	MILITARY CAMP	SCAPA FLOW
ND39SW 20.5	LYNESS, ROYAL NAVAL OIL TERMINAL, PIER	PIER	GOLDEN PIER, SCAPA FLOW, LYNESS PIER
ND39SW 20.6	LYNESS, ROYAL NAVAL OIL TERMINAL, SQUASH COURT	BUILDING, SQUASH COURT	SCAPA FLOW
ND39SW 20.7	LYNESS, ROYAL NAVAL OIL TERMINAL, ROMNEY HUT	NISSEN HUT	SCAPA FLOW
ND39SW 20.8	LYNESS, ROYAL NAVAL OIL TERMINAL, POWER STATION	ENGINE HOUSE, SHOP	CO-OP, SCAPA FLOW
ND39SW 20.9	LYNESS, ROYAL NAVAL OIL TERMINAL, DE-CONTAMINATION BUILDING	DECONTAMINATION BUILDING	SCAPA FLOW
ND39SW 21	DOONATOWN, LYNESS, THE GARRISON THEATRE	CINEMA, HALL, MILITARY CAMP, MILITARY HEADQUARTERS, THEATRE	NORTH NESS, THE GARRISON
ND39SW 40	LYNESS, ROYAL NAVAL OIL TERMINAL, PUMPING STATION	PUMPING STATION	SCAPA FLOW
ND39SW 43	ORE FARM	ANTI AIRCRAFT BATTERY	H5, LYNESS
ND39SW 44	LYNESS, ROYAL NAVAL OIL TERMINAL, BURN OF ORE	PILLBOX	SCAPA FLOW
ND39SW 45	HACKNESS, NEWHOUSE	ANTI AIRCRAFT BATTERY	H1, SOUTH WALLS, SCARTON
ND39SW 45.1	NEWHOUSE	MILITARY CAMP	H1, HACKNESS
ND39SW 45.2	SOUTH WALLS, NEWHOUSE	RADAR SITE	H1, HACKNESS, SOUTH WAAS
ND39SW 45.3	NEWHOUSE, DECOY ANTI-AIRCRAFT BATTERY	DECOY SITE	H1, HACKNESS, SOUTH WAAS
ND39SW 46	WALLS BATTERY	COASTAL BATTERY	SOUTH HUTTS, SOUTH WAAS
ND39SW 46.1	SOUTH WALLS, WALLS BATTERY	SEARCHLIGHT BATTERY	SOUTH WAAS
ND39SW 47	ORE FARM MUNITION DEPOT	AMMUNITION STORAGE HUT(S)	
ND39SW 53	WALLS, LYNESS, NAVAL CEMETERY, WAR MEMORIAL AND GATE	CEMETERY, GATE, WAR MEMORIAL	LYNESS CEMETERY
ND39SW 56	MID RINNIGILL	BOOM DEFENCE	SCAPA FLOW
ND39SW 59	RINNIGILL	BOATHOUSE, MILITARY SIGNALLING SITE, STRUCTURE(S)	SCAPA FLOW
ND39SW 64	HACKNESS, BARRAGE BALLOON MOORING SITE	BARRAGE BALLOON SITE	SOUTH HUTTS, SOUTH WAAS
ND39SW 65	SOUTH WALLS, HACKNESS	BARRAGE BALLOON SITE	NEWHOUSE, SOUTH WAAS
ND39SW 66	BURNHOUSE	BARRAGE BALLOON SITE	BURN OF REDKIRK, SOUTH WAAS
ND39SW 67	WEST WARDS	MILITARY CAMP	SOUTH WAAS
ND39SW 68	LONGHOPE	PILLBOX	SOUTH NESS, LONGHOPE PIER, SOUTH WAAS
ND39SW 69	LONGHOPE	MILITARY CAMP	LITTLE LYTHES, SOUTH WAAS

ND39SW 70	PARK	BARRAGE BALLOON SITE	
ND39SW 71	SWARTLAND COTTAGE	BARRAGE BALLOON SITE	
ND39SW 72	RAFTERS	BARRAGE BALLOON SITE	
ND39SW 73	OBAN COTTAGE	BARRAGE BALLOON SITE	BULWARK
ND39SW 74	SOUTH WALLS, LONGHOPE	BARRAGE BALLOON SITE	SOUTH WAAS
ND39SW 79	THE BATTERY	ENCLOSURE(S), STRUCTURE	SOUTH WAAS
ND39SW 8	HACKNESS, MARTELLO TOWER	MARTELLO TOWER	HACK NESS
ND39SW 83	RINNIGILL	BUILDING(S)	SCAPA FLOW
ND39SW 9	HACKNESS, THE BATTERY	BATTERY	LONGHOPE GUN BATTERY
ND39SW 96	LONGHOPE PIER	PIER	SCAPA FLOW, MOASOUND
ND39SW 97	LONGHOPE, WAR MEMORIAL	WAR MEMORIAL	SOUTH WALLS
ND39SW.20	LYNESS, ROYAL NAVY OIL TERMINAL, OIL TANKS	OIL STORAGE TANK(S)	SCAPA FLOW
ND39SW128	ARCTIC CONVOY MEMORIAL	COMMEMORATIVE MONUMENT	SCAPA FLOW MUSEUM
ND39SW20.2	LYNESS, ROYAL NAVAL OIL TERMINAL	OIL STORAGE TANK(S)	SCAPA FLOW
ND39SW20.4	LYNESS, ROYAL NAVAL OIL TERMINAL, PILLBOX	PILLBOX	SCAPA FLOW

Appendix 6. North Walls School Wartime Heritage Project Timetable

Date	Time	Lesson Title	Summary Description
19 th February (Wednesday)	13:50-15:20	FL01: Base Line Evaluation (Assessment)	2 mile linear walk, group recall map exercise
21 st February (Friday)	11:30-12:50	CL01: Base Line Follow-Up	Class 1 - group poster, Class 2 - individual posters
26 th February (Wednesday)	13:50-15:20	CL02: An Introduction to Archaeology	Intro talk with video clips & timeline, artefact handling, storytelling activities
28 th February (Friday)	11:30-12:50	CL03: An Introduction to World War Two	Intro Q&A session, recall exercise, talk to intro themes, origins of WWII activity, timeline activity
5 th March (Wednesday)	13:50-15:20	FL02: Entry Point Revisit	Recall of skills & clues from past, guided walk along baseline route, identification/exploration of WWII sites
7 th March (Friday)	11:30-12:50	CL04: Investigating the Past	Pupils present timeline posters, ID card activity, recall research questions & video, artefact recording exercise
12 th March (Wednesday)	13:50-15:20	PTL01: Archaeological Survey Training	Practical lesson teaching survey skills in playground rotated with continuation of artefact recording exercise
14 th March (Friday)	11:30-12:50	CL05: Finding Out More	Q&A session - clue recall, intro to other sources, maps & photos activity, anti-aircraft gun dodgeball activity
19 th March (Wednesday)	13:50-15:20	FL03: Rafters Site Survey	Class recall on recording skills, barrage balloon site visit, anchor point exercise, recording worksheets
21 st March (Friday)	11:30-12:50	CL06: Rafters Site Research	Class recall of Rafters visit, research using maps & photos, barrage balloon activities, intro to oral history
26 th March (Wednesday)	13:50-15:20	CL07: Visit by Jim Sinclair	Welcome Jim & intro, guided walk by Jim along base line route, Q&A enroute & at regular stops
28 th March (Friday)	11:30-12:50	CL08: Site Related Research: Broader themes	Class based research on the survey sites & other related topics with Jim
23 rd April (Wednesday)	13:50-15:20	FL05: Field Trip to SFVC&M	Scavenger hunt activities and artefact research relating to sites and themes covered during project
25 th April (Friday)	11:30-12:50	CL09: Project-work Finale	Production of large thematic posters using information gathered during project, small group questions with Jim
30 th April (Wednesday)	13:50-15:20	FL06: End Point Evaluation (Assessment)	2 mile linear walk, group recall map exercise
2 nd May (Friday)	11:30-12:50	CL10: End Point Evaluation (Assessment)	Class 1 - group poster, Class 2 - individual posters
21 st May (Wednesday)	14:30	FL07: Exhibition Launch	Public launch of pupils work exhibition at SFVC&M

Appendix 7. CfE Experiences & Outcomes

Early	First	Second
Expressive Arts		
<p>I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/ performances.</p> <p>EXA 0-01a</p>	<p>I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/ performances.</p> <p>EXA 1-01a</p>	<p>I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/ performances.</p> <p>EXA 2-01a</p>
<p>I have the freedom to discover and choose ways to create images and objects using a variety of materials.</p> <p>EXA 0-02a</p>	<p>I can create a range of visual information through observing and recording from my experiences across the curriculum.</p> <p>EXA 1-04a</p>	
Health and Wellbeing		
<p>In everyday activity and play, I explore and make choices to develop my learning and interests. I am encouraged to use and share my experiences.</p> <p>HWB 0-19a</p>	<p>Through taking part in a variety of events and activities, I am learning to recognise my own skills and abilities as well as those of others.</p> <p>HWB 1-19a</p>	
Literacy		
<p>I enjoy exploring events and characters in stories and other texts, sharing my thoughts in different ways.</p> <p>LIT 0-01c</p>		
<p>As I listen and talk in different situations, I am learning to take turns and am developing my awareness of when to talk and when to listen.</p> <p>LIT 0-02a/ENG 0-03a</p>		
<p>I listen or watch for useful or interesting information and I use this to make choices or learn new things.</p> <p>LIT 0-04a</p>	<p>As I listen or watch, I can identify and discuss the purpose, key words and main ideas of the text, and use this information for a specific purpose.</p> <p>LIT 1-04a</p>	

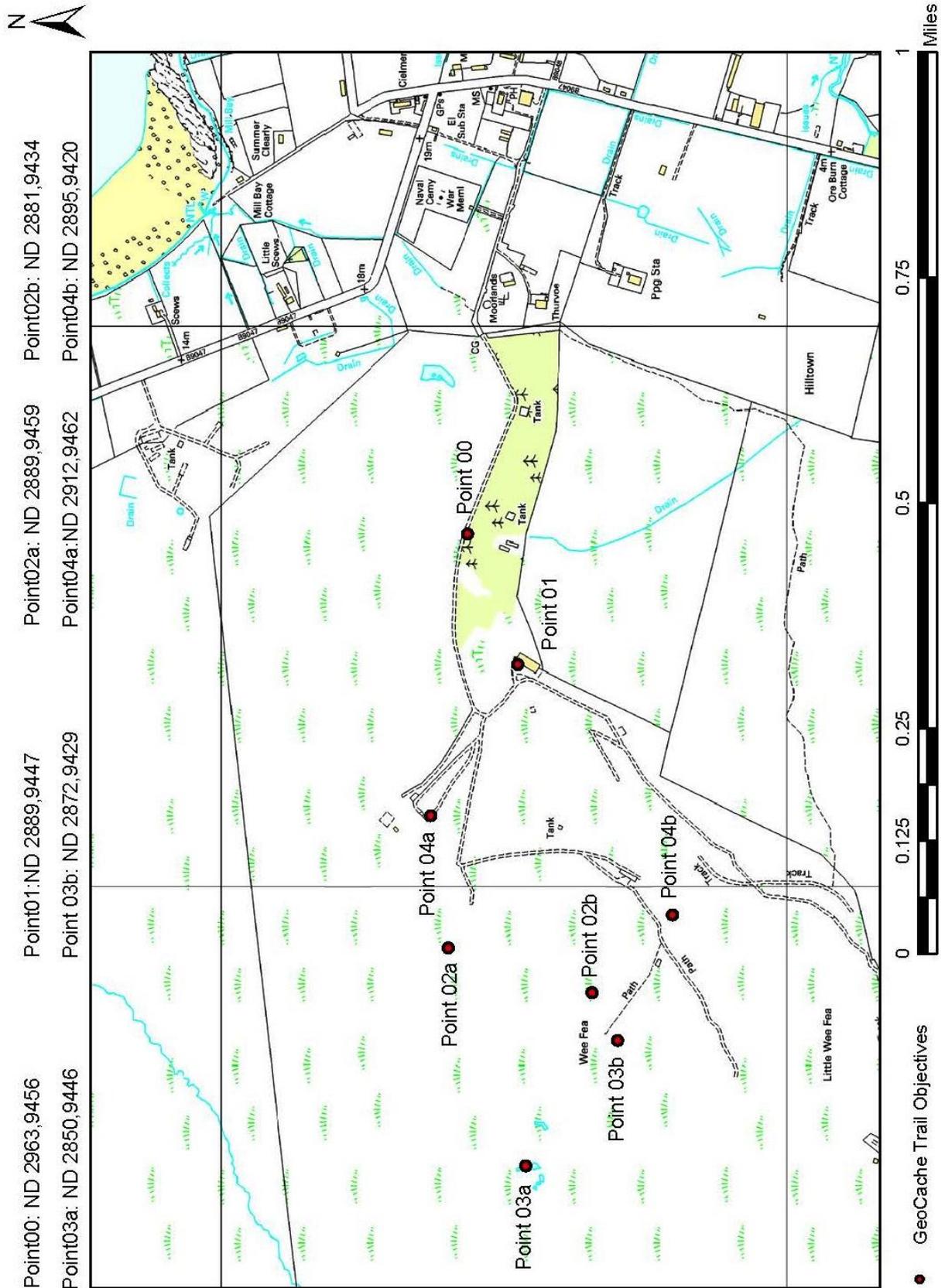
<p>To help me understand stories and other texts, I ask questions and link what I am learning with what I already know.</p> <p>LIT 0-07a/LIT 0-16a/ENG 0-17a</p>	<p>I can select ideas and relevant information, organise these in a logical sequence and use words which will be interesting and/or useful for others.</p> <p>LIT 1-06a</p>	
<p>I use signs, books or other texts to find useful or interesting information and I use this to plan, make choices or learn new things.</p> <p>LIT 0-14a</p>	<p>I can show my understanding of what I listen to or watch by responding to and asking different kinds of questions.</p> <p>LIT 1-07a</p>	
	<p>I can communicate clearly when engaging with others within and beyond my place of learning, using selected resources as required.</p> <p>LIT 1-10a</p>	
<p>Numeracy</p>		
<p>I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.</p> <p>MNU 0-01a</p>		
<p>I am aware of how routines and events in my world link with times and seasons, and have explored ways to record and display these using clocks, calendars and other methods.</p> <p>MNU 0-10a</p>		
<p>I can collect objects and ask questions to gather information, organising and displaying my findings in different ways.</p> <p>MNU 0-20a</p>		<p>I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way.</p> <p>MNU 2-20b</p>

Mathematics		
	I have developed an awareness of where grid reference systems are used in everyday contexts and can use them to locate and describe position. MTH 1-18a	I can accurately measure and draw angles using appropriate equipment, applying my skills to problems in context. MTH 2-17b
		Through practical activities which include the use of technology, I have developed my understanding of the link between compass points and angles and can describe, follow and record directions, routes and journeys using appropriate vocabulary. MTH 2-17c
		Having investigated where, why and how scale is used and expressed, I can apply my understanding to interpret simple models, maps and plans. MTH 2-17d
Social Studies		
I am aware that different types of evidence can help me to find out about the past. SOC 0-01a	By exploring places, investigating artefacts and locating them in time, I have developed an awareness of the ways we remember and preserve Scotland's history. SOC 1-02a	I can use primary and secondary sources selectively to research events in the past. SOC 2-01a
I can make a personal link to the past by exploring items or images connected with important individuals or special events in my life. SOC 0-02a	I can use evidence to recreate the story of a place or individual of local historical interest. SOC 1-03a	
I explore and discover the interesting features of my local environment to develop an awareness of the world around me. SOC 0-07a	I can compare aspects of people's daily lives in the past with my own by using historical evidence or the experience of recreating an historical setting. SOC 1-04a	

	<p>I can describe and recreate the characteristics of my local environment by exploring the features of the landscape.</p> <p>SOC 1-07a</p>	
	<p>Through activities in my local area, I have developed my mental map and sense of place. I can create and use maps of the area.</p> <p>SOC 1-14a</p>	
Technologies		
<p>I enjoy playing with and exploring technologies to discover what they can do and how they can help us.</p> <p>TCH 0-01a</p>		
<p>I explore software and use what I learn to solve problems and present my ideas, thoughts, or information.</p> <p>TCH 0-03a</p>	<p>I can access, retrieve and use information from electronic sources to support, enrich or extend learning in different contexts.</p> <p>TCH 1-03b</p>	
<p>I enjoy taking photographs or recording sound and images to represent my experiences and the world around me.</p> <p>TCH 0-04b</p>		
<p>Within real and imaginary settings, I am developing my practical skills as I select and work with a range of materials, tools and software.</p> <p>TCH 0-12a</p>		

Appendix 8. Wee Fea Wartime Geocache Trail - Cache Box Locations

N.B Point00 represents the start point for the Outdoor Education groups where the 'sealed orders' are opened and does not have a physical cache box located at it.



Appendix 9. Lyness Guided Walk Crib Sheet

POINT OF INTEREST	CORE INFORMATION	ADDITIONAL INFORMATION	IMAGES
<p>START - SFVC&M Welcome Board</p>	<p>PRE-WALK BRIEFING</p> <ul style="list-style-type: none"> • Distance: c.2 miles • Duration: approx 2 hours • Circular route beginning and ending at SFVC&M • Mixed terrain, mostly road and track but can be boggy with water filled potholes • Care and caution to be maintained at all times on roads which can become busy • Mostly flat but some moderate inclines can be expected • Very few conveniences enroute so visit toilet before departure <p>PRE-WWII HISTORICAL SUMMARY</p> <ul style="list-style-type: none"> • Scapa Flow 120 square mile natural harbour. Recognised for its natural defensive qualities during the Napoleonic Wars of the 19th century • Connection between Lyness and the Royal Navy began during WWI • Battleships of British Fleet could be placed within striking distance of German ports • Constrained German naval activity to North Sea & caused shortages of food & materials • Origins of the base came when the Royal Navy began to construct oil fuelled battleships • Scapa Flow designated main Fleet anchorage so land based oil fuel reservoir was needed • 4 10,000 ton oil tanks, pier, torpedo, paravane stores & other associated infrastructure constructed in 1917, 8 miles north of the Fleet's main administrative base at Longhope • Majority of sites & stories on walk relate to WWII military activity. Will point out a couple of WWI features as go along • Can find out more about the role of the base in WWI at the museum afterwards 	<ul style="list-style-type: none"> • Some of route is close to farmland. Dogs to be kept on a leash • Save questions until walking between points of interest • Regarded as inland sea with fine harbours rather than 1 large harbour • Naval strategy involved blockading of enemy ports • Drastically affected Germany's ability to wage war 	<p>Scapa Flow Map</p> <p>Lyness WWI Map</p>

<p>POI 01 – Bremse Gun Base</p>	<ul style="list-style-type: none"> • The story of Lyness as a significant Naval Base begins with the German military reoccupation of the Rhineland in 1936 which awoke concerns of renewed hostilities between the European powers • June 1938 Boom defence personnel arrived at Lyness, constructed boom slab, shed, workshops & began laying boom nets across entrances to Scapa Flow • September 1938 - work began on expanding the oil storage capacity & infrastructure • Unlike WWI, Lyness was to be far more than just an oil and ammunition depot in WWII • Named HMS Proserpine by the Admiralty in 1939, Lyness became the ‘parent ship’ for the Orkney Fleet Base • In other words it served as the main administrative centre for all of the officers and ratings (Navy Personnel) who carried out base duties on the islands of Hoy, Flotta & South Ronaldsay during WWII • By 1940, Lyness was accommodating over 12,000 service personnel & half that again in civilian workers. This is a figure that continued to grow as the base expanded • The base included a full array of facilities for repairing damaged ships, resupplying them with provisions, equipment, fuel & ammunition • There were also entertainment, education and sports facilities for the men and women who lived and worked at Lyness • For all intent and purposes the base was like a small town with a population greater than Kirkwall & Stromness today combined 	<ul style="list-style-type: none"> • Scapa Flow was designated Category A defended port • Scapa Flow surveyed, for new defence positions in 1936, positions of booms decided in 1937 • King’s Harbour Master’s launch was commissioned Proserpine in Oct 39 	<p style="text-align: center;">Slab Construct Photo</p> <p style="text-align: right;">Lyness from Wee Fea</p>
<p>POI 02 – Boom Defence</p>	<ul style="list-style-type: none"> • In addition to the vital supply & repair role, Lyness also served as the main construction & maintenance facility for the anti-submarine and anti-shipping defence booms mentioned briefly already 	<ul style="list-style-type: none"> • Lyness began with the BDO. Was the only dept fully installed and ready at beginning of WWII 	

<p>POI 02 cont'd</p>	<ul style="list-style-type: none"> • This is where the Boom Defence Depot was located, just walked across part of the slab • Launched boom nets from net slipway/trough next to Ro-Ro ferry ramp • The Boom depot was commissioned as an independent command HMS Pomona, 1st Oct 1943 	<ul style="list-style-type: none"> • Max of 1100 O & Rs employed & 130 civils 	<p>x2 BDO & slab photo</p> <p>x2 Boom Slipway photos</p>
<p>POI 03 – Drifter Office</p> <p>POI 03 – Piers</p>	<ul style="list-style-type: none"> • At outset of war large number of small fishing vessels pressed into service by RN across UK to serve support role to ships of the Fleet, transporting personnel & equipment to & from shore • Up concrete steps behind was situated the Drifter Office, drifter being the term for vessels • Each warship at anchor in Scapa Flow allocated a drifter. A large pool of these vessels was necessary so could be available at any given time • Drifter Office operated 2 hourly ferry service between the southern isles for 5 years • 1st July 1943 was commissioned as an independent command HMS Pleiades • 4 piers in Ore Bay in WWII (Old WWI, North, West & South) • At outbreak only 1 available, old wooden WWI pier, condemned as unsafe in 1918. Stayed in service by drifters & dispatch boats throughout WWII, known as Officers' Pier. • North Pier - Completed 1941. Steel with wooden decking, narrow & standard gauge track. • Used by drifter office for ferry service & landing libertymen & provisions • West Pier - Completed 1942. Concrete with narrow gauge track 	<ul style="list-style-type: none"> • Moved here from corner of boom shed beginning of 1940 • 191 drifters in the pool by Oct 44 • Cava, Fara, Flotta, & South Ronaldsay, calling at Longhope, Lyness, Houton, Scapa & Stromness • Owing to preferential use by Naval Officers coming & going • Built by civil contractors Messrs, Sir William Arrol & Co Ltd • Found to be particularly difficult to walk along in wind, rain or at night 	<p>Officer's pier painting By Charles Cundall</p> <p>North pier photo</p> <p>West pier photo</p>

<p>POI 03 cont'd</p> <p>POI 03 – Drifter Slipway</p>	<ul style="list-style-type: none"> • Used by tugs & small craft being refitted by Base Engineer Officer • Fitted with crane for Torpedo & Paravane depot to use for rearming warships • South Pier - built of steel similar design to North pier. Located at Rinnigill • Used by RAF for loading/unloading stores & hydrogen bottles for barrage balloons • Boat Slipway - formed part of boat repair works. Built WWI and extended in 1941 • Shed and slipway allowed all weather repair & painting of damaged ships boats • Built 1944, allowed quick repair & refit of up to 3 drifters at a time, saved delay sending to Moray Firth ports. Steam drifters could be overhauled in 14 days at Lyness 	<ul style="list-style-type: none"> • Arrol & Co Ltd • Made auxiliary in 1944 when main repair base opened (pumphouse quarry) 	<p>Drifter slip photo</p>
<p>POI 04 – Recreation Centre</p>	<ul style="list-style-type: none"> • Constructed WWI & originally a paravane store • Used by civil contractor Metal Industries involved in salvage during interwar period • Reopened as RN Recreation Centre in Sept 1939 • Contained restaurant, NAAFI Bar, grocery shop, clothing store, barbers shop, reading, table tennis & billiards rooms as well as an education centre which put on lectures • Main feature - 900 seat cinema/theatre, fully kitted out with all modern sound, lighting, projection equipment, backstage dressing rooms, motorised curtains • Celebrity and E.N.S.A. shows put on as well as classical and local talent concerts. Visiting artists: Gracie Fields, Vera Lynn, Evelyn Laye, George Formby, Doris Day • Boxing & Badminton matches took place between three time daily film showings • Dances for up to 250 couples were also a regular occurrence • Average Recreation Centre attendance conservatively estimated at 1800 per day 	<ul style="list-style-type: none"> • Metal Ind still had lots of their equipment still stored in one end of it • Navy, Army, Air Force Association • Entertainments National Service Association 	<p>Photo Education Centre</p> <p>Photo of stage</p> <p>Gracie Fields cartoon & photo</p>

<p>POI 05 – Haybrake II</p>	<ul style="list-style-type: none"> • Site of one of the many accommodation camps built at Lyness • Constructed in 1942 incorporating civil camps of Balfour Beatty (No 2 camp) & Arrol • Built as response to increased RME personnel taking over construction duties from civil contractors • Good place to talk about Royal Marines – 3 branches (Stevedores, Engineers & Combat) • 1st called Auxiliary Battalion, Marines arrived 8th March 1940, pitched tents in mud • Dug drainage ditches, prepared foundations, constructed roads & most critically unloaded vessels at pier • Replaced small group of civilian dock workers who had become overwhelmed by demands of so many ships • Detachment of 140 Marines loading/unloading cargo, task never trained for • Reorganised as the 19th Battalion Oct 1942, Marines also a combat battalion, undertook duties as part of the Hoy defence force. 	<ul style="list-style-type: none"> • 280 men (100 outside Orkney, 180 working on RAF Grimsetter • By 1942 so proficient were discharging mixed cargoes from ships at average of 33½ tons per hour 	<p>Haybrake II photo</p> <p>RM Stevedore photo</p>
<p>POI 05 – Photo Stop</p>	<ul style="list-style-type: none"> • RM & WRNS photos offer snapshot of base in first 3 months of 1943 • Bell tents visible in background in Royal Marine Engineers camp area. 	<ul style="list-style-type: none"> • Last RME huts completed Mar '43 • WRNS arrived Jan '43 • Wee Fea Com. Centre completed Sept '43 	<p>RM & WRNS photos</p>
<p>POI 06 – Torpedo Depot</p>	<ul style="list-style-type: none"> • Torpedo & Paravane depot not operational until 1940 • Time taken to find & construct suitable accommodation • H.M.S. Greenwich - stowed, maintained and issued torpedo & paravane armament for the fleet at Scapa Flow in addition to the FAA torpedoes for R.N.A.S Hatston 	<ul style="list-style-type: none"> • Paravanes - type of underwater winged torpedo in shape. Trawled on a tether to sweep for mines • Recreation centre had taken WWI site 	<p>Paravane photo</p>

<p>POI 06 cont'd</p> <p>POI 06 – Power Station</p>	<ul style="list-style-type: none"> Initially issued via lorry to Lyness pier then drifter – had to wrestle for pier attention Improved in 1942 with completion of West Pier – WWI narrow gauge railway put back into use between storage, assembly & pier. Crane winched ordnance aboard drifters Power generator from depot provided entire base lighting for a year plus powered teleprinters until Base power station was completed Main power station didn't come into operation until June 1941 Second, auxiliary, power station built on north side of Naval base overlooking Mill bay Base closed March 1957 – all the power went out, community resorted to personal generators 	<ul style="list-style-type: none"> Later extended to North pier Diesel loco used Lyness not connected to National Grid until 1978 West ext. reused as island co-op 	
<p>POI 07 - French Road</p>	<ul style="list-style-type: none"> Image shows scale of base post Sept '43 LAA site clearly visible on top of hill Gives impression of how densely populated the area was – streets, rows of huts 		<p>Haybrake I photo</p>
<p>POI 08 – WRNS Camp</p>	<ul style="list-style-type: none"> This area first camp to be built at Lyness – March 1940 10 huts plus Chief & Petty Officer's Mess and Ratings Mess, 2 brick huts are ablutions Jan 1943 WRNS arrived on Hoy (680 quartered at Lyness) Became main WRNS camp - woman quartered separately with own dining & domestics Originally thought bad idea to station women in remote locations Arrival did much to improve the base. Raised morale & men smartened up their appearance (<i>had become more and more unkempt owing to the conditions</i>) Initially women put to work in domestic duties (cooks, secretaries, clerks, laundry hands). As War progressed took on roles traditionally held by men 	<ul style="list-style-type: none"> Ratings Mess under Hoy Hotel, same footprint 1st WRNS in Orkney Jan 1941 Such as mechanics, technicians, plotters, drivers, comms staff, repair crew 	<p>WRNS boom repair photo</p>

<p>POI 08 cont'd</p>	<ul style="list-style-type: none"> • Women and their work was absolutely vital to the War effort. Practically whole land-based communications for Navy at Scapa Flow operated by WRNS • Over 230 worked in CCO in watches around the clock • Story of winter midnight watch - snow stopped motor transport, walked up hill on foot roped together and escorted by naval patrol 	<ul style="list-style-type: none"> • Central Communications Office, Wee Fea 	<p>WRNS V/S photo</p>
<p>POI 09 – St Ninian’s</p>	<ul style="list-style-type: none"> • Already discussed importance of entertainment for maintaining morale, in times of war spiritual welfare was also a major concern • St Ninian’s built 1943-44 by RME • Based on large Nissen or Romney hut • Bit like Italian Chapel in that all base departments contributed with labour, furnishings or money. Some furniture made from scratch • Teak prayer desks, altar, credence table, candlesticks, lectern & Priest’s chair, oak choir stalls, portable communion rails, concrete pulpit & font, ‘Hammond’ electric organ • 4 services held every Sunday & used by other denominations at other times 	<ul style="list-style-type: none"> • Roman Catholic church also built on base. • C of S & Free churches held joint services in RN cinema • Bitumastic floor, could be polished • Cost £1200 Church Building committee fund raised money • In use until personnel withdrawal in 1945 	<p>Church exterior photo</p> <p>Church interior photo</p>
<p>POI 10 – Cemetery</p>	<ul style="list-style-type: none"> • Established in 1915 as the final resting place of Navy personnel who lost their lives during WWI whilst on operations in or around Scapa Flow. • Contains 439 commonwealth burials from WWI, 112 unidentified • Many graves are officers, ratings and crewmen of HMS Hampshire, Vanguard, Narborough and Opal. Also some Battle of Jutland losses • 14 German sailors lost during scuttling of the German High Seas Fleet in 1918 • 200 service men and women of the commonwealth from WWII, 26 from HMS Royal Oak. 4 German, 1 Norwegian & 30 non-combatant burials • In addition to central stone carved Cross of Sacrifice, there are two memorial crosses to HMS Hampshire and HMS Vanguard as well several others to specific groups or events 		<p>Royal Oak photo</p>

<p>POI 11 – Telephone Exchange, ACOS & Wee Fea Comms. Centre</p>	<ul style="list-style-type: none"> • Established pre-war while fleet was on manoeuvres • Aug '39 until Sept '43, all L/T to & from Admiralty & Fleet went through this exchange • Oct '39 ACOS moved to Head of Right from HMS Iron Duke after bombing & exchange then handled all ACOS phone & printer comms to & from submarines, boom gate vessels, signal stations & main phone cable ring connecting all Scapa Flow defence sites • Sept '43 purpose built splinter-proof combined ACOS HQ & Naval Comms Centre open • 230 of the 270 personnel were WRNS • <i>Hut in front of exchange one of base mail offices</i> 	<ul style="list-style-type: none"> • Provided L/T (land telecoms for Flag officers, RAF & Orkney HQ with connection to Rosyth & London • ACOS co-ordinated all matters concerning Home Fleet base Scapa Flow as well as Shetland & Scrabster • By Jan '45 handling 60,000 messages per day by V/S, L/T & W/T 	<p>Wee Fea exterior</p> <p>Wee Fea interior</p>
<p>POI 12 – PDO</p>	<ul style="list-style-type: none"> • Passive Defence Office Control Centre • Passive Defence Organisation operational from the outset of WWII • Tasked with prevention of fire and gas emergencies mainly by threat from air-raids ie bombs blasts igniting huts or oil tanks & destroying base • Only 1 Chief Petty Officer and 1 Able Seamen fully employed to maintain breathing apparatus & run training courses • Ensured fire-fighting team leaders knew how to coordinate untrained fire parties • Small second storey observation post used to spot for fires across the base • Timber hut attached to PDO was HMS Proserpine's Captain's quarters. Responsible for smooth running of the base, just like a ship at sea 	<ul style="list-style-type: none"> • Based on civilian Air Raid Precaution (A.R.P.) system • Established 11 sub area HQs, 4 first aid & gas cleansing stations and 3 gas decontam. Stations • Fire watchers & emergency response parties detailed from base personnel • Another OP visible on top of 'A' Power Station 	<p>PDO CC photo</p>
<p>POI 13 – Gas Decontamination Building</p>	<ul style="list-style-type: none"> • 1 of 3 gas decontamination stations built as part of PDO. Would be put into operation in event of Luftwaffe dropping gas bombs or an explosion induced gas leak 	<ul style="list-style-type: none"> • Purpose built with boiler room & water tank 	

POI 13 cont'd	<ul style="list-style-type: none"> • One-way layout - air lock entrance, undressing room, eye cleansing station, decontamination showers, drying room followed by dressing room with fresh clothing provided, exit through second air lock door 	<ul style="list-style-type: none"> • Separate facilities for males & females 	
POI 14 – Squash Courts	<ul style="list-style-type: none"> • Part of wider athletic activities available on the base • Pair of squash courts, constructed 1942, proved very popular with land & sea based officers & ratings. Offered indoor alternative to football & other more weather dependant means of exercise • Painted lines for scoring survive on interior walls, originally had central interior stairs to observation area & lighting reputedly still worked in the 1970's • Area opposite squash courts contained Navy Officers' camp. Had own privileges - club built opposite camp with its own bar & stock of beer from the lower rank canteens 	<ul style="list-style-type: none"> • Available to men & women • Camp built May 1940 • Club built Dec 1943 	<p>Squash court photo</p> <p>Officers' club photos x3</p>
POI 15 – Oil tank field	<ul style="list-style-type: none"> • As walk down canteen road need to imagine oil tanks towering either side of road • As mentioned at beginning there were 4 built in 1917 • Further 12 built by Apr 1939 each could contain 12,000 tons of fuel oil although two of WWI tanks were adapted for use as salt water reservoirs for fire fighting • Will explain more about oil storage system at base of tank 7 	<ul style="list-style-type: none"> • Total capacity of 16 = 192,000 tons • Built by Messrs & Balfour Beatty 	<p>Photo of oil tanks</p>
POI 16 – Fleet Canteen	<ul style="list-style-type: none"> • Stopped here to show photo – only ground image showing bit of main Fleet Canteen • Luftwaffe AP shows tank field just walked through and how canteen sits right in middle • Reason for location = canteen dates to WWI when tanks were much further away, wasn't same threat from bombing • Story of ACOS staff - Speaking of bombing – after Iron Duke bombed, ACOS staff moved ashore 	<ul style="list-style-type: none"> • Taken Oct '39 during parade to cemetery • Trenches have capacity for 1000 men, later replaced by prefab concrete shelters • Situation continued until 	<p>Royal Oak survivors photo</p> <p>Luftwaffe AP taken 18.09.39</p>

<p>POI 16 cont'd</p> <p>POI 16 – Fuel oil system</p>	<ul style="list-style-type: none"> • Not enough accommodation. Officers on Admiral's staff stayed at Longhope Hotel, writers slept in boilerhouse, Captain's secretary slept on wardroom table • Majority of Proserpine personnel slept in canteen....after had been 'squeegee'd out' after Fleet libertymen had departed back to their ships!!! • Oil tank No7 all remains of the 16 above ground tanks, surrounded by brick splinter proofing (<i>built '41 - '42</i>) and spillage containment bunds (<i>built '40 - '42</i>) • Oil pumped into tanks from tankers using steam generated at pumphouse • Steam also used to feed heating/radiator system in base of tanks, made oil more viscous for pumping it from the tanks • Before above ground tanks began being built work started on underground oil fuel reservoir (6 tanks) In September 1938 in Wee Fea hill. • Incredible civil engineering feat took 5 years to complete. Total capacity 100,000 tons • Second, diesel driven pump house was built half way between above ground tanks and the underground reservoir to pump oil up from one set of tanks to the other • Gravity system brought oil back down where was pumped onto 'oilers' for transferring to Fleet vessels 	<p>Mar '40 when first camp completed</p> <ul style="list-style-type: none"> • All rock excavated from Wee Fea to build tanks removed through 2 vaulted concrete access tunnels that were only 10ft(3.05m) wide • Tanks 778ft (237m) long, 45 ft (14m) wide & 48 feet (15m) high • 1st ready Sept '42 • Final ready Aug '43 • Messr, Baldry, Yerburgh & Hutchison main contractors • 800 worked on tanks at peak in July '42 • Norwegian miners evacuated from Spitzbergen worked from Oct '41 	
<p>POI 17 – Wharf overview</p> <p>POI 17 – Boat Repair</p>	<ul style="list-style-type: none"> • Vista allows wide view of the 'working area' of Lyness Naval Base • Frm left to right – Boat Repair & Base Repair Workshop of Chief Constructor's Dept • Boat repair operations started here in July 1944 (moved from boat slip seen earlier) • Vital role maintaining small boats from ships of the Fleet that suffered damage from enemy action, mishandling or harsh weather conditions on the arctic convoy routes. 	<ul style="list-style-type: none"> • Dept set up as emergency repair base for destroyers of Home Fleet Aug '40 • Destroyers & cruisers notorious for badly damaging boats in rough northern seas 	<p>Panorama photo</p>

<p>POI 17 cont'd</p> <p>POI 17 – Base Workshop</p> <p>POI 17 – Golden Wharf</p>	<ul style="list-style-type: none"> • Quarry created in wharf construction, flooded & used as boat storage pond • Romney huts also for storage of boats awaiting repairboat storage • Base Repair Workshop completed Nov 1940. Served as machine shop for base shipwrights & boilermakers • The piers and wharfs always a problem. Managed by King's Harbour Master's Dept • Inspection in May 1939 describing scene as <i>"A muck heap run by the Boom Defence Depot, and about three different contractors. Not the worst Spanish quay was so devastatingly cluttered up"</i> • New wharf requested, took until 1944 before completed & cost £35,000 hence name • 4 steam cranes operated along tracks to Golden wharf. Normally coupled to flat trucks used for transporting sections of anti-submarine netting or boats needing repaired 	<ul style="list-style-type: none"> • Also space for blacksmiths, plumbers, welders & electrical fitters • Ill equipped, too short & boggy for all demands of Navy • £1,005,200.00 today • Built using spoil from underground tanks 	<p>Boom slab/wharf photo</p>
<p>POI 18 – Arctic Convoys</p>	<ul style="list-style-type: none"> • June 1941, Germany & Axis partners invaded Russia codenamed Operation Barbarossa • Russian losses in men & material were immense • Aug '41 Anglo-Soviet Mutual Assistance Pact signed in Moscow. Same day 1st convoy sailed from Liverpool carrying supplies of fuel, tanks, aircraft, ammunition etc • Perilous icy waters of Norwegian Sea & Arctic Ocean, brave merchant seamen ran the gauntlet past patrolling German U-boats, battleships & Luftwaffe making for Russian ports of Murmansk and Archangel on Baltic coast • Merchant vessels sailed from different locations • Escorts provided by destroyers, sometimes cruisers, battleships & aircraft carriers from Scapa Flow. 	<ul style="list-style-type: none"> • Russia jointly invading Poland with Germany 28 Sept 1939 • Other Axis involved in Barbarossa - Italy, Rumania & Hungary • 1st convoy codenamed 'Dervish' • Liverpool, Clyde, Hvalfjord & Loch Ewe • Loch Ewe - over 200,000 tons of shipping passed daily • Last convoy RA 67 arrived Firth of Clyde 	<p>Routes map</p> <p>Convoy photo</p> <p>Ice photo</p>

<p>POI 18 cont'd</p>	<ul style="list-style-type: none"> • Constant stream of casualties in Orkney hospitals from escort ships that limped back into Flow & heavy damage needing repaired was stark testimony to the bitter fighting that took place on the long Russian convoy routes • 1400 merchant ships made the crossing, 85 lost to enemy action 	<ul style="list-style-type: none"> • 78 convoys sailed in both directions in WWII, last one 30 May 1945 • Cost to Royal Navy - 2 cruisers, 6 destroyers, 8 other escort ships 	<p>Convoy arrival photo</p>
<p>FINISH - SFVC&M museum plaque</p>	<ul style="list-style-type: none"> • Base steadily downsized through 1945 but remained operational until 1956, formal closure May 1957 part of post-war austerity/economising measures • Huts demolished & sold off – Many went to France or auctioned locally in Orkney • Hope enjoyed tour, encourage to visit museum, other upcoming events, • Encourage to take time & complete short questionnaire. Comments will assist Development Trust & Museum in further developing wartime interpretation on Hoy 	<ul style="list-style-type: none"> • Free French soldiers assisted in collapsing huts for the move 	