



**Fjordr**

Marine and Historic Environment Consulting

# **East Coast War Channels in the First and Second World War**

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## Executive Summary

The East Coast War Channels (ECWCs) are the carefully defined routes that were swept of mines between the Thames and the border with Scotland in both the First and Second World Wars. These routes formed the main seaways for the vast amount of civilian shipping that was necessary to meet the country's domestic needs and to continue fighting. The channels were swept by minesweepers, and an array of other minor warships were engaged in maintaining and defending traffic. Many of the minesweepers and other minor warships were fishing vessels requisitioned by the Admiralty; but fishing also continued and fishing vessels themselves were subject to attack. The combination of merchant vessels, fishing vessels and minor warships traversing the East Coast War Channels in the First and Second World Wars is the focus of this project.

The East Coast War Channels were needed because civilian shipping was being attacked from the start to the end of each war. Large numbers of shipwrecks reflect the losses, but shipwrecks also represent the even more numerous ships that were not lost. Paradoxically, the many vessels that had successful voyages have since been scrapped, whilst the ships that were wrecked have survived. Unlike the forces used on land and in the air, there are very few vessels 'in preservation' that fully reflect the battles of the East Coast.

It is important to distinguish between weapons – mines, torpedoes, shells, bombs – and the 'weapons systems' that delivered them: submarines; aircraft; surface craft. In both wars, most wrecks were attributable to mines. Submarine-laid mines were a particular hazard in the First World War. U-boats were in fact the main source of loss; they sank ships by gunfire, by placing charges on board, and by scuttling, as well as laying mines. U-boats also sank ships by torpedo in the First World War, but this did not become a major cause of loss until 1917 and 1918 and the advent of unrestricted submarine warfare. More ships were lost to U-boats in the ECWCs in 1916 – before the start of unrestricted warfare – than after. The introduction of convoys to the East Coast at the end of April 1917 may have played a key part in reducing losses, as it did in the Atlantic and elsewhere.

In the Second World War, mines laid by aircraft and E-boats were the greatest cause of loss. In contrast to the First World War, U-boats were largely absent from the ECWCs in the Second World War. Bomb attacks by aircraft and torpedo attacks by E-boat added to the danger from mines. In another contrast with the First World War – in which losses remained high throughout the war – the number of losses was high from the start of the Second World War but fell sharply in 1943-44, before a desperate surge in the final months.

In the First and Second World Wars, the ECWCs were a key theatre of great significance to the history of England. The ECWCs contain large numbers of heritage assets, both of known wreck sites and of documented losses. The ECWCs themselves can be seen as a heritage asset; in fact a case can be made for the ECWCs meeting national guidance on eligibility as a registered battlefield. As well as assets at sea, a range of other heritage assets are related to the ECWCs, including features such as boom defences and sea forts. Wireless stations – and the information they provided through direction-finding and intercepted signals – played an important role in the ECWCs through naval intelligence. This was very significant in the First World War as well as the Second World War. Although more often associated with the Second World War, aircraft carrying out anti-submarine patrols and escorting convoys were also important in the First World War.

The use of maritime space in the North Sea was heavily structured by the ECWCs. Multiple systems relating to sweeping, routing, escorts, defensive mining, coastal forces, maintenance of lights and buoys, salvage and clearance, and so on all had to mesh together

within the ECWCs. These sat within even bigger systems concerned with maintaining the supply of goods – especially coal – to south-east England, and ensuring that there were enough ships to cover all the transport needs, and enough warships to protect them. A key finding of this project is the need to recognise that surviving heritage assets do not just reflect their own unique circumstances, but also the huge effort devoted to maintaining traffic through the ECWCs overall.

Specific conclusions and recommendations are made about the ECWCs and the steps that could be taken to increase understanding, awareness and – if necessary – protection. The approaching centenary of the First World War presents an opportunity to start addressing the ECWCs in a manner appropriate to their significance; but the need to properly take into account the ECWCs in the Second World War must also be kept to the fore. A key finding is that although there is a great deal of documentary, photographic, cartographic and other data relating to the ECWCs, this data has largely been severed from the heritage assets themselves. This separation impairs the meaningfulness of the heritage assets, and of the mass of data that relates to them. Approaches to reinstating the links between heritage assets and related data are proposed, emphasising the opportunity for English Heritage to support planned activities by others, drawing attention to the historic environment of the ECWCs whilst ensuring that new information is amenable to incorporation into historic environment records. Engaging the public in the ECWCs – whether they are divers, other sea users, or people who are at the coast – is to be regarded as a means of drawing-in information about ECWCs heritage assets, as well as of increasing appreciation.

To date, the ECWCs – like other maritime aspects of C20th conflicts – have fallen through a gap in heritage protection. Despite the effort and sacrifice of all those who endured and were lost during the First and Second World Wars in the ECWCs, they have largely been forgotten. Hopefully, this project is a step towards remembering them.

## East Coast War Channels in the First and Second World War

### Fjordr 16130 / EH 6586

#### 1. Introduction

##### 1.1. Initial Overview

The story of civilian shipping off the East Coast of England (Fig. 1) in both World Wars is one of enormous effort and enormous losses. The circumstances in which people were killed or injured were extraordinary: explosion; scalding steam; fire; entrapment; cold water. It was not only traumatic for those who suffered directly; surviving could mean long spells in the water or in open boats. And for all there was the sense that any of these things could happen at any instant, for year after year.

The main weapons were mines, shells, torpedoes and bombs, delivered variously by ships, boats, submarines and aircraft. Usage varied between the two wars and within each war, and in different places. German forces pressed civilian shipping very hard on the East Coast, and most of the losses discussed are of Allied and neutral shipping. However, Allied forces pressed equally hard against German forces using the same sorts of weapons and the same forms of delivery. This report concentrates on the destruction and death arising from being mined, shelled, bombed or torpedoed by German forces in English waters, but it should always be remembered that Allied forces attained high levels of destruction and death in German and other waters. In neither war was the conflict one-sided.

The intent, on both sides, was to reduce the amount of food and supplies that the other side could deliver by sea. This encompassed material that contributed directly to the war effort – munitions, equipment, key raw materials – but also for the general population. In this, German efforts to prevent civilian shipping from using the East Coast ultimately failed in both wars. Many ships were sunk, but very many more had successful voyages. Allied efforts in denying use of the sea to ships serving Germany were more successful: it is estimated that 763,000 Germans died of starvation as a result of the Allies' maritime blockade in the First World War<sup>1</sup>. Maritime blockade was again a major feature of UK economic warfare against Germany throughout the Second World War. Again, in neither war was the conflict one-sided.

In this project, 'civilian shipping' encompasses merchant shipping and fishing vessels: vessels crewed predominantly by civilians. However, civilian shipping was militarised to some degree in both wars, in some cases by being armed and / or having military personnel on board, and by being organised and directed by the military. However, the degree of military control was by no means absolute; many shipping operations were essentially private transactions, run by masters and owners.

Surrounding civilian shipping there was a huge military and state-driven industrial infrastructure. As well as merchant shipping and fishing vessels, this project focusses on the minor warships that were intimately connected with civilian shipping as minesweepers and escorts, for example. Many of these minor warships were in fact civilian vessels that were converted to military service; and some classes of minor warship that were built for military service were actually converted to civilian roles when hostilities ceased. The flux from civil to

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<sup>1</sup> <http://www.nationalarchives.gov.uk/pathways/firstworldwar/spotlights/blockade.htm>

military applied also to people. There were civilian seafarers that were reservists before the wars who were mobilised into uniform; and civilian seafarers who volunteered. There were also volunteers and conscripts on the minor warships who had no experience of the sea before joining up.

The infrastructure surrounding civilian shipping on the East Coast extended beyond the closely associated minor warships, indicating several major overlapping systems that interleaved with wider wartime activities. The merchant vessels themselves were a manifestation of both the organisation of trade, and of the supply of shipping. The use of ships for transport on the East Coast involved choices relative to other forms of transport such as rail, road and inland waters, as well as shipping using other routes, for example (Savage 1957). The supply of merchant vessels had to take into account not only intense losses on the East Coast, but intense losses in other theatres, and the need to make available merchant vessels to support military operations such as (in the Second World War) the Dunkirk Evacuation and D-Day (Behrens 1955). The demand for minor warships also had to be met, again making good many losses both on the East Coast and elsewhere. Hence the maintenance of civilian shipping invoked various means of securing ships, including shipbuilding and repair.

As indicated above, sufficient numbers of seafarers had also to be secured despite losses, whilst naval crews had to be recruited and trained. Ships and their crews had to be provided with supplies, munitions and specialist equipment: the huge numbers of mines deployed by the Allies needed not only explosives but enormous amounts of cable. There was also an important technological aspect to both conflicts. Two technologies were especially important: radio – including wireless and later radar; and aviation. In both cases, civilian shipping on the East Coast was supported by systems of wireless and radar stations, which were themselves linked to intelligence services making use of a wide range of methods; and by numerous airfields. One of the striking aspects of this project has been that radio, intelligence and aircraft – popularly associated with the Second World War – played a very important role in East Coast shipping in the First World War also.

As indicated above, civilian ships were not only British, nor were their crews and passengers. Shipping included Allies and neutrals, and these encompassed a very wide range of nationalities and backgrounds. The East Coast encapsulates wars that were truly global in their effects. Nor did the conflicts on the ECWCs engage only men: references to women at sea are rare but not entirely absent, and women played significant roles in naval bases and in the front line of the intelligence war, for example.

The intention of this project is to address civilian shipping on the East Coast archaeologically, through its material remains. Through its physical consequences – at the scale of individual artefacts, sites such as shipwrecks or former airfields, and whole landscapes of activity – it is hoped that we can better understand and appreciate what happened on the East Coast, and which of these remains we should seek to conserve into the future.

Accordingly, this project is centred on the War Channels that were instated early in the First World War for civilian shipping (Fig. 2), and which were again used from the start of the Second World War (Fig. 3). These channels arose from the rapid recognition that it would not be possible to keep every bit of the sea clear from mines, in particular. Consequently, minesweeping was focussed on specific routes up and down the East Coast. The routes that were swept were known in both conflicts as the War Channel(s). The channels were marked physically with buoys and protected by defensive minefields. As shipping was concentrated in the channels they became a target for enemy action, and for counter-offensives. The

physical remains of the conflicts on the East Coast – predominantly shipwrecks – are structured and patterned by the position of these channels (Fig. 4; Fig. 5).

It is worth noting at this point that the War Channels are not synonymous with ‘convoy routes’. Convoys were not used in the First World War until 1917. Before the institution of convoys – a hotly debated innovation – vessels sailed independently, with the War Channels providing a safer route. Convoys proved very successful in the First World War, such that they were introduced from the very start of the Second World War and maintained throughout. However, some vessels sailed independently also in the Second World War, and again the War Channels were available to them as well as the convoys.

Recognising that merchant shipping and the minor warships that protected it was relatively constrained to specified routes is a first step towards understanding the archaeological record of the East Coast not as an undifferentiated mass of dots, but as a landscape. The landscape that was known to the people who used it encompassed all the shipping and other activities that took place; the landscape that can be known archaeologically is only a part of this, and not necessarily the same in every respect. As noted above, most ships travelled the East Coast successfully and left no material trace of their passing. The wrecks, though numerous, are a tiny fraction; hence the importance of the wrecks lies partly in the much denser picture of maritime activity that they invoke. It also needs to be borne in mind that the position of wrecks does not necessarily reflect the route that was being taken. In wartime, ships were still subject to the usual hazards of the North Sea: going aground; dragging their anchors; being driven ashore. Some of the usual hazards were no doubt exacerbated by wartime conditions: some navigational aids such as lighthouses and lightships were dimmed; the risk of collision with the ships crowded into defined channels was undoubtedly higher. Further, when calamities did occur – either as a result of warfare or other hazards, ships may have continued to move before being finally wrecked. Damaged vessels can drift, but it should also be borne in mind that strenuous efforts were made to rescue ships even when they were badly damaged, by towing them to safety. These efforts were not all successful, so in many cases the position of a wreck reflects the efforts to save it rather than the position where damage initially occurred. That many ships were rescued serves to underline the fact that today’s wrecks also stand for ships that were attacked – and people who were killed or wounded – but evaded the depths.

There is a paradox here, because although they were lost at the time, the ships that were wrecked have survived in some form, whereas those that completed their journeys have virtually all been scrapped. There are some vessels in preservation, but these are mostly smaller vessels such as Thames Barges. Keeping even a modestly-sized merchant vessel in preservation is incredibly difficult. Although by no means forming a complete record, conflicts on land and in the air are represented by numerous vehicles and aircraft in museums and private hands, in many cases in running order. Their continued presence helps maintain awareness – reinforced by living history societies and events – of the part played by forces on the land and in the air in the First and Second World Wars. Hardly anything seems visible of the conflicts at sea, either military or civilian. Hence, the physical remains of the East Coast War Channel have a role in maintaining – perhaps even building – awareness at large. Certainly, the surviving remains have an importance that is enhanced by the near-absence of remains in preservation.

Having noted that civilian shipping on the East Coast sat within and alongside other systems, it follows that the landscape of the East Coast War Channels has several sets of components and sits within and alongside other landscapes. The East Coast ports developed particular geographies in both the First and Second World Wars in terms of the bases and facilities

they supported, and their defences. Already mentioned is the landscape of wireless and radar stations, and of airfields and air stations. The airspace itself was shaped around environmental and operational factors, in some cases reflecting the War Channels but sometime overlying them – such as the 'Spider Web' grid of anti-submarine patrols that covered large parts of the southern North Sea in World War I (Hallam (PIX) 2009). Other aspects of naval operations framed and shaped the seospace, by reference to tangible points for navigation such as shoals and lightships, or more abstract systems of coded squares. The effect, overall, is that in both wars the East Coast and the North Sea generally was not the empty blue that is shown on most maps; they had a diverse and meaningful topography.

Considering this a little further, it should be recognised that the Western Front that extended in an unbroken line from the Swiss Frontier to the River Yser in Belgium during the First World War did not stop at the sea, but continued west and then north up to Scotland's Northern Isles. This element of the Western Front was more permeable and the 'no mans' land' rather wider than the front on land, but it was certainly a zone of constant warfare and attrition. The Royal Navy succeeded in keeping the German High Seas Fleet bottled up, in maintaining its maritime blockade and in controlling the Dover Straits and the all-important transport links to France; but German submarines were predominant along the whole of Britain's East Coast, often close inshore. It should also be recalled that Norway, Sweden, Denmark and the Netherlands remained neutral in the First World War, so Germany's direct access to the sea was limited to the occupied part of Belgium and the German Bight.

The broad geography of the North Sea was quite different in the Second World War compared to the First World War. By the end of June 1940 the entire seaboard of the Continent from Norway to France's border with Spain was under Axis control. The East Coast of Britain was the front line. German submarines had much less of a role in the North Sea than in the First World War, but E-boats and aircraft took the fight right to the coast of the UK until Allied air superiority began to be established. Nonetheless, Germany was able to mount attacks on merchant shipping off the East Coast right up to the closing days of the Second World War.

### *1.2. Research Aim and Objectives*

The East Coast War Channels project arose from a proposal prepared by Fjordr Limited and submitted to English Heritage in March 2012. English Heritage commissioned Fjordr to prepare a Project Design that was submitted in January 2013, when the project itself was commissioned.

The aim of the project is to contribute to greater protection and appreciation of heritage assets from the First and Second World Wars associated with the East Coast War Channel.

The project's objectives are as follows:

- O1 To develop a narrative overview of the East Coast War Channels in the First and Second World Wars that outlines the key asset types, their original phasing, their overall distribution, and spatial character.
- O2 To outline the significance of the East Coast War Channels in the First and Second World Wars, in terms of both the history of the UK and of local, community and family histories.

- O3 To provide an overview of the current survival of heritage assets associated with the East Coast War Channels, of current and future activities that may affect their survival, and opportunities for these assets to contribute to economic growth.
- O4 To identify sources of data relating to heritage assets associated with the East Coast War Channels – including quantitative, documentary, cartographic and photographic sources – and to propose ways in which this data might best be amalgamated to enhance the National Record of the Historic Environment and be made available to wide audiences.
- O5 To identify and summarise the roles and interests of institutions and agencies with interests in heritage assets associated with the East Coast War Channels, including organisations that hold relevant data.
- O6 To promote wider awareness of heritage assets associated with the East Coast War Channels and their significance, including through specific material targeted at sea-users in the region

### *1.3. Scope*

This project is best regarded as an appraisal or scoping project on the East Coast War Channels, intended to provide an initial base upon which protection and appreciation can be improved. Whilst this was understood from the outset, the results have underlined the quantity and complexity of the physical remains of the East Coast War Channels, and the very wide range of cartographic, photographic and documentary sources that could be brought to bear.

As its title states, this report is concerned with two periods – the First World War (August 1914 to November 1918) and the Second World War (September 1939 to May 1945). Clearly, reference is made outside of these time periods where relevant; in particular, the loss of civilian shipping due to wartime activities continued after each war, principally due to the continued presence of mines.

The geographical scope extends along almost the entire East Coast of England, from North Foreland in Kent to Berwick-upon-Tweed (Fig. 1). The northern boundary reflects the geographical remit of English Heritage today: certainly, the same issues discussed here continued into Scottish waters, up to the Forth and beyond. The southern boundary has been chosen to reflect the very important role of the Dover section of coast in both wars. In the First World War, the Dover section is best seen as a block extending across to Belgium and France, which had to be protected because of its critical role in the supply of land forces. It also had to be ‘stopped up’ to prevent U-boats from transiting to the Western Approaches and Atlantic, whilst efforts to stop the Flanders flotillas at ‘source’ from wreaking havoc in the North Sea were also focussed in this block. In the early stages of the Second World War the emphasis was again on stopping up the Channel against German submarines, but with the fall of France the Straits became the closest point between the Allies and Axis. Dover was undoubtedly a critical node for coastwise civilian shipping too, in both conflicts, but its particular complexities could overwhelm consideration of the rest of the East Coast; it is therefore proposed that the Dover section be studied in its own right on a separate occasion, preferably in conjunction with researchers in France and Belgium.

As noted already, the issues of civilian shipping on the East Coast did not exist in isolation. There are numerous overlaps with other aspects of the war at sea, in the air and on the ground in both wars. To maintain the report’s focus many of these overlaps have been

scoped out of this project. Some of the key aspects of the war on the East Coast that are not addressed in detail are as follows:

### Coastal Artillery

Many East Coast ports were equipped with coastal batteries for defence against surface craft (Foster 2004). With a few exceptions, surface attacks on ports did not materialise in either war, and coastal artillery was not used directly in maintaining civilian shipping.

### Invasion Defences

German invasion was feared in both the First World War and especially the Second World War. In both wars, infrastructure was put in place to defend the East Coast, but again it was not used directly in maintaining civilian shipping.

### Anti-Aircraft Defences

There is more overlap between anti-aircraft defence and coastal shipping, especially in the Second World War, because air attacks on shipping were a major cause of loss. The main focus of AA defence was, however, on the ports rather than on shipping itself – though undoubtedly ships in port were a focus for attack and had the benefit of port AA defences. As with Coastal Artillery, AA defence is better considered as a facet of ports in wartime than of civilian shipping as such. It is important to bear in mind that defence of ports from the air – using fighter aircraft as well as artillery – was a major concern in the First World War as well as the Second World War because of the Zeppelin and Gotha raids that targeted East Coast towns and cities.

### Naval Fleet Actions

Large warships were active off the East Coast in both the First and Second World Wars, though in both conflicts their activities were limited. Several key engagements took place in the North Sea in the First World War, supported by extensive patrolling by RN cruisers and destroyers. The German attack on Hartlepool, Whitby and Scarborough (Clarke 2010; Marsay 1999) is important with respect to civilian shipping because it was accompanied by minelaying that caused the loss of cargo ships and minesweepers. Although it is a fascinating episode on several levels, its implications for the main focus of this report are tangential. In the other fleet actions, civilian shipping was on the sidelines: the focus was entirely on engagement between the major warships. Following an indecisive action between elements of the British Grand Fleet and the German High Seas Fleet on 19 August 1916, it was determined that no operations of the Grand Fleet would be conducted south of the line of Horns Reef, off Denmark, because of the danger to major warships from mines and submarines (Newbolt 1931). Large warships were rare in the North Sea throughout the Second World War again because of the asymmetrical dangers of mines, torpedoes and aircraft. Germany's capital ships were few in number and did not deploy as a fleet. Although directed at civilian shipping as well as warships, they targeted convoys in the Atlantic and Arctic, accessed via the northern North Sea and from France's Atlantic coast. They did not approach the East Coast of England. The 'Channel Dash' in February 1942 was a unique and partial exception, when the battleships *Scharnhorst* and *Gneisau* and the heavy cruiser *Prinz Eugen* transited from Brest to the German Bight through the Straits of Dover (Foynes 1994). Overall, fleet actions in both wars were of only indirect relevance to civilian shipping in the North Sea.

### Blockade Operations

As noted above, the Allies maintained a maritime blockade against vessels supplying Germany in both wars. Blockade involved patrols by armed vessels, which boarded merchant vessels and could impound them. The main focus of these activities were in the south, around the Downs, and in the North, from Orkney to Norway, effectively closing off the North Sea at each end to prevent trade to and from Germany. The conduct of the blockades is not covered by this project, though it should be borne in mind that the conduct of economic warfare by Britain was portrayed by Germany as one of the reasons for its attacks on Allied merchant shipping.

### RN Coastal Forces

Royal Navy Coastal Forces operations – by small fast vessels such as Motor Torpedo Boats (MTBs) and Motor Gun Boats (MGBs) are one of the better-known aspects of the Second World War on the East Coast. In the early stages, Coastal Forces did have a direct role in trying to defend merchant vessels from German E-boats, but they switched tactics to intercepting E-boats close to their home ports on the German occupied coast, either on the E-boats' return or at their outset (Scott 2009; Frank 2007). Coastal Forces became increasingly focussed on offensive operations against German vessels well beyond UK inshore waters, and so are not covered here. Earlier operations in direct defence of merchant shipping are included, however.

### Evacuation and Invasion

Civilian shipping was called upon to support various military operations, notably in the Second World War. Merchant vessels, fishing vessels and other civilian vessels were used in the evacuation of Allied personnel during the fall of France in May-June 1940, including Operation Dynamo (Dunkirk), Operation Cycle (Le Havre) and Operation Ariel (French ports on the Normandy, Brittany and Atlantic coasts). Civilian craft – merchant vessels and former fishing vessels in minesweeping and patrol roles – were called upon again to support invasions in North Africa (Operation Torch), Italy (Husky; Avalanche), Normandy (Neptune) and the South of France (Dragoon). The demand for vessels for military operations clearly had implications for the conduct of 'normal' activities on the East Coast, but again this aspect of the overall conflicts has been set aside for the purposes of this project.

### Strategic Offensives

In both the First and Second World Wars, Allied commanders sought to address German military activity 'at source', including the bases from which German military forces operated, and the broader transport and industrial infrastructure upon which they depended. Accordingly, the Allies conducted strategic offensives against Germany that were directly related to civilian shipping on the East Coast, but which took place beyond the immediate region. Bombing raids and extensive offensive mining operations were conducted against German naval and submarine bases in both the First and Second World Wars. Blockship operations were conducted against Ostende and Zeebrugge in 1918 (Prince 2010), and blockships were deployed again May 1940 immediately before the evacuation of Dunkirk (Foynes 1994). Later in the Second World War, streams of RAF and USAAF aircraft flew over the East Coast in the course of the strategic bombing offensive – sometimes targeting E-boat pens that threatened shipping (Frank 2007) – resulting in many air crash sites. The recovery of aircrew by rescue boats and aircraft based on the East Coast adds a further layer of complexity to the landscape but will, for the purposes of this project, be omitted.

#### *1.4. Methods*

The project has been essentially desk-based, making extensive use of web-resources and published works. Primary archives have been appraised directly in the case of the National Archives and the UKHO.

Site visits were carried out on sections of the coast at Tynemouth, South Gare (Tees), Kettleness, Whitby, Ravenscar, Scarborough and Filey Brigg to gauge the degree to which wreck sites might be visualised by people at the coast. These visits also considered the potential of features at the coast as points at which the story of the East Coast War Channels might be raised. Tynemouth, Whitby and Scarborough were all selected, for example, because of the presence of English Heritage properties at the coast.

Oral presentations on the project were delivered at meetings of the North East Maritime Archaeological Forum (NEMAF) (16 October 2013) and the Maritime Committee of ALGAO (12 November 2013.) In addition, correspondence with a range of interested parties has been carried out principally by email but also by telephone (see below).

Data for the project has been provided by the National Record for the Historic Environment (NRHE). This data has been provided in pdf format arising from queries run by NRHE in discussion with Fjordr. Data has also been obtained from the Wrecksite database, which is available online. The Lat/Long co-ordinates for the search area for the NRHE were as follows:

NW	55 45.40N	001 59.00W	NE	55 45.40N	002 09.50E
SW	51 22.40N	001 59.00W	SE	51 22.40N	002 09.50E

These have been converted as the following NGRs:

NW	401144	651478	NE	660995	659309
SW	401256	163808	SE	689489	172017

The same Lat/Long co-ordinates were used to conduct searches of the Wrecksite.

These two datasets, although having a great deal of data in common by virtue of using similar core sources, are structured and made accessible in different ways. In order to maximise the ways in which relevant monument data can be discovered, NRHE records often include multiple terms in relation to attributes. For example, wrecks may be ascribed two or more causes of loss (e.g. 'foundered' and 'torpedoed') or two or more maritime craft types (e.g. 'trawler' and 'fishing vessel'); in some cases these terms relate to different periods in the vessel's biography, whilst in some cases they are alternative means of classification. Although facilitating access, this can make the process of querying large datasets for broad quantitative characteristics quite complex because the multiple terms may result in duplicates. Querying the data effectively requires specialist understanding of the structure of the records and how specific terms have been used. The complete details of assets identified as a result of the queries can be made available as Complete Monument Reports (which can be searched as pdfs using keywords), and the results can be mapped, though the detail cannot be sub-queried in a mappable form without further extensive work. The overall effect is that NRHE data provides a great deal of detail and can – through skilled staff – be used to undertake broad quantitative queries, the results of which can be mapped. Although the NRHE data is very rich, it is less suited to being explored quantitatively – to look for broad patterns – from an external desktop. It should also be borne in mind that the NRHE extends

only to the limits of the English Inshore Region, i.e. the Territorial Sea (broadly 12 nm from the coast).

The Wrecksite database can be used to explore broad patterning as well as individual wrecks, though it has its own constraints. The data is simplified relative to the NRHE in that all the fields – such as cause of loss or vessel type – are filled with single attributes. Although this does not always reflect the complexity of the sites themselves, it does enable straightforward queries. The queries that are available are predetermined as a series of filters: propulsion; vessel type; nationality; cause of loss; date of loss etc. These filters can be combined, to some degree, very effectively. The results can be displayed in a mapped form and spatial queries can be raised by reference to the boundaries of published admiralty charts or a user-defined rectangle. Inconsistent recording can cause difficulties, however. For example, in some instances Admiralty Trawlers are recorded as ‘minesweepers’ whereas in other cases they are recorded as ‘trawlers’, which complicates quantification. Also, the Wrecksite does not distinguish between known wrecks and recorded losses (casualties) as clearly as the NRHE. Casualties are included as wrecks in the Wrecksite, though it is usually evident if no material remains have yet been located either from the detail of the record or the attribution of poor reliability to the wreck’s position. This is especially relevant to the large number of fishing smacks lost in the First World War and recorded as wrecks in the Wrecksite data, as it is evident that these are essentially casualties ascribed to nominal positions, rather than actual wreck sites. The results of Wrecksite queries are only available on screen; they cannot be exported in a form that allows for subsequent searching or further analysis, nor can they be exported in a mappable form. Like the NRHE, the Wrecksite also comprises very rich data, augmented by hyperlinks to related material – such as details of ship owners and shipbuilders, and images. As the Wrecksite is global in scope, its records encompass the whole English Offshore Region (i.e. beyond 12 nm).

It is worth bearing in mind the form that NRHE and the Wrecksite take on the web, with respect to their accessibility to the general public. Individual NRHE records can be accessed easily through [www.pastscape.org.uk](http://www.pastscape.org.uk) whilst the Wrecksite ([www.wrecksite.eu](http://www.wrecksite.eu)) is a highly accessible online resource, though some of its features are restricted to users with paid subscriptions. The Wrecksite is open to contributions by users, which adds to the richness of the data as shipwreck researchers, divers and people with family interests, for example, add to the records. However, both the NRHE records in PastScape and the Wrecksite records are quite technical; their content is not fully self-evident without a certain degree of understanding of ships and ship-related data, which may be a barrier to their accessibility to a wider public.

These considerations have a bearing on how this project has been conducted in terms of assembling an evidence base, and on how it looks forward to achieving wider awareness of the heritage assets associated with the East Coast War Channels.

Wrecks referred to in the text are listed in Appendix I, with cross references to NRHE (UID) and Wrecksite identifiers. References to other sites in the NRHE include their UIDs in the text; references to designated sites on the National Heritage List have the prefix LID.

Convoy numbers use the system used by Arnold Hague as reflected in Convoyweb. The convoys repeatedly used the same numbers (00-99) across multiple phases; Hague incorporated the phase into a three or four figure number, hence:

<b>Wartime</b>	<b>Hague/Convoyweb</b>
FN.26 (Phase 1)	FN.26
FN.26 (Phase 2)	FN.126
FN.26 (Phase 3)	FN.226
FN.26 (Phase 4)	FN.326
FN.26 (Phase 5)	FN.426
....	
FN.26 (Phase 17)	FN.1626

The familiar term 'E-boat' has been used here, as it was by UK sources during the war, rather than 'S-boat' (for Schnellboot) which is perhaps more correct.

## 2. East Coast War Channels in the First and Second World Wars

The intention of this section is to develop a narrative overview of the East Coast War Channels in the First and Second World Wars that outlines the key asset types, their original phasing, their overall distribution, and spatial character.

The first question in developing these narratives is whether the ECWCs in the First and Second World War are best considered separately – as separate narratives for each conflict – or together. Each conflict has a distinctive history on the East Coast and for that reason they are best considered separately, but it is worth reviewing some of the commonalities first.

### 2.1. *Commonalities between the First and Second World Wars*

In many respects, the conflict concerning civilian shipping on the East Coast is a battle that was fought twice. The objectives were the same in both cases: for Germany to deny the safe use of the East Coast seaways by the UK; and for the UK to maintain the safe use of those seaways in the face of attack. There was also a war of attrition in play, whereby Germany sought to reduce the availability of ships and seafarers and to tie up military resources that might be used in other theatres, and the Allies sought both to reduce casualties to levels that were bearable and to make up the losses whilst also meeting the demand for military resources. Although the war of attrition was undoubtedly a factor on the East Coast, the principal concern in both wars seems to have been over whether the seaways were operational.

As noted previously, the seaways were in fact maintained throughout both wars and German efforts might be regarded as unsuccessful even though, at times, Germany had a high degree of operational control. Despite Germany's failure on the East Coast as a whole, the intensity of the danger to shipping in the North Sea did result in strategic reorganisation of activity away from the East Coast as well as numerous temporary halts to traffic. Civilian shipping on the East Coast was only able to continue with the support of major resources and by working within severe constraints. The War Channels were one of these constraints.

The ECWCs were largely common to both conflicts although details of the routes varied. Their chief characteristic was also the same in both conflicts, that is to say the ECWCs consisted of channels that were swept for mines. The channels were buoyed, patrolled, protected by defensive mines, and manifested in their navigation by thousands of ships; but fundamentally they were 'constructed' and maintained by minesweeping.

The importance of minesweeping to the ECWCs underlines another key point in common in both wars: the use of mines to attack shipping. This is at once obvious from the need for swept channels, but perhaps less obvious in popular perception of attacks on merchant shipping. The iconic image of civil shipping in the First and Second World Wars is the view of a torpedo track streaming towards a freighter in a submarine's periscope. German U-boats were certainly of overwhelming importance in the North Sea in the First World War, but principally for laying mines; surface attacks by U-boats were also important, with torpedo attacks gaining prominence only in 1917 and 1918. In the Second World War, U-boats were absent from the ECWCs for most of the war; and bombing by aircraft and torpedo attacks by E-boats were important. But as in the First World War, the constant in the Second World War was the mine. Mines were laid first by ships and then mainly by U-boats in the First World War; and by ships and U-boats early in the Second World War but then predominantly by aircraft and E-boats. In the First World War it was contact mines – which were set off by

being hit -- that were most significant. In the Second World War, contact mines were certainly deployed in large numbers but 'influence' mines triggered by the magnetic or acoustic signature of a passing ship were of particular significance. All these forms of mine could be 'swept' using different methods, hence the overwhelming need for the swept channels of the ECWCs in both wars.

Another commonality of the ECWCs in both wars was the use of aircraft. This is perhaps surprising, because long forays over the sea by aircraft might normally be associated only with the Second World War. Certainly, air power was a key factor with respect to civilian shipping on the East Coast in the Second World War: direct attacks on ships; bombing of ports and air dropped mines on the one hand, countered by fighter defence and patrols on the other. The absence of U-boats from the East Coast in the Second World War was largely a consequence of air cover. It is less widely appreciated, however, that the use of aircraft to protect civilian shipping, principally against U-boats, was firmly established on the East Coast in the First World War also (Abbatello 2011). Given how recent was the introduction of heavier-than-air flight, and the fragility and low performance of 'flying machines' at the outbreak of the First World War, the relatively advanced and routine character of air operations in 1917-1918 is remarkable. The role of First World War aviation in respect of the ECWCs is elaborated further in the sections below.

Again normally associated with the Second World War, radio and intelligence were used heavily in the First World War also, providing another commonality across both conflicts. Radio had a major role in position-fixing enemy units in the First World War through 'direction finding' (d/f): with the right equipment, radio stations could establish the direction from which the enemy was transmitting their communications; bearings from two or more stations could be combined to fix the position of the transmitter by straightforward geometry. This method was also used in the Second World War, with improved precision and the capacity to obtain fixes from short transmissions. In the Second World War the use of radio to detect objects directly – without their transmitting signals – was accomplished by radar (**radio detection and ranging**) – of much shorter range than direction-finding but used extensively to cover the ECWC. In addition to radio direction-finding, extensive use was made in the First World War of signals intelligence: intercepting and decrypting the content of radio transmissions (Beesly 1982; Grant 2002a). Famous now because of the decoding of Enigma in the Second World War, it is important to recognise that signals intelligence was also a feature of activities in the North Sea in the First World War, supported by infrastructure that put this information directly in the hands of operational staff on the East Coast. Direction-finding and signals intelligence were accompanied by other forms of intelligence: from espionage and counter espionage to the physical recovery of documents and equipment from sunken vessels (Grant 2002b; Grant 2003).

A further commonality to note is that in both wars the ECWCs sat within a complex, multi-faceted political, military and administrative system. As indicated in the introduction, this ranged from the economics of trade flows to munitions, to logistical support and to operational arrangements. This infrastructure had a material form in shipyards, naval bases, air bases, offices and requisitioned buildings all along the East Coast, and up the chain of command to the Admiralty, Whitehall and ultimately the Cabinet (Savage 1957; Behrens 1955). It was not only a matter of central government, however. Numerous other organisations were heavily engaged in civilian shipping, from Trinity House to the Shipwrecked Mariners' Society, as well as many private companies engaged in building or operating ships, manufacturing aircraft and equipment, and supplying provisions and other services. Also common to both wars were the people themselves, whether they were at sea or far from it, with multiple webs of relationships with family, communities and the

institutions of civil society. Two points are worth making about this broadening context of the ECWC: it often had a material expression, which is explored further in the section on surviving heritage assets; and it resulted in a mass of paper-based communications and records, ranging from bureaucratic forms to private letters, which now form key sources of data. A final point worth noting is that in both the First and Second World Wars – despite the intensity of the circumstances – many aspects of life continued as normal. Without implying anything about peoples' support for either war, it has to be recognised that day-to-day life continued and people did what people do. As well as all the perseverance, bravery and effort there were disagreements, disputes and conflicts: money to be made and working conditions to bemoan (Lane 1990; Monsarrat 2000). These too had material consequences; the historic environment of the ECWCs should not be expected to show only uniform steadfastness against common adversity.

## *2.2. The East Coast War Channels in the First World War*

Characterising the East Coast War Channels in the First World War in terms of their chronology, geography and special features is undoubtedly complex. There does not appear to have been a singular account of civilian shipping on the East Coast or North Sea, though many published sources have a bearing on it (King-Hall 1936; Dorling 1935). The ECWCs are a facet of both the broader question of merchant shipping in the First World War, which tends to be highly focussed on the war in the Atlantic and other oceans, and of the conflict between the German High Seas Fleet and the Royal Navy's Grand Fleet, and their various units. The story of the ECWCs in the First World War has largely fallen through the gaps, even though it was clearly of very great importance in its own right during the war. This importance is reflected both in the resources devoted to it, and the way in which it seems to have been conceptualised. The major narratives have influenced the terms in which the First World War is generally considered, but as the ECWCs have played only a minor role in these narratives, their terms are not necessarily suited to thinking about the ECWC. The material remains of the ECWCs present, therefore, a new avenue from which to consider not only the ECWC, but also the other narratives and potentially the history of the First World War as a whole.

The conflict between the naval fleets in the North Sea and the wider war on merchant shipping – which are themselves interrelated – provide important context for the ECWCs in the First World War. In broad terms, Germany's objective was to reduce the superiority of the Grand Fleet incrementally so that it could come to a fleet action on more even terms and be victorious. Victory over the Grand Fleet would make Britain's blockade untenable and give German vessels – merchant and military – freedom of action globally. Britain's objective was to bring the High Seas Fleet to action and destroy it, removing the threat to the critical supply routes to France and enabling its blockade to continue. German interest in submarines and mines was an adjunct to its overall intentions with respect to the Grand Fleet: these new weapons had the capacity to reduce Britain's numerical superiority in major warships. Accordingly, Germany undertook a number of actions using fleet units in the North Sea that were intended to draw the Grand Fleet over German mines or submarines. Britain, eager to bring about a major action with the High Seas Fleet, generally responded as required and Germany had a number of successes in sinking major RN warships with mines or submarines. However, signals intelligence and observations by RN submarines seem to have provided the Grand Fleet with a significant advantage, so Germany's intent was often evident in advance. A stalemate ensued by 1916, with the High Sea Fleet largely held in its bases, and the Grand Fleet awaiting its opportunity; both sides having concluded that submarines and mines had made the southern North Sea too hazardous for major units.

The final roll of the dice for the High Seas Fleet appears to have been catastrophic, but not because it resulted in a naval action. As the overall direction of the war turned against Germany in the summer of 1918, a plan was made for a last ditch naval attack. Sailors of the High Seas Fleet refused to take part in this action; mutiny spread from the navy and prompted widespread revolt; Germany was declared a republic and signed an armistice that brought the war to an end.

As the fleets failed to get to grips with each other conclusively, submarines and mines were transferred from their anticipated use into the unprecedented role of large-scale adoption against civilian shipping. This overall trajectory did not follow a simple route, however. Germany started laying mines immediately after the UK declaration of war; in fact it would appear that the first minelayer – the *Konigin Louise* – was already en route before war was declared. It laid mines across a shipping route, possibly with the intention of sinking naval vessels rather than merchant vessels. The *Konigin Louise* was spotted and intercepted by HMS *Amphion*, which then encountered some of the mines that had been laid, sinking whilst trying to return to Harwich. At some point around 23-26 August, mines were laid off the Tyne and the Humber by German surface vessels, again possibly with the intent of damaging warships. However, it was civilian ships that were affected – a Danish fishing vessel off the Tyne and the trawler City of Bristol off the Humber (Corbett 1920). Two more neutral vessels were lost, then a drifter and the minesweeping gunboat HMS *Speedy*, whilst trying to sweep the minefield off the Humber. Corbett notes that 'After these losses the Admiralty directed that the minefields were to be left alone and sweeping operations confined to clearing a swept channel along the coast'. Corbett also notes that the German minefields were subsequently reinforced by Britain as a defence, and that by compromising the Tyne and Humber as naval bases, the flotillas that were to be based there were freed for coastwise patrols (Corbett 1920):

As the Germans themselves had barred to so great an extent the approaches to the Tyne and Humber districts, it was now possible to use these flotillas to extend the system of continuous coastwise patrol which had been organised for the East Anglian zone after the affair of the Koenigin Luise, and eventually the German minefields were not only left untouched but were actually reinforced by our own minelayers.

Had this form of minor offensive stood alone it would have been comparatively easy to contend with, but it was supplemented by an ever-increasing activity on the part of the enemy's submarines. Both methods of attack were forms of hostility of which we had no experience, and with which the fleet itself could not deal; they could only be met by small craft specially equipped for the work. Already by September 1, besides the regular flotillas and minesweepers, there were in commission some 250 trawlers, drifters and similar craft, besides seaplanes, entirely devoted to meeting the submarine and mine attack ... The duties of the several classes of these craft were to sweep for mines, to guard the swept channels, to patrol for submarines and examine vessels to see that they were not being employed as submarine tenders or as mine-layers.

This extended extract suggests that many of the key attributes of the ECWCs – the focus on a swept channel, defensive minefields, the use of numerous minor warships supplemented by commissioned trawlers, and the use of aircraft – started to take their form within a few weeks of the outbreak of the First World War.

Unrestricted submarine warfare did not, however, commence until 1 February 1917. The intensification of German effort before this date occurred episodically as a series of 'offensives' with rules of engagement that placed limits on attacks on merchant vessels, especially neutrals. The development of these episodes is closely related to the overall politics of commerce war as well as specifics in the North Sea (Hawkins 2002). Although it

had made some preparations for minesweeping prior to the First World War, Britain had made little provision for its own use of mines (Naval Staff 1973). However, in response to their use by Germany and with particular concern for protecting cross-channel traffic against submarines – especially following the loss of the *Aboukir*, *Cressy* and *Hogue* on 22 September 1914 – Britain proceeded to construct the Dover Straits Minefield (actually located to the north of the Dover Straits, between the Thames and the Belgian Coast) and to lay minefields off Lowestoft and Harwich. Britain declared the Dover Straits Minefield on 2 October 1914 and went on to declare on 3 November 1914 that the whole of the North Sea was a war zone in which the safety of neutral shipping could not be guaranteed, effectively requiring such shipping to follow instructions as to the routes it could use (Hawkins 2002). Germany continued to probe and provoke a response from the Grand Fleet, shelling Yarmouth on 3 November 1914 and laying mines during their withdrawal, and laying mines again off Scarborough under the cover of raids there and at Whitby and Hartlepool on 16 December 1914 (Clarke 2010; Marsay 1999).

Part of Britain's reason for asserting complete control over the North Sea was a belief that mines were being laid by vessels surreptitiously flying neutral colours, but its effect was to further tighten the blockade of Germany and interfere with freedom of navigation (Hawkins 2002). The distinction between civilian shipping and military purposes was to continue to blur. As noted above, neutral shipping and fishing vessels had already been sunk by German minelaying; and the Germans had intercepted and sunk British fishing vessels in the course of its minelaying raids in August 1914. For its part, Britain had adopted a strong blockade against neutral shipping trading with Germany, asserted an unprecedented degree of control over all shipping in the North Sea, and its own mines did not discriminate. The defensive arming of some merchant vessels and fishing vessels, operations where trawlers towed submarines to trap attackers, and the subsequent introduction of secretly-armed RN ships posing as merchant vessels (Lake 2009), could all be cited as contributing to the spread of total war to civilian shipping. The biggest brake on this movement was probably the influence of the US, which Germany did not wish to provoke into joining the Allies. Hence, each time submarine warfare became more open and high profile losses to US interests occurred, so the submarines were again confined. Three U-boat offensives have been identified prior to the advent of unrestricted warfare:

First offensive	1 Feb 1915	18 Sep 1915	Start accompanied by the German proclamation of war zone around Great Britain and Ireland; end prompted by reaction to sinking of <i>Lusitania</i> , 6 June 1915
Second offensive	Feb 1916	24 Apr 1916	End prompted by reaction to sinking of <i>Sussex</i> , 24 March 1916
Third offensive	6 Oct 1916	Jan 1917	
Unrestricted submarine warfare	1 Feb 1917	11 Nov 1918	

As indicated above, the main focus on these offensives has been in respect of their implications for the Atlantic, but they were also relevant to the North Sea. It should be recalled that the restrictions on U-boats' rules of engagement did not apply to minelaying, so this continued throughout. In fact, when restrictions were reintroduced it enabled an increase in submarine mining, for example. Equally, when other forms of constraint were

placed on U-boats it could have consequences on the East Coast, such as the effectiveness of measures to close the Straits of Dover, which increased U-boat activity in the North Sea.

The campaign against unrestricted submarine warfare generally consisted of intensifying the measures already referred to: closing the Dover Straits; reinforcing existing minefields seaward of the War Channels to create a formal East Coast Mine Barrier from the Humber to the Tyne; and seeking to close the alternative exit to the North Atlantic with the Northern Barrage (Naval Staff 1973). As well as shallow defensive mines, deep mines were laid in places where they might be expected to trap U-boats. Submarines were attacked at source through bombing raids (Abbatiello 2011) and, in April and May 1918, blockship raids were attempted at Zeebrugge and Ostend (Prince 2010). Technological innovations also occurred, including improved mines and sinkers; the initial deployment of magnetic mines and indicator loops; depth charges; and hydrophones.

In December 1916, during the third offensive and not long before the start of unrestricted warfare, Admiral Jellicoe – who became First Sea Lord early that month – created the Anti-Submarine Division (ASD) within the Admiralty Staff, under the directorship of Rear Admiral Duff. One of his first proposals was for the significant growth of Royal Naval Air Service (RNAS) operations in home waters (Abbatiello 2011). Naval aviation had been active from the start of the war, but mostly focussed on reconnaissance for the fleet, the possibility of seaborne invasion, and countering Zeppelins (Gardiner 2009). Anti-submarine work had already featured in multi-purpose patrols over the North Sea, and the RNAS Airship Service undertook specific anti-submarine patrols of, for example, the Humber from Howden. However, a major expansion of both lighter- and heavier-than-air operations flowed from Duff's proposal, and the focus switched from Zeppelins to submarines<sup>2</sup>. Huge effort went in to patrolling for submarines and escorting convoys; although the number of submarines sunk by air attack was low, the presence of aircraft severely constrained the U-boats' freedom of operation (Abbatiello 2011).

In the context of British use of the air over the North Sea it should be noted that Germany was also active – especially in counter-attacking RNAS sorties towards the German coast (Hallam (PIX) 2009). However, Germany does not appear to have made extensive use of aircraft in direct attacks on shipping in the ECWCS; though one ship – SS *Storm* – is recorded as being lost to a torpedo from a German aircraft (Firth et al. 2012).

The most effective step taken against the U-boats in the First World War was the introduction of the convoy system. The idea of grouping together vulnerable ships in order to protect them with thinly-stretched escorts was initially given little consideration as a countermeasure and then resisted by the Admiralty. However, shipping losses reached clearly unsustainable levels in April 1917 – only the third month of unrestricted submarine warfare – and a decisive meeting was held on 30 April 1917 between Lloyd George, the Prime Minister, and Jellicoe (Breemer 2010). The first transatlantic convoys occurred later in May, but convoys between the Humber and Lerwick appear to have started in the period 29-30 April (Newbolt 1931). A 'new system' is recorded from January 1918 with the following codes:

UT – Humber-Tyne	TU – Tyne-Humber
TM – Tyne-Methil	MT – Methil-Tyne

<sup>2</sup> Though the anti-submarine patrols did not hold back from pursuing Zeppelins when they got the opportunity.

Vessel journeys certainly occurred south of the Humber but it is not clear whether ships sailed in 'short-distance' convoys that have not been recorded, or whether they proceeded independently (which seems unlikely). The convoys continued beyond the armistice: the last MT convoy being on 26 November 1918, which followed the surrender of U-boats at Harwich from 20 November onwards (King-Hall 1936).

### *2.3. The East Coast War Channels in the Second World War*

The ECWCs in the Second World War started off from where the First World War had left off, almost 21 years before. The War Channels themselves were reinstated, marked and swept; a mine barrage was laid across the Dover Straits starting 11 September 1939; relatively small fields of deep and shallow mines were initially put in place on the East Coast, then a massive East Coast Mine Barrier was established from December 1939 onwards (Naval Staff 1973). Convoys were introduced from 6 September: the principle ones on the East Coast being the FN (Forth-North, i.e. northwards from Southend to Methil) and FS (Forth-South: southwards from Methil to Southend) series (Hewitt 2008). Convoys of ocean-going vessels bound for the Atlantic also left from Southend, through the Straits of Dover westward through the Channel, as the OA (Outbound – Route A) series, accompanied by coasters who tagged along whilst bound for Channel ports. Although convoys were established from the start, it should be borne in mind that many ships continued to sail independently, and were at much higher risk as a result (Grove 1997).

As in the First World War, U-boats laid mines off the East Coast from September 1939 onwards, sinking a number of ships. Foynes notes that south of Flamborough, only two ships were lost through direct attack by submarine (Foynes 1994, 8). After several losses themselves, U-boats then avoided coastal waters until February 1944, and even then were mainly active in the south, south west and north, rather than on the East Coast (Hewitt 2008, 48, 194). Hence, the main contrast with the First World War is that attacks on the East Coast were not preponderantly from U-boats but from aircraft and E-boats. Nonetheless, as in the First World War it was the mine that was the key weapon, dropped by aircraft and by surface ships.

There were some initial minelaying sorties by larger surface vessels off the Humber in October 1939 and off Harwich and the Tongue Light Vessel in November (Foynes 1994). Large surface craft continued to lay mines through April 1940, but E-boats were the main source of surface minelaying later in the war (Frank 2007). Mines dropped on parachutes by aircraft posed particular danger because they were able to get right into the harbours and estuaries of the East Coast (Foynes 1994). Air-dropped mines were influence mines rather than contact mines; the mine came to rest on the seabed rather than floating up into the water column, and were triggered by the 'influence' of ships rather than being struck. Influence mines were not susceptible to being located and swept using the direct physical methods of the First World War – though these were still necessary for dealing with contact mines, which were still in use. The initial invulnerability of influence mines was devastating, and part of the narrative of the East Coast is of the succession of different types of mines and the development of countermeasures: magnetic mines – first 'blue' (from September 1939), then 'red' (April 1940), later 'bipolar' and delayed-action; acoustic mines (August 1940); combined magnetic/acoustic mines (June 1941); moored influence mines (1941); and pressure-sensitive 'oyster' mines (1944) (Hewitt 2008; Turner 2008). In general terms, it was the earliest phase of influence mines – from September 1939 to May 1940 – that caused the greatest losses, though this is not to downplay the individual significance of later mine losses.

As well as laying mines, aircraft were highly significant for direct attacks on shipping, principally by bombing and strafing. Torpedo attacks by aircraft were also made in UK coastal waters, but apparently in the north and south-west rather than on England's East Coast – though Hewitt does refer to one attack by a torpedo aircraft on FS.353 in November 1940 (Hewitt 2008, 127). Shipping was damaged in the course of attacks on ports and harbours, but also from attacks directed at the ships themselves in open water. Initial air attacks were quite light but intensified from January 1940. Lightships and other Trinity House vessels were targeted in December 1939 – January 1940 (Woodman 1983).

The invasion of the Low Countries and the fall of France in May and June 1940 had a catastrophic effect on the geography of the North Sea and English Channel from the Allies' perspective. Air attacks intensified, especially in the Channel. E-boats also appeared and – in combined air and E-boat attacks – forced an end to the ocean-bound OA convoys from the Thames (Hewitt 2008). Thereafter, large ocean-going ships predominantly used only west-coast ports – including 'emergency ports' – transhipping their cargoes to coasters for a journey down the East Coast that was considered too hazardous for the most valuable hulls (Behrens 1955).

The intense phase of attacks on coastal shipping that formed the first phase of the Battle of Britain was focussed on the Channel rather than the East Coast, but not exclusively. Hewitt notes an attack by 50 Stukas and Messerschmitt 110 fighters on FN.249 on 11 August. Although two ships were damaged none were lost; but 6 German and 4 British aircraft also went down (Hewitt 2008, 115). From late in August 1940 onwards, air attacks on shipping on the East Coast were typically made by single aircraft on 'tip and run' raids. Exceptions included the last daylight Stuka raids on shipping in the Thames, sinking the *Letchworth* on 1 November and damaging three ships a week later (Hewitt 2008, 123–124). Aircraft continued to be a major problem for minelaying and tip and run attacks throughout 1941 and into the first months of 1942, though the effects of minelaying were relieved to some degree by the construction of minewatching stations from early 1941 (Hewitt 2008, 131–132) (e.g. UIDs 1426779; 418885; 1424370).

As noted above, E-boats became active along the coast with the invasion of the Low Countries and France from May 1940, initially being most evident in the Channel but also basing themselves at Ijmuiden, The Hook and Den Helder and working across the southern North Sea to Essex, The Thames and North Kent. Their area of operations expanded to encompass the whole of the East Anglian coast, turning the War Channels into 'E-Boat Alley'. The E-boats usually worked in flotillas and attacked with torpedoes, often taking out multiple ships in a single operation. For example, two flotillas totalling 12 E-boats attacked convoys FS.429 and FN.426 in March 1941 as they passed by each other off the North Norfolk coast, sinking the *Dotterel*, *Rye*, *Corduff*, *Kenton*, *Boulderpool*, *Norman Queen* and *Togston* (Hewitt 2008). E-boats also worked singly and as minelayers, going right into the War Channels to lay both contact and influence mines ahead of the convoys (Frank 2007). The combined effect of E-boats and aircraft was such that in March to May 1941, more ships were lost off the East Coast than in the Atlantic in the same period. At this point a new EC series of convoys was introduced to speed the return of empty vessels to the coalfields (Hewitt 2008, 141).

There was a gradual turning point from about June 1941 coinciding with Germany's attack on Russia, as aircraft and E-boats were switched to the Eastern Front (Hewitt 2008; Foyne 1994). The turnaround was not sudden, however. It coincided with improvements on the British side; by late 1941 Britain 'had the measure' of mines and tip and run raids, though E-boats were still largely unopposed. Better use of coastal forces, destroyers and aircraft

started to turn the tide supported by improvements in intelligence and its use operationally. Radar on land and on ships was being used to spot approaching E-boats, whilst signals intelligence known as 'Headache' focussed on short-range traffic from the E-boats themselves, intercepted by German speakers on coastal escorts and at coastal listening stations. Although intense attacks continued to be made by aircraft, by mining and by E-boats, by February 1942 the overall balance had changed. The quantity, quality and use of equipment all made a difference in reversing German fortunes, but it also had an administrative and political dimension as concluded by Frank in the translated version of *Die deutschen Schnellboote im Einsatz* (Frank 2007, 164):

The British erected a strong system of coastal stations, gunboats, destroyers and aircraft, and they all worked together pragmatically, without rivalries or claims for independence. All were devoted to the common goal: to protect the life arteries of the nation.

Radar started to be used on aircraft and to equip anti-aircraft ships in the Thames, and the Thames and Essex coasts were also reinforced by the introduction of sea forts from February 1942. An outer screen of patrolling Coastal Forces supported by destroyers and corvettes was introduced just inside the East Coast Mine Barrage from the Thames to the Wash, known as the Z-Line (Hewitt 2008; Foynes 1994). It is worth stressing that these improvements did not stop all attacks, but they made losses 'manageable'. Although the convoys and escorts were not immune, the action moved increasingly away from the convoys themselves, to interceptions and counter offensives by Coastal Forces and aircraft further into the North Sea and across to the enemy coast (Hewitt 2008; Foynes 1994; Scott 2009). The E-boats transferred to the Channel in July 1942, returning in October as the shortening days provided greater cover of darkness for the long trips across the North Sea. They could still do considerable damage, sinking five coasters off Lowestoft in one raid in December 1942, for example (Hewitt 2008, 178).

Again without wishing to imply that the ECWCs became 'easy' – given the need for constant vigilance against attacks and care for navigating a naturally hazardous coast in convoy – 1943 and the first part of 1944 were even quieter than 1942. A key characteristic of this period was the increasing number of ocean-going ships bringing supplies and equipment in support of the planned offensive in Normandy. There were still losses to E-boats and mines, but 'strong escorts, total control of the air, and excellent intelligence' (Hewitt 2008) meant that attackers were mostly unable to get close to the tempting mass of shipping. U-boats returned to UK coastal waters in February 1944 but do not appear to have operated off England's East Coast. From D-Day, such attacks as could still be mounted by the Germans were concentrated in the Channel (Hewitt 2008; Frank 2007). As the coasts of France and Belgium were liberated, and in view of the massive need to supply Allied forces on the Continent, so the convoy routes were reorganised. The FN/FS route stayed in place, but cross-channel routes were re-introduced to key ports such as Antwerp, and these became a focus for German attacks by minelaying aircraft and E-boats still based in Holland. The post-D-Day period also saw new weapons being deployed, again mostly in the Channel and mostly unsuccessfully – including explosive motorboats; human torpedoes and midget submarines. Several sinkings are claimed or suspected to have been attributable to Seehund midget submarines in the Thames, off North Foreland and Suffolk, including the *Taber Park* and *Monarch* in March and April 1945 respectively (Porter 2010, 99; Foynes 1994). Although not used specifically against ships, V1's launched at London caused damage to ships in the docks (Hewitt 2008, 207–208); specific anti-ship missiles were developed by the Germans but they do not appear to have been deployed in the North Sea.

Although now clearly weakening, German forces maintained such pressure as they could on the East Coast right up to the end (White 2008): two ships were sunk from FS.1734 by E-

boats on the night of 21-22 February; and two more coasters were sunk by E-boats on the night of 18-19 March. The *Athel Duke* in FS.1784 was sunk by U-1274 off the Farne Islands on 16 April, though U-1274 was itself sunk as a result and lies not far off. The last losses in coastal waters were the *Avondale Park* and the *Sneland 1* in the Firth of Forth, sunk by a U-boat on 7 May 1945 – the same day that Germany signed its surrender.

### 3. The surviving record of Heritage Assets associated with the ECWCs

#### 3.1. *The ECWCs as a Battlefield*

The East Coast War Channels can be seen quite legitimately as a single, coherent battlefield, stretching from North Foreland to Berwick and beyond. This battlefield was fought over twice: from 4 August 1914 to 11 November 1918; and from 3 September 1939 to 8 May 1945. Each battle was critical to Britain's survival, and each is therefore central to understanding the story of England (and, indeed, of Europe) in the Twentieth Century. Unlike many battlefields, this one is still strewn with the material remains of combat. Many remains still lie where they fell as physical monuments not only to those who died in shuddering circumstances, but to the many thousands more who participated at equal risk. The vast majority of combatants were civilians. Awareness of these battles and their material remains is very low, especially in comparison to other battles and campaigns that may have been no less important but were certainly much shorter. It is contended here that the two battles of the East Coast War Channels are as significant to the history of England as the Somme or Gallipoli; the Battle of Britain or D-Day.

The battlefield itself is largely below low water, running from the coast up to about 30 nm offshore (though in places it is much narrower). The battlefield has an important littoral fringe comprising the ports, naval bases, air stations, wireless and radio stations and other land-based infrastructure that was so closely engaged. There is also a much wider hinterland from which the vessels sailed from and to, where they were built, and from which their crews and passengers came. Much of this hinterland is within or very close to the battlefield: many ships were built, crewed, loaded and unloaded locally. Equally, aircraft – especially in the First World War – operated only quite locally. At the other extreme, the hinterland of the battlefield was global: as Hewitt notes of Hussein Awaleh, who died of scalds and other injuries after the SS *Bradglen* was mined in the Thames in September 1941, sailors from the far reaches of the Empire were caught up in a war not of their making (Hewitt 2008, 151)<sup>3</sup>. British ships and neutrals alike had crews hailing from all over the world; and indeed the whole conflict was about maintaining links with the rest of the world upon which the south of England, in particular, depended.

As a whole, the twice-fought battlefield of the ECWCs can be regarded as a heritage asset at a landscape scale. It meets the definition of a battlefield as the place of a battle involving wholly or largely formed bodies of armed men, normally deployed and engaged on the field under formal command (English Heritage 2012a). The two battles of the ECWCs cannot be described as skirmishes, sieges or civil unrest, nor were they simply bombardments. The ECWCs battlefield is securely located and has high historical significance. It has a high level of topographic integrity with – as noted above – many physical features still present. With the right representation it is both visible and readable. It has high archaeological potential and – as discussed below – is accompanied by a great deal of documentation. It is associated with critical military innovations that had implications far beyond this battlefield, and for decades after. There are numerous biographic associations to the mighty and humble alike, and aspects of the battles are commemorated both locally and nationally, including at the Tower Hill Memorial. In all these respects, a strong case could be made for the ECWCs meeting criteria for formal designation as a battlefield (English Heritage April 2012).

<sup>3</sup> And see <http://blogs.iwm.org.uk/research/2013/03/south-asian-seamen-in-the-two-world-wars/>; <http://www.britishpathe.com/video/victim-of-nazi-frightfulness/query/victims+of+nazi+fright>; (Lane 1990, 155–188).

The ECWCs comprise a variety of other heritage assets at smaller scales – though even some of these are quite big. Their character, survival and significance are discussed under the headings below.

### 3.2. *War Channels and Minefields*

The principal heritage assets that define and distinguish the ECWCs are the War Channels themselves, and the minefields around them. Both the War Channels and the minefields had quite clear spatial extents and were physical things that strongly structured activity; although permeable to some degree, ships would disregard them only at their mortal peril. The fact that the War Channels do not have the physical presence of a road or an earthwork does not mean they were less real. Hallam's incidental account of flying over the War Channel en route to his patrol area in the 'spider web' gives a sense of its presence (Hallam 2009 45):

After passing over the well-known buoys at the approaches to the harbour, we crossed a fleet of trawlers in the emergency war channel busily engaged in the pleasing task of sweeping up enemy mines laid the evening before by an optimistic Fritz from Zeebrugge. Fifteen minutes later we had the Shipwash four miles on our port beam, and were over the shipping channel which ran parallel with the coast. Here, as far as the eye could see in either direction, was a thick stream of cargo boats, of all shapes and sizes, ploughing along on their various occasions, a striking example of the might of the British Mercantile Marine.

As this quote makes clear, the coastwise War Channels that ran parallel with the coast were accompanied on their landward side by swept channels that branched off into the East Coast ports. Additionally, on the seaward side, channels and gaps led through the minefields to the 'open' sea.

The UKHO archive holds charts showing the extents of the War Channels in the Second World War (Fig. 3) but equivalents from the First World War have yet to be located. A chart of wrecks in the First World War – prepared for RN submarines – shows the (presumed) centre line of the War Channel as a feature (Fig. 2), but as the chart covers the entire southern North Sea it is at a small scale.

Although no detailed charting has yet been found of the coastwise War Channels in the First World War, information about the seaward channels is appended to charts showing the approximate position of minefields. On the earlier charts these channels through the minefields are shown on the chart itself and annotated (Fig. 6), whereas in later examples from the same series the seaward channels are not shown on the chart but are described in an accompanying memorandum. The positions, bearings and buoyage of the channels is described, and each channel has a specific identifier, hence:

C. Channel. – The northern side of this channel, which is half a mile wide, is a line from Cross Sand Light Vessel to Smith's Knoll Pillar Buoy, and is marked by three buoys in Longs. 2° 00' 40" E., 2° 05' 20" E., and 2° 11' 20" E.

The War Channels were marked physically by buoys in both wars. These are shown on the Second World War charts, and are also shown on an unofficial chart used by an airman in the First World War (Fig. 7). Although the airman's chart does not outline the channel as such, it clearly shows the War Channel buoys, keyed according to their shape and identification letter, as these would clearly have been key navigational features to the airmen during their patrols.

The Second World War chart shows that not only were the buoys given individual identifiers, but the channels too. For example, channel 273 S runs from Great Yarmouth, joining channel

404 S from Lowestoft to the main channels, marked by buoy No. 4: channel 401 S to the south (buoy No. 3C); channel 402 S to the north (Buoy No. 6); and channel 403 S to the north north east (buoy No. 4A) (Fig. 8). Foynes notes that the channels were annotated QZS, where QZ referred to a mined area and QZS to a swept channel (Foynes 1994, 3). The chart shown in Fig. 8 has an annotation to the effect that QZ is omitted, hence channel 273 QZS is labelled 273 S.

Foynes also notes that there was also an inshore channel in the Second World War that was 'narrower and within a few miles of the coast' and was used mainly by barges and coasters plying independently over short distances. Foynes shows this 'minor swept channel' in his map on pp. 4-5 but it is not shown on the charts seen at the UKHO to date (Foynes 1994).

The channels were not static in either the First World War or the Second World War, but were moved according to changing circumstance. The descriptions of the seaward channels from the First World War include examples where channels were extended, abolished and replaced. One of the files examined at the National Archives in the course of this project includes extensive correspondence about 'Proposed alterations to searched channels between Shipwash, Cross Sand and Hearty Knoll' (ADM 1/15815) in 1942-43, illustrating the many factors taken into account in determining the routes.

It is worth detailing the infrastructure of the channels themselves because it indicates that they are not only represented physically by the remains of ships and aircraft that were within them. There is every reason to expect direct physical remains of the channels in the form of the buoys, chains and moorings to have survived. At least some of the lightships on the East Coast that were sunk in the course of the conflicts are also known to survive as wrecks (e.g. *Corton*; *East Oaze*; *East Goodwin*). Even where they did not mark the War Channels directly, the lightships were fundamental landmarks in the battlefield.

In the case of the minefields, it would be extraordinary if some of the mine sinkers from the thousands of mines that were laid are not still present: the sinkers were fairly large and substantial in themselves (see Fig. 9), and are likely to show in both sidescan and magnetometer data. Lost sweeps, kites, paravanes and other materiel – including as-yet undetonated mines – may also give the minefields a continuing presence as physical entities.

A further physical element of the ECWCs that has not been mentioned so far are the booms and gates that were installed across many estuaries (e.g. Fig. 10). Other forms of physical barrier were also employed, together with passive systems such as indicator loops. The Second World War sea forts of the Thames and Essex Coast should probably be included in this group, even though they served multiple purposes. Bull Sand Fort (UID 915963) and Haile Sand Fort (UID 1429147), both built in the First World War to protect the entrance to the Humber and used also in the Second World War, can certainly be regarded as part of the infrastructure of the ECWC<sup>4</sup>.

Controlled minefields – where mines were laid on the seabed with the capacity for them to be exploded under passing ships – might also be included in this group of assets, together with their onshore control posts. However, controlled minefields – although certainly worth

<sup>4</sup> Although clearly beyond the ECWC, the Nab Tower off Chichester Harbour should be considered in its originally intended use as a control tower for the 'MN' mine barrage that was to stretch from Dungeness to Boulogne in First World War. The Armistice was signed before the scheme was put in place, so the Nab Tower was effectively reused - in a different location and out of its original context. Nonetheless, its structure represents a significant First World War fortification.

examination – might be seen rather as a form of port defence against attack or invasion, rather than as part of the system of maintaining civilian shipping.

In terms of the onshore elements of the War Channels, consideration should be given to the Port War Signal Stations (PWSS), which are marked on the War Channel charts from the Second World War but were first built and used in the First World War. The principal role of the PWSS was in communicating with merchant vessels as they entered and left port for the channels. There are surviving examples at Spurn and Dover. Neither is designated in its own right, but the example at Dover falls within the scheduled monument of Dover Castle and is one of the features of English Heritage's property there. EXDO (Extended Defence Officer) posts<sup>5</sup> – such as an example at Blyth<sup>6</sup> – might also be considered in this bracket, as they were RN facilities principally concerned with port defence but with control over booms and other responsibilities that had a bearing on merchant traffic.

### *3.3. Ship and Aircraft Wrecks*

#### Collective Characteristics

The most numerous forms of heritage asset that are known to be present or are likely to be present are the wrecks of ships and aircraft. Definitive quantification of the number of shipwrecks relating to the East Coast War Channels in each conflict is difficult for several reasons. Nonetheless, it is clear that the numbers are large.

Queries run by the NRHE give the following totals for known sites and recorded losses in the rectangle defined above encompassing the ECWCs in each war:

1914-1918				1939-1945			
	Known Sites	Recorded Casualties	Total		Known Sites	Recorded Casualties	Total
Aircraft		4	4		9	177	186
Ships	551	819	1370		523	391	914
Wrecks	551	823	1374		532	568	1100

This gives a total of 1083 known sites from the two wars combined, and a further 1391 recorded losses; 2474 known and potential wrecks are recorded in total, though there may be other unknown and as yet unrecorded wrecks and casualties also.

The count of wrecks recorded in the Wrecksite for the same rectangle for each war are as follows:

	1914-1918	1939-1945	Total
Wrecks	1028	726	1754

As noted above, the Wrecksite does not distinguish between known wrecks and recorded losses. However, the majority of its recorded wrecks are known wrecks. In some instances recorded losses are included as wrecks with unreliable locations, but in general terms the Wrecksite does not appear to have as comprehensive a coverage of recorded losses as the NRHE. A lot of the known wrecks in the NRHE that have been ascribed to the Second World War have very little information (Cant pers. com.), so this dating may not be secure.

<sup>5</sup> See <http://www.pillbox-study-group.org.uk/index.php/advanced-pillbox-designs/part-1-a-n/exdo-posts/>.

<sup>6</sup> [http://www.pillbox-study-group.org.uk/index.php/advanced-pillbox-designs/part-1-a-n/exdo-posts/dsc\\_7940\\_1\\_2\\_3\\_4enhancer/](http://www.pillbox-study-group.org.uk/index.php/advanced-pillbox-designs/part-1-a-n/exdo-posts/dsc_7940_1_2_3_4enhancer/)

As the searches of both NRHE and the Wrecksite combine just dates with a spatial extent, they include all wrecks sunk in each period in the region, not just the wrecks that are associated with the ECWCs. However, there were very few activities not connected with the ECWCs in these areas in both wars, so the number of non-ECWC-related wrecks in these totals is likely to be low. Confidence in these numbers reflecting the actual losses associated with the ECWCs is increased when considering vessel type, cause of loss and so on, below. The possible exception to this is the figure for recorded aircraft casualties in the Second World War, because there were several air campaigns that gave rise to losses in the region that were not directly ECWC-related. Losses attributable to the Battle of Britain (other than the shipping raids at its start and end) are not really ECWC-related, nor are the numerous losses off East Anglia and Lincolnshire associated with the RAF/USAAF strategic bombing offensive. These losses could not be picked out without going through each record.

It is not easy to make straight comparisons between the number of known wrecks and recorded losses on the one hand, and historical accounts of losses on the other. For most commentators, the ECWCs is included with other home waters, so figures are not provided separately. Foynes appears to provide a comprehensive list of losses in his area of interest – from North Foreland to Flamborough – in the Second World War, but obviously this does not include losses between Flamborough and Berwick (Foynes 1994). Furthermore, Foynes appears only to have provided a list for each year, not counts. Hewitt includes figures for the losses from the FN/FS series of convoys, totalling 203 (178 losses in convoy, 10 losses of 'stragglers', and 15 losses 'out of convoy' – presumably vessels associated with a convoy that were transiting between the convoy and their port) (Hewitt 2008). Given that the FN/FS series was the main convoy on the East Coast, these numbers seem low – especially as they also include losses between Berwick and Methil. However, it should be borne in mind that many ships sailed independently of the convoys, and these were especially susceptible to loss. In fact, Grove notes that only 1 in 6 losses between September 1939 and the end of December 1940 were of ships sailing in convoy; the other five out of six losses were sailing independently (Grove 1997, 210).

Hewitt's figures for the FN/FS convoys help to reinforce the point that the wrecks represent not just the large number of losses, but the very much larger numbers of ships that travelled the coast without loss – and indeed the success of the ECWCs despite Germany's efforts. The 203 wrecks arose from 3,584 individual convoys, which themselves comprised 104,792 ships. In other words, each ship that sank in convoy also stands for 516 shipping movements without loss. As Foynes puts it 'over the war as a whole, for every ship and cargo lost another six hundred got through' (Foynes 1994, 238).

Another point to be recalled is that figures tend to focus on losses to merchant vessels, as it was the avoidance of losses to merchant vessels that spelled success or failure. The number of losses to other ships – such as minesweepers and other warships – whose only purpose was to protect the merchant vessels, tend not to be included. Foynes seems to be an exception, noting that the Nore Command lost 200 vessels in the Second World War; and as Foynes notes, this figure does not include losses to the Rosyth Command, which was heavily involved in escorts and patrols.

All in all, the NRHE and Wrecksite figures probably reflect fairly the magnitude of losses associated with the ECWCs in each war, i.e. in the order of 1300 ships lost on the ECWCs in the First World War, represented by 600-1000 known wrecks; and 1000 ships lost in the Second World War, represented by 500-700 known wrecks. Even acknowledging the

problems inherent in these statistics, the ECWCs is plainly associated with large numbers of heritage assets that are in the form of wrecks.

These numbers can be queried to give a clearer understanding of the character of these heritage assets collectively. In terms of cause of loss, for example, the NRHE has provided the following breakdown:

	1914-18				1939-45			
	Known Wrecks	Recorded Casualties	Wrecks + Cas	% of Total	Known Wrecks	Recorded Casualties	Wrecks+ Cas	% of Total
Mined	235	265	500	56%	234	61	295	42%
Torpedoed	172	145	317	36%	51	45	96	14%
Gun action	16	42	58	7%	7	45	52	7%
Depth charged	6	2	8	1%	12	1	13	2%
Shot down		4	4	0%		0	0%	
Bombed					74	68	142	20%
Collision					47	50	97	14%
Total	429	458	887		425	270	695	

These figures indicate that the heritage assets correlate with the documented record: mines were the chief cause of loss in the ECWCs in both the First and Second World Wars. Although significantly less than mines, many losses were attributable to torpedoes in the First World War; whilst in the Second World War, bombs were a greater cause of loss than torpedoes. In fact, in the Second World War the numbers suggest that as many ships were lost due to collision as were lost from torpedo attacks. Being able to break these numbers down to the 'weapons systems' used to deliver these munitions would provide a yet clearer picture of the conflicts.

A similar pattern – as far as weapons if not weapons systems – is apparent in the Wrecksite data:

	1914-18		1939-45	
Mine	378	36.8%	304	41.9%
Torpedo	209	20.3%	74	10.2%
Gunfire	75	7.3%	3	0.4%
Ran aground	70	6.8%	28	3.9%
Charges	67	6.5%	1	0.1%
Scuttled	47	4.6%	0	0.0%
Collision	43	4.2%	59	8.1%
Foundered	14	1.4%	4	0.6%
Depth Charge	3	0.3%	2	0.3%
Air Raid	1	0.1%	106	14.6%
Naval battle	0	0.0%	6	0.8%
Wrecks attributable to causes listed	907		587	
Total Wrecks	1028		726	

Again, mines dominate both wars, and appear even more significant to Second World War losses than the First World War. Air raids replaced torpedo attacks as the second most important cause of loss in the Second World War. Collectively in the First World War, gunfire, charges and scuttling – all usually associated with direct attacks by submarines – total 189, or 18.3%; approaching the losses caused by torpedoes.

The Wrecksit data can be queried chronologically also:

Year	Wrecks	Months	Wk/Mth	Year	Wrecks	Months	Wk/Mth
1914	78	5	15.6	1939	106	4	26.5
1915	179	12	14.9	1940	230	12	19.2
1916	289	12	24.1	1941	224	12	18.7
1917	260	12	21.7	1942	69	12	5.8
1918	190	10	19.0	1943	40	12	3.3
				1944	26	12	2.2
				1945	31	4	7.8
Total	996	51	19.5		726	68	10.7

The contrast between the two wars is marked. In the First World War, losses grew to a peak in 1916 (before the advent of unrestricted warfare, it should be noted) after which they remained at a high level, but did fall to some extent as convoys took effect. In the Second World War the peak was at the start, with rates of loss comparable to the First World War in 1939-41. Thereafter the rate of loss fell to quite low levels, though rising slightly in Germany's desperate final months.

The combination of chronology and cause of loss is instructive in the First World War:

	Gunfire (G)	Charges (C)	Scuttled (S)	Combined G-C-S	Torpedo	Mine
1914	1	1	0	2	0	50
1915	11	15	9	35	21	88
1916	33	22	19	74	16	123
1917	19	19	13	51	88	81
1918	11	10	6	27	84	28
	75	67	47	189	209	370

NB: Losses to Gunfire; Charges and Scuttling shown individually (in grey) and combined (G-C-S)

On the basis of these figures, U-boats do not appear to have been especially active in the ECWCs in 1914; they were still operating with the High Seas Fleet, and even the losses to mines are attributable to mines laid by surface vessels. In 1915, gunfire, charges and scuttling are preferred over torpedoes; the rules of engagement required that the character of the vessel be ascertained before being attacked, and as few torpedoes were carried they were conserved. The increasing use of mines probably reflects the introduction of minelaying submarines to the Flanders Flotilla from October 1915. The use of mines increases significantly in 1916, and there are also many losses to gunfire, charges and scuttling; reflecting the U-boat offensives against commerce but also that the terms of engagement were still restricted. The advent of unrestricted submarine warfare in early 1917 sees a massive increase in the use of torpedoes and a progressive fall in the methods where U-boats have to reveal themselves. The effect of mines may have fallen in 1917 and 1918 because U-boats are concentrating on direct attacks with torpedoes; but the introduction of convoys preceded by minesweepers may have played the greatest role.

The losses recorded in the Wrecksit can also be broken down to better understand the overall composition of the shipping that was lost:

	1914-18	1939-45		1914-18	1939-45
Cargo	481	354	British	702	562
Passenger/cargo	26	5	German	27	11
Passenger	6	6	French	15	14
Tanker	3	30	Norwegian	108	34
Trawler	187	82	Swedish	41	9
Drifter	22	28	Danish	26	6
Smack	45	1	Dutch	36	26
Patrol Boat	12	10	Belgian	6	8
Submarine	31	5	Canadian	2	2
Minesweeper	43	44	American	2	2
Aircraft	0	5			
	856	570		965	674

The composition of the 'fleet' of heritage assets also accords with the historical record. The vast majority of vessels were cargo ships, and overwhelmingly British. Fishing boats were also lost in considerable numbers, though there is some inconsistency in how the data has been recorded in this respect, as many of the trawler records in the Wrecksite data are actually for HM Trawlers employed as minesweepers or patrol vessels at the time of loss. The relatively high number of submarines are predominantly U-boats. The figures for nationality demonstrate in particular the contribution made by the Norwegian merchant fleet (Cant 2013); and also the danger to neutrals in the First World War.

Further statistical overviews can be derived from the Wrecksite data for vessel tonnage and loss of life, for example. Although some large ships were lost and in some cases there was heavy loss of life from individual ships, in the main the ships that typified the ECWCs were of moderate size or small. The number of people lost on individual ships was also relatively small. Only in a few cases were large numbers killed in a single loss, and these were usually warships. Other than (predominantly minor) warships, vessels carrying large numbers of people – troopships; passenger liners – were kept away from the dangers of the East Coast. The greatest loss of life from single wrecks in the First World War did not actually arise from enemy action: 792 died on the battleship HMS *Bulwark* when it exploded accidentally at Sheerness; and 135 on the minelayer HMS *Princes Irene*, again as a result of an accident at Sheerness (Smith 2005). The hospital ship *Rohilla* came to grief near Whitby as a result of navigational error, with the loss of 84. Enemy action was, however, to blame for the greatest single instances of loss of life in the Second World War: about 400 were lost when the French requisitioned minesweeper *Emile Deschamps* hit a mine in the Thames whilst returning from Dunkirk. HMS *Vortigern* (147 lost), HMS *Exmoor* (104 lost) and HMS *Vimiera* (91 lost) were all destroyers that sank quickly as a result of enemy action. For a civilian vessel, the high loss of life on the *Simon Bolivar* was exceptional for the East Coast. Unlike the vessels in military service referred to above, the *Simon Bolivar* was a passenger liner carrying 400 passengers and crew from Holland to Suriname that sank with the loss of 102 lives at Harwich in November 1939. The vessels most often lost on the ECWCs – cargo ships, fishing boats, minesweepers – only had small numbers aboard. In consequence, even the loss of a few lives could be in fact the entire crew. Each loss was a tragedy; and the apparently small numbers became huge once multiplied by the number of wrecks on which lives were lost.

These quantitative perspectives on the ECWCs have a geographical dimension. As noted previously, the Wrecksite can be used to carry out spatial queries, although these cannot be exported to enable more complex manipulation. Nonetheless, the basic spatial queries are sufficient to say that geographical patterns of wrecks varied considerably between the two

wars. Even simple comparisons of total losses show marked contrasts: such as the concentration of wrecks off the North Yorkshire Coast in the First World War but not in the Second (Fig. 11); and the concentration of losses in the mouth of the Humber in the Second World War but not in the First (Fig. 12). These are likely to reflect documented differences between the two conflicts, but the material differences in the patterning of wrecks may also raise new questions. It is also likely that distinct geographies can be drawn out against each of the different quantitative perspectives outlined above: by year; month; cause of loss; type of vessel and so on.

Collectively, the most numerous heritage assets of the East Coast War Channels have a great deal to tell. The initial summaries above are necessarily broad brush because of the limitations of recording, but they clearly point the way towards analysis of the story of the ECWCs on the basis of the material remains, not just on the documentary record. This is important because the physical remains can prompt and challenge the documentary record. The physical remains are also important because there appears to be a fair degree of correlation between the historical record and the archaeological record; this means that the archaeological record can provide a reasonably representative physical starting point from which people can start to explore the many facets of the ECWC.

### Individual Characteristics

Starting to unpick the character and potential significance of each of the wrecks in the ECWCs is clearly too great a task to be attempted in a scoping project. Nonetheless, some general observations about the characteristics of individual wrecks in the ECWCs are worth making:

- As shown above, the wrecks have a value collectively. However, both secondary sources and primary documents such as survivors' accounts make it plain that each wreck has an individual story. Hence, the ships of the ECWCs are not just a mass. They can each be considered in an individual context that informs or illustrates the story of the conflict at that specific time and place. Understanding and appreciating the ECWCs has to be 'bottom-up' – based on the aggregation of the specifics of individual wrecks – as much as 'top-down', working from overarching narratives.
- Whilst acknowledging both their collective value and their individual significance, it should also be recognised that some wrecks have group value. This is clearly observable in the ECWCs where ships commonly travelled in groups and were attacked by other groups of ships and aircraft. There may also be group value with other marine heritage assets – such as minefields, mine lays or segments of War Channel – and indeed with onshore heritage assets such as radar stations or Y stations. Numerous instances of group value can be identified: the *Dirk* and the *Caroline* lost off Flamborough on the same convoy in 1918 (see below); the 11 Scarborough trawlers sunk by the U-57 in one episode in 1916<sup>7</sup>; the seven ships sunk by E-boats in their attack on FS.429 and FN.426 in March 1941, and so on. In some instances – such as the Scarborough trawlers – the association between connected wrecks is included in the NRHE record; but other examples of associations are not noted. Even where a group is recognised in the NRHE, its implication in terms of understanding, appreciation and management has yet to be elaborated.
- Irrespective of their wartime careers, one consequence of the cataclysmic loss of ships in the First and Second World Wars is that the ECWCs provides a cross-section

<sup>7</sup> <http://www.scarboroughsmaritimeheritage.org.uk/auboatlog.php>

of vessels at the time. This cross-section is shaped to some degree by the circumstances of each war, but the point holds that in examining the vessel wrecks of the ECWCs we are not only studying wartime remains; we are studying the history of shipping as a whole, including peacetime. This is especially true of merchant and fishing vessels, including those fishing vessels requisitioned as minor warships; but it is also true of warships too, insofar as those used on the ECWCs tend to have been older craft.

- The survival and condition of individual wrecks varies widely, not least because of the efforts to 'clear' wrecks during and after each war to reduce the hazard to navigation in the relatively shallow areas of the North Sea. Further damage will have occurred as a result of other human-induced and natural processes subsequently. As a result, some wrecks appear to be in a relatively poor state. Other appear to retain a fair degree of coherence and structural integrity. Information on survival and condition is not generally recorded in the NRHE, but a basic understanding can sometimes be obtained from comments in the 'survey history' of UKHO reports, which are included within the Wrecksite. Descriptions relating to the state of the wreck are usually based on their appearance from a hydrographic survey perspective; a better assessment might be obtained from high resolution geophysical survey and/or diver observations. Information on the survival and condition of wrecks in the ECWCs has not been correlated previously, so an overview is not possible, other than to note that the variation between individual wrecks is likely to be considerable.
- A final point worth bearing in mind is that many wrecks form relatively closed assemblages of whatever was being carried on board at the time of loss. In many cases the wrecks have been subject to major disturbance – principally clearance for navigational purposes – but they still contain cargoes, equipment and personal possessions that give a direct insight into maritime activity and life on board. These heritage assets didn't go gradually out of use, or find themselves being used for other purposes; they entered the archaeological record abruptly. Such material may retain an interpretable degree of integrity as an assemblage even if there has been major damage to the structure of a wreck. The archaeological value of artefactual material from wrecks in the ECWCs should not be dismissed.

### Types and Classes: Vessels

Again, the character of this project as an appraisal does not allow a detailed assessment of all the different classes and types of vessels represented in the ECWCs, but such an effort would certainly be warranted to better understand the resource and provide a basis for gauging significance.

The broad classes of vessel evident in the ECWCs are as follows:

- Merchant Vessels;
- Fishing Vessels;
- Minor Warships (Allied);
- Warships (German);
- Service Vessels.

Each of these classes can be broken down into types, and could then be considered in terms of chronology, spatial distribution, condition and so on. Although they include classifications of vessel type, neither the NRHE nor the Wrecksite datasets are currently suitable for such an exercise. In the case of the NRHE the use of multiple terms generates duplicates and

hampers this sort of analysis, and in the case of the Wrecksite there is inconsistency in the use of terms and the terms chosen do not necessarily reflect the themes relating to shipping that might be expected to be important in the ECWCs.

There is a particular need to break down the large numbers of cargo vessels into types, or a combination of types and sizes. Cargo ships have particular designs and forms, including standard wartime designs that were introduced to facilitate increased production to address the volume of ships being lost. The application of a more refined set of terms for merchant vessels would help in understanding the history of the ECWCs and in gauging the significance of specific wrecks. As well as types, the earlier sections of this report have shown that there is scope to start breaking down merchant shipping in terms of characteristics such as tonnage and nationality; but also in terms of cargo (often coal, but not always); port of departure; intended destination; ship builder; propulsion; ship owner and so on. Guidance already developed by English Heritage (English Heritage 2012b) could be applied to cargo vessels, bearing in mind the need to consider the whole biography of wrecks that are present in the ECWCs in terms of their build, use and loss.

Fishing vessels could also be broken down more effectively according to type in the ECWCs, but the most important distinction that needs to be consolidated is that between fishing vessels engaged principally in fishing and fishing vessels engaged principally in military activity at the time of loss. The impact of the conflict on fishing vessels engaged in fishing during both wars warrants particular attention (D'Enno 2010; Elphick 1999, 36). Other distinctions ought to be drawn more carefully also. Not all military trawlers were engaged in minesweeping; some were adapted as patrol craft and/or anti-submarine craft. A more consistent distinction is also required between requisitioned fishing vessels, and vessels built by the Admiralty (Toghill 2003; Toghill 2004). This would enable vessels being used for military purposes to be considered alongside other minor warships, and for wartime fishing to be considered in its own right.

Warships usually have the advantage of an explicit classification of types, but again there is a case for making sure that this is applied consistently with respect to minor warships. As noted above, the consideration of requisitioned craft such as fishing vessels – but also recreational craft – warrants greater attention: trawlers, drifters, yachts, paddle steamers. The full range of types built as minor warships also requires elaboration, including the following, even if not all of them are represented physically by wrecks in the ECWCs:

- Motor Minesweepers (MMS)
- Motor Launches (ML)
- Harbour Defence Motor Launches (HDML)
- Motor Anti-Submarine Boats (MASB)
- Motor Torpedo Boats (MTB)
- Motor Gun Boats (MGB)
- Steam Gun Boats (SGB)

Moving up in size, the corvettes, destroyers, submarines and small cruisers used on the ECWCs can each be considered in terms of their types and classes. The likely effect is that wrecks that appear anonymous in quantity will be seen to be much less numerous; and their significance will be more evident.

The intention here is not to break down the numbers in order to encourage a ‘one of each’ stamp collection of heritage assets, or to use type to disproportionately amplify significance by reference to a new-found uniqueness. Rather, a finer-grained understanding of types and classes of vessels should enable a much clearer understanding of how the ECWCs functioned as systems in each war.

As noted above, vessels under the German flag are much less numerous than those of Allies and neutrals in the ECWCs. German losses were sustained largely on the other side of the North Sea; all those lost in the ECWCs were U-boats or E-boats, with one exception. German U-boat wrecks in English waters have recently been subject to a detailed assessment by English Heritage<sup>8</sup> supplemented by fieldwork (Wessex Archaeology 2013). In contrast, of the 14 E-boats recorded by the Wrecksite as lost off the East Coast within the UK Continental Shelf, none appear to have resulted in known physical remains. The only vessel other than a U-boat or an E-boat was the *Konigin Louise*, sunk by HMS *Amphion* at the outbreak of the First World War whilst minelaying with the loss of 129 crew, just within the UK Marine Area. In view of it being lost in the first naval action of the war, and laying mines that were to dominate the ECWCs in the First World War, the *Konigin Louise* is clearly a heritage asset of considerable significance.

The service vessels that warrant more detailed thematic consideration encompass light vessels and tenders; a range of auxiliary naval craft such as boom defence vessels, and tugs and salvage vessels. Trinity House vessels – both Light Vessels (LVs) and tenders (THVs) – were highly exposed in both wars. The Light Vessels were aids to navigation on the front line of a warzone; tended by THVs that also undertook all the work required to install and maintain buoys both for the War Channels and more generally (Woodman 1983). Two Light Vessels (Corton – mined; and Cross Sand – collision) appear to have sunk in the ECWCs in the First World War, and THV *Irene* was lost to a mine near Tongue LV with the loss of 20+ crew. Both THVs and LVs seem to have been expressly targeted for air attack in the Second World War, especially in 1940 and 1941, but they were also endangered by mines. Some THVs and LVs were damaged and suffered casualties – even fatalities - without the vessel being lost. Other vessels did not escape. About eight LVs were sunk in the ECWCs in the Second World War, as well as the following THVs:

- THV *Reculver* – lost to a mine in the Humber in October 1940 having previously suffered a major air attack the previous January;
- THV *Argus* – lost to a mine in the Thames in November 1940 with the loss of all but one crew (see below);
- THV *Strathearn* – lost to a mine off Essex in January 1941 with the loss of 15 crew.

In view of the key role of Light Vessels in navigation by air and sea in both wars, and of the front line role of Trinity House in maintaining navigation, the LVs and THVs lost in the ECWCs might be regarded as having particular significance.

Another critically important form of service vessel on the ECWCs in the First and Second World Wars were the lifeboats of the RNLI. Many launches were made in extraordinary conditions, and thousands of lives saved; but it appears that no lifeboats were actually lost in the ECWCs in either war. This is a case where absence from the marine historic environment should not be allowed to imply historical absence or lack of significance: it is important that the role in both wars of lifeboat stations adjacent to the ECWCs be factored into the consideration of these buildings, many of which are Listed Buildings.

<sup>8</sup> <https://www.english-heritage.org.uk/caring/first-world-war-home-front/war-at-sea/>

Many vessels that suffered critical damage in the ECWCs did not end up as wrecks because they were saved by tugs, whilst salvage vessels sought to remove wrecks in order to enable safe navigation or to recover reusable components and materials (Foyne 1994, 296–309). Tugs, salvage vessels and other auxiliaries were, therefore, integral to the operation of the ECWCs and warrant consideration alongside the bigger classes already discussed. Drawing on the Wrecksite, examples of auxiliary vessels from the ECWCs include seven tugs lost in the First World War and eleven lost in the Second World War, plus dredgers, pilot vessels, boom defence vessels, examination vessels, net layers and the minelayer *Nautilus* of the Royal Dutch Navy. Vessels such as these have significance because they help broaden peoples' awareness of the range of shipping implicated by the ECWCs and underline the fact that vessels only indirectly connected to fighting and commerce were also vulnerable to mines, bombs and torpedoes.

#### Classes and types: Aircraft

Aircraft played a very important part in the ECWCs: in extensive Allied anti-submarine work in the First World War; as a key form of German attack both directly and indirectly (by mining) in the Second World War; and also in Allied maritime defence and counter-offensive. Losses certainly occurred, but the number of known sites in the NRHE is low: there are no known wrecks recorded from the First World War and just nine from the Second World War. Even the number of casualties in the NRHE in the First World War is low – just four Zeppelins. The number of casualties in the Second World War is higher at 177, but even this is likely to be only a proportion of documented losses reflecting the availability of sources rather than historical patterns.

The majority of aircraft casualties from the Second World War are German bombers and fighters, but it is plain that not all of them were involved in anti-shipping operations. The NRHE records indicate that many were losses arising from attacks directed towards land targets or port cities. Nonetheless, some of the German casualties are shipping related, either being types used predominantly in that role (such as He 115 float planes), attached to units engaged in attacks on shipping (Kuestenfliegergruppe / Ku.Fl.Gr. – coastal flying corps), or described in the record as carrying out mining, for example.

Most of the Allied aircraft casualties appear to be losses during training or exercises, with some instances of bombers lost as they crossed the North Sea to and from the Continent. There are, however, two examples of the NRHE noting casualties whilst patrolling coastal convoys, both Hurricanes (UID 1387577; 1354234).

As previously noted with respect to other heritage asset types, a relatively low number of recorded assets – whether actual sites or casualties – should not be interpreted as either a lack of activity or a low level of significance. In both the First and Second World Wars, huge effort went into providing air cover to support shipping (Davis 2007; Owers 2004a; Owers 2004b; McNeill 2003), and further work is required to address its apparent absence both by seeking to enhance the NRHE's record of sites and casualties, and by properly recognising the importance of the onshore infrastructure that made coastal flying possible. Certainly, it is not the case that coastal flying in the First World War was immune from aircraft ditching, crashing or otherwise coming to grief at sea. Nor can it be assumed that First World War craft were so flimsy as to leave no trace on the seabed. There is a report in FlyPast Magazine, for example, of a Clerget 9 cylinder 130hp rotary engine having been brought up in the nets of the fishing boat Courageous II from the Humber, in the same area that a badly-corroded Lewis gun was trawled up (Anon. 1981). Although the report speculates that

the engine and gun may have been from an Avro 504K, the 9 cylinder 130hp Clerget 9B was also used in Sopwith Baby floatplanes, which – armed with a Lewis gun and bombs – were used extensively in anti-submarine roles on the East Coast.

The RNAS (later RAF) used land planes, float planes and flying boats in their marine operations, some of which were large with multiple engines and can be expected to have formed wrecks on the seabed in some circumstances at least. Consideration also needs to be given to the potential archaeological traces of lighter-than-air craft such as airships (predominantly semi-rigid and non-rigid) and balloons, especially kite-balloons, which played a very significant role in anti-submarine work (Ford 2004).

German air attacks on shipping, and Allied defence and counter-offensives within the area of the ECWC, clearly warrant specific attention given their historical importance. Existing NRHE records provide an initial basis for distinguishing between German anti-shipping activities and other campaigns, but there is no doubt that considerable enhancement could be carried out. The record of aircraft wrecks and casualties ought to be brought up to a level where it can complement both the record of ships lost by bombing and air-dropped mines, and the record of the defensive systems of coastal radar stations, airfields and other infrastructure.

Guidance on the significance of air crash sites is set out in *Military Aircraft Crash Sites* (English Heritage 2002).

### *3.4. Heritage Assets Onshore*

It should be clear that the effort to maintain civilian shipping during the First and Second World Wars involved a great deal of onshore infrastructure. Heritage assets onshore are more readily apparent in the historic environment, and have been subject to previous archaeological effort in recording and investigation, including specific programmes. As a result, there is already a great deal of material to draw upon. However, the maintenance of shipping on the East Coast in the two wars has not really been identified as a key theme in previous work, so this dimension of the significance of onshore assets has not always been fully recognised. Hence, the resulting records, management and protection are not necessarily comprehensive or coherent. There is a case, therefore, for reviewing the 'known' historic environment of the East Coast afresh through the prism of the ECWCs.

Key to understanding civilian shipping in the ECWCs is the role of the civil ports and harbours that were the places of departure and destination. The huge effort directed to civilian shipping – both merchant and fishing – can be expected to have had material consequences for the historic environment of ports, harbours and their communities up and down the East Coast. As well as wharves, quays, fish docks and their associated infrastructure, both wars had implications for shipbuilding and repair, ranging from the huge capacity of shipbuilding centres such as the Tyne, Wear and Thames, to smaller scale facilities involved in building minor warships and in patching up damage. It should also be borne in mind that the military presence in many harbours would have required extensive civilian support services, hence there was a blurring of civil and military roles onshore as well as offshore.

Many of the ports that were implicated directly in the ECWCs are being assessed as part of the *England's North Sea Ports* project (EH 6377) which is currently underway. This project can be expected to provide a good basis for better understanding the civilian aspects of these ports in the First and Second World Wars in particular.

## Naval Bases

Naval bases are multi-functional entities and in both wars the continuity of civilian shipping was not the only concern of the RN naval bases on the East Coast. Their roles with respect to capital ships were quite limited, but there was still offensive activity by – for example – cruisers, destroyers and submarines based at Harwich and in the Thames. Nonetheless, the ECWCs formed a key sphere of action for the naval bases, hosting minesweeping flotillas, patrol craft, and coastal forces to combat E-boats. The East Coast was split between two commands: Nore, from the Thames up to Flamborough; and Rosyth from Flamborough up around the Scottish Coast. Each Command had sub-commands and bases. Shore establishments were named as if they were vessels – as ‘stone frigates’ – which would sometimes include an actual flagship. Some of the key establishments relating to the ECWCs are as follows, split by Commands and Sub-commands (based on Table 21, Francis and Crisp 2008):

Commands	Sub-Commands	Bases	Name	Function
Rosyth	Newcastle	Blyth	HMS <i>Elfin</i>	Submarine Base
			HMS <i>Elfin II</i>	Coastal Forces Base
		Newcastle	HMS <i>Calliope</i>	
		Sunderland	HMS <i>Satyr</i>	
		Hartlepool	HMS <i>Paragon</i>	Minesweeper Base
Nore	Humber	Hull		
		Grimsby	HMS <i>Beaver</i>	
			HMS <i>Calonsay</i>	Minesweeper Base
			HMS <i>Royal Charter</i>	Minesweeper Base
		Immingham	HMS <i>Beaver II/III</i>	
			HMS <i>Wallington</i>	
	Harwich	Great Yarmouth	HMS <i>Kingfisher</i>	Auxiliary Patrol Base
			HMS <i>Midge I/II</i>	Coastal Forces Base
			HMS <i>Miranda</i>	Minesweeper Base
		Lowestoft	HMS <i>Europa</i> ( <i>Pembroke X</i> )	RN Patrol Service (Sparrow's Nest)
			HMS <i>Martello</i>	Auxiliary Patrol Base and Minesweeper Base
			HMS <i>Minos</i>	Naval Base; Harbour Defence Base
			HMS <i>Romola</i>	Minesweeper Base
			HMS <i>Mantis</i> (formerly HMS <i>Minos II</i> )	Coastal Forces Base
		Harwich	HMS <i>Badger</i>	Minesweeper Base
			HMS <i>Bunting</i>	
		Shotley	HMS <i>Shotley</i>	
		Ipswich	HMS <i>Bunting</i>	Auxiliary Patrol Base
		Felixstowe	HMS <i>Beehive</i>	Coastal Forces Base
	Nore	Brightlingsea	HMS <i>Nemo</i>	Auxiliary Patrol Base
		Clacton	HMS <i>Osea</i>	Motor Boat Base
		Southend	HMS <i>Leigh</i>	
		Sheerness	HMS <i>Minerva</i>	Reserve Fleet
			HMS <i>Wildfire</i>	
		Chatham	HMS <i>Neptune</i>	Reserve Fleet
		London		

Although the majority (possibly all) of the facilities associated with these bases will have gone out of military use, some will survive as heritage assets and may already be protected by designation. With respect to the ports being assessed in the course of the *England's North Sea Ports* project, the identification of surviving assets relating to naval activity in the ECWCs, and recognition of their significance in this context, would be welcome. The Sparrow's Nest in Lowestoft is just one example. It played a central role in the operation of the Royal Naval Patrol Service in the Second World War (Lund and Ludlam 1972; Sutherland and Canwell 2010) and the RNPS memorial, which is a Listed Building (LID 1385386), is in an adjacent Registered Park and Garden (LID 1001621). The RNPS Association and its museum are based in some of the few surviving original buildings of the Sparrow's Nest, but the national importance of the site in the context of the ECWCs and the wider actions of the RNPS does not appear to be recognised.

As well as assets that were used generally in connection with the ECWCs, consideration is warranted towards assets that had a specific functional use relating to civilian shipping and its protection. Specifically, heritage assets relating to ECWCs command, control and communication could be addressed. The system of plot rooms and bunkers used to assimilate intelligence and direct resources is an example (Foynes 1994, 225–226), including Naval Plotting Rooms such as the bunkers of the Area Combined Headquarters at Chatham (Nore) and Pitreavie Castle (Rosythe – in Scotland but covering the coast down to Flamborough). There were Sub-Command Naval Plotting Rooms too, such as the bunker beneath Hamilton House in Parkstone, Harwich<sup>9</sup> and at Newcastle, Immingham and Great Yarmouth. Equally, the key East Coast ports were provided with Port War Signal Stations (PWSS) that were used in both the First and Second World Wars for communicating with vessels entering and leaving port. Their locations are mapped, there are examples in the NRHE, and there are surviving remains in at least some cases; but their significance as key sites in the functioning of the ECWCs does not appear to be recognised. The physical infrastructure of the Naval Control Service – which liaised with merchant shipping – might also be identified and recognised for its role.

### Air Stations

The importance of air activity in the ECWCs has been underlined above, as well as the apparently low number of known heritage assets that represent this activity. The onshore facilities that enabled the exercise of air power are therefore significant on their own merits and also in representing the role of air activity in the ECWCs as a whole.

Air activity in support of civilian shipping in the ECWCs in the Second World War made use of conventional land planes for maritime patrol and fighter cover. Patrols fell within the remit of Coastal Command, but Fighter Command also responded. Coastal Command was also responsible for anti-shipping counter-offensives against E-boats later in the war. The ECWCs fell between 15 Group to the south of Flamborough and 16 Group to the north. Close to the coast in the vicinity of the ECWC, Coastal Command operated from RAF Thornaby in North Yorkshire, RAF North Coates in Lincolnshire, and RAF Bircham Newton and RAF Docking in Norfolk (McNeill 2003).

In contrast to the relatively few air stations used by Coastal Command in the Second World War, in the First World War there were numerous stations along the East Coast, including seaplane stations for flying boats and float planes in the coastal zone itself; airfields for land planes used on marine operations; and balloon and airship stations. The following list –

<sup>9</sup> <http://www.subbrit.org.uk/rsg/sites/h/harwich/index.html>

ordered north to south –has been compiled from *Military Command and Control Organisation* (Francis and Crisp 2008), though a number of other stations near the East Coast may have also been used in these roles (Davis pers. com.):

Station	Command	Role (see Key)			Notes
New Haggerston	Tyne	A			Anti-Submarine Patrol Station
Seahouses	Tyne	A			Anti-Submarine Patrol Station
Ashington	Tyne	A			Anti-Submarine Patrol Station
Cramlington			B		Non-Rigid Patrol Station (under construction 1918)
Tynemouth	Tyne	A			Anti-Submarine Patrol Station
South Shields				X	Repair Depot
Seaton Carew	Tyne	A			Anti-Submarine Patrol Station
Seaton Carew II	Tyne		S		Seaplane Station
Redcar	Tyne	A			Anti-Submarine Patrol Station
West Ayton	East Coast	A			Anti-Submarine Patrol Station
Atwick	East Coast	A			Anti-Submarine Patrol Station
Hornsea Mere	East Coast		S		Seaplane Station
Owthorne	East Coast	A			Anti-Submarine Patrol Station
Howden				R	Rigid Airship Patrol Station
Barlow (Selby)				X	Construction (Rigids – Armstrong Whitworth)
Killingholme	East Coast		S		Seaplane Station (USN)
Greenland Top	East Coast	A			Anti-Submarine Patrol Station
Immingham	East Coast		B		Balloon Base
North Coates Fitties	East Coast	A			Anti-Submarine Patrol Station
Yarmouth	Lowestoft	A			Anti-Submarine Patrol Station
Hickling Broad	Lowestoft		S		Seaplane Station
Lowestoft	Lowestoft		B		Balloon Base
Pulham				X	Airship Experimental Station
Aldeburgh				X	Marine Observers' School
Felixstowe	Harwich		S		Seaplane Station
Shotley	Harwich		B		Balloon Station
Eastchurch				X	Marine Observers' School
Kingsnorth				X	Construction (Non-Rigids – Admiralty)
Sheerness				X	Balloon Training Base
Westgate	Nore		S		Seaplane Station
Manston	Nore	A			Anti-Submarine Patrol Station
Dover St. Margaret				X	Marine Operational Pilots' School

#### Key to roles:

A = Marine (Aeroplane) Operations Station

S = Marine (Seaplane) Operations Station

B = Marine Operations (Balloon) Bases and Stations

R = Marine Operations (Balloon) Bases and Stations – Rigid

X = Training and Repair Marine Operations Stations; Construction Facilities

Remains dating to the First World War are still present at stations such as Killingholme, Seaton Carew II (Fig. 13) and South Shields (Davis pers. com.), and an overarching review of survival, condition and significance of the RNAS Stations relating to the ECWCs would appear to be warranted.

### Other Military Infrastructure

Review is also warranted in respect of other forms of infrastructure directly involved in the ECWCs. In some cases this can be achieved on the basis of detailed work already carried out or in progress, to highlight the relationship with the ECWCs. For example, several of the radar stations that were developed along the East Coast have already been investigated and in some cases designated. This series of 'K' stations operated as a system directly concerned with the ECWCs, seeking to provide 'surface watching' capability against approaching E-boats and also cover against low flying aircraft making direct attacks on shipping or laying mines (Foynes 1994, 226; Cocroft 1998a; Cocroft 1998b; Thomas 1999)(Fig. 14).

Wireless stations played a major role in the ECWCs in the First and Second Word Wars in two main roles: direction finding (d/f), whereby the position of the enemy could be calculated from a wireless broadcast irrespective of its content; and signals intelligence, where the content of enemy broadcasts were intercepted. Both d/f stations and intercept (Y) stations were established along the East Coast, including 'Headache' stations using German speakers to intercept the short-range spoken transmissions of E-boat crews. English Heritage is currently undertaking a project to identify significant wireless stations, which it is hoped will encompass the network of stations used on the ECWCs.

Amongst the less technical forms of defence against the threats to civilian shipping in the Second World War were the Minewatching Posts, which were small structures that would allow observers to fix the position of air dropped mines landing in the water. There are example of these recorded in the NRHE around some of the estuaries of the East Coast. It is not clear whether a systematic inventory has been attempted.

Other forms of passive defence that have certainly left physical remains in some instances include the boom defences used across the entrances to ports and in some restricted channels within open waters, in both the First and Second World Wars. Charts held by the UKHO Archive indicate that booms, nets, piles and/or concrete dolphins were installed (or at least planned) in the Downs (just south of the ECWCs Study Area), Margate, Sheerness, Swale, The Swin, Harwich, Humber and Tyne during the First World War (Fig. 10). Similar measures were taken again in the Second World War, and indeed in the Cold War, when the major boom across the Thames was re-aligned and is now scheduled where it meets the Essex shore (LID 1021091). The boom across the Humber was supported by the construction of Haile Sand Fort and Bull Sand Fort, which are both Listed Buildings (LID 1240990 and LID 1083477 respectively). Despite these instances of designation, boom and net defences – and other systems such as indicator loops – have yet to be the subject of systematic assessment.

The designated Humber forts provide an introduction to the wider issue of sea forts in the ECWCs, notably the 'Maunsell' forts of the Essex coat and in the Thames Estuary:

Navy Forts	Rough Sands
	Sunk Head
	Knock John
	Tongue Sands
Army Forts	Shivering Sands
	Red Sands
	Nore

These forts were intended to combat low-flying aircraft attacking ships and laying mines in the ECWCs, though by the time they were installed a more general anti-aircraft (and anti-V1) role applied. The sea forts are a major feature of the post-Second World War seascape, only one (Nore) having been removed but with its remains still visible in the intertidal zone of North Kent. Detailed consideration of their history and significance is warranted.

As noted earlier, although outside the ECWCs the Nab Tower on the south coast was built as a First World War fortification to accompany a cross-channel minefield that was not built because of the Armistice. In view of its design and potential contribution to understanding the scale of the effort directed to preventing U-boat operations against merchant shipping, the Nab Tower warrants specific consideration of its significance and future management.

#### 4. Organisations and Data relating to the East Coast War Channels

This section presents an overview of the organisations that have interests relating to the ECWCs, and the organisations that hold data. There is a major overlap between these two sets of institutions. The organisations are discussed under the following sub-headings:

- National Museums and Archives
- National Organisations holding Archives
- National Heritage Organisations
- Heritage Data Initiatives
- Regional Museums and Archives
- Local Museums and Heritage Organisations
- Archaeological Units
- Seabed Survey Organisations
- Individual Researchers

The section concludes with a discussion of approaches to recording and representing heritage assets associated with the ECWCs spatially.

##### 4.1. *National Museums and Archives*

The national museums and archives considered here do not have any particular responsibilities or functions with respect to the ECWCs but they do hold large quantities of information pertaining to them. Through their own collections and initiatives they could play an important role in increasing public awareness of the ECWCs. The key organisations considered in this respect are the Imperial War Museum (IWM), the National Archives (NA), the National Maritime Museum (NMM), the UK Hydrographic Office (UKHO), the Naval Historical Branch and the National Museum of the Royal Navy (NMRN). Their respective collections include, variously, documents, photographs, art, charts, plans, models, film, sound recordings, secondary sources and so on.

In the case of the IWM and NMM, extensive searches of their collections can be carried out online and material can be downloaded. In many instances, licensing allows relatively open use of the material. The NMRN also has an online collection – including the Wright & Logan Collection of 22,000 warship photographs – but this is currently undergoing a major upgrade and is not yet available.

The archive material has evidential value in understanding human activity in the ECWCS, either in respect of specific vessels, sites or events; or more generally in respect of classes of vessels, sites and activities for which information is sparse. Archive material also makes an important contribution to the historical (illustrative and associative) and communal value of heritage assets in the ECWCs. In particular, given the lack of physical visibility for assets underwater and the low societal visibility of the conflicts on the East Coast, this archive material is especially important in evoking awareness, and drawing peoples' attention to the physical remains of the ECWC. The material is diverse too, and has potential to broaden consideration of the ECWCs to aspects that are not necessarily apparent from archaeological records alone.

There are very large numbers of relevant items online in the IWM and NMM, some of which belong to longer series. The following links indicate the types of material available:

**Imperial War Museum**

- Artefact: First World War German propaganda poster about effects of submarine warfare in southern North Sea  
<http://www.iwm.org.uk/collections/item/object/28712>
- Video: First World War newsreel: A Day on a Minesweeper  
<http://www.iwm.org.uk/collections/item/object/1060023126>
- Photograph: Second World War barrage balloon vessel used to deter minelaying aircraft in Thames  
<http://www.iwm.org.uk/collections/item/object/205207813>
- Photograph: one of a series showing the construction of wooden minesweepers on the East Coast in the Second World War  
<http://www.iwm.org.uk/collections/item/object/205186118>
- Artefact: German First World War mine recovered from Scarborough minefield in 1914  
<http://www.iwm.org.uk/collections/item/object/30021773>
- Photograph: ship portrait of HMS *Neda* – gunboat converted to minesweeping.  
<http://www.iwm.org.uk/collections/item/object/205263390>
- Photograph: HMS *Amphion* sinking after hitting a mine at the very start of the First World War  
<http://www.iwm.org.uk/collections/item/object/205306496>
- Photograph: convoy off East Coast in Second World War from HMT *Vanity*  
<http://www.iwm.org.uk/collections/item/object/205185099>
- Photograph: convoy off East Coast in the Second World War from HMT *Turquoise*  
<http://www.iwm.org.uk/collections/item/object/205186476>
- Photograph: Wren onboard drifter approaching merchant vessel to advise the Master on routes  
<http://www.iwm.org.uk/collections/item/object/205200764>
- Photograph: Drill using rocket-propelled Life Saving Apparatus on East Coast in the Second World War  
<http://www.iwm.org.uk/collections/item/object/205136010>
- Document: drawing of British Mark VIII mine sinker of the sort used extensively off the East Coast in the later years of the First World War.  
<http://www.iwm.org.uk/collections/item/object/205281974>
- Artefact: wireless recovered from UB-110, sunk and then recovered off Redcar in the First World War.  
<http://www.iwm.org.uk/collections/item/object/30005556>
- Photograph: ship portrait of MMS 1081 in Harwich in the Second World War.  
<http://www.iwm.org.uk/collections/item/object/205119779>
- Photograph: ship portrait of HMT *Turquoise* in the Second World War.  
<http://www.iwm.org.uk/collections/item/object/205119782>
- Artefact: amber charm carried by Lowestoft trawler, First World War  
<http://www.iwm.org.uk/collections/item/object/30084812>
- Photograph: WRNS women working on anti-submarine nets – one of a series showing WRNS work in the First World War  
<http://www.iwm.org.uk/collections/item/object/205196401>
- Photograph: crew in engine room of corvette *Widgeon*, Harwich Second World War – one of a series showing life onboard  
<http://www.iwm.org.uk/collections/item/object/205186592>
- Sound recording: interview with asdic operator in North Sea, the Second World War  
<http://www.iwm.org.uk/collections/item/object/80009112>
- Sound recording: interview with RNPS seaman on minesweepers on East Coast, the Second World War  
<http://www.iwm.org.uk/collections/item/object/80017779>

### National Maritime Museum

Art: oil painting of work on minesweeping trawler, the Second World War.	<a href="http://collections.rmg.co.uk/collections/objects/13066.html">http://collections.rmg.co.uk/collections/objects/13066.html</a>
Art: painting showing First World War convoy with dazzle camouflage	<a href="http://collections.rmg.co.uk/collections/objects/12160.html">http://collections.rmg.co.uk/collections/objects/12160.html</a>
Art: painting showing First World War convoy with dazzle camouflage	<a href="http://collections.rmg.co.uk/collections/objects/12877.html">http://collections.rmg.co.uk/collections/objects/12877.html</a>
Art: painting showing boom nets and floats, the Second World War	<a href="http://collections.rmg.co.uk/collections/objects/13254.html">http://collections.rmg.co.uk/collections/objects/13254.html</a>
Art: portrait of Able Seaman, Merchant Navy, the Second World War	<a href="http://collections.rmg.co.uk/collections/objects/14300.html">http://collections.rmg.co.uk/collections/objects/14300.html</a>
Art: painting of boom defence vessels showing boom, the Second World War	<a href="http://collections.rmg.co.uk/collections/objects/13051.html">http://collections.rmg.co.uk/collections/objects/13051.html</a>
Model: HMT Grenadier, the Second World War	<a href="http://collections.rmg.co.uk/collections/objects/67531.html">http://collections.rmg.co.uk/collections/objects/67531.html</a>
Model: HMT Bredon, Second World War - model made by RNVR officer while serving with the vessel, which was subsequently sunk in the Atlantic.	<a href="http://collections.rmg.co.uk/collections/objects/67528.html">http://collections.rmg.co.uk/collections/objects/67528.html</a>

The National Archives and the UKHO Archives were appraised by viewing the material directly. In the case of the National Archives, preliminary searches can be made online to identify specific items that can be viewed on site. Although not online, the UKHO Archive was able to provide indexes to relevant holdings that enabled requests for specific charts and documents to be submitted in advance. Unfortunately it did not prove possible to appraise the archives of the Naval Historical Branch relating to the ECWCs in the course of this project, but they did provide a copy of the *Naval Staff History British Mining Operations 1939-1945* (Naval Staff 1973), which provided a very detailed account of defensive mining in connection with the ECWCs in both the First and Second World Wars.

The National Archives primarily hold documentary material relating to the ECWCs, but potentially also photographs and charts/plans. The material is wide-ranging, encompassing details of specific vessels and losses, but also broader strategic decisions. Examples include the following:

Reference	Description
ADM 1/10035	MERCHANT NAVY (64): Trawlers: requisitioning arrangements
ADM 1/10039	MERCHANT NAVY (64): Trawlers purchased for anti-submarine and minesweeping operations: allocation manning, etc. arrangements
ADM 1/10041	MERCHANT NAVY (64): Protection of merchant shipping against air attack
ADM 1/10045	MERCHANT NAVY (64): Minesweeping Trawlers: command, disposition, complementing, etc
ADM 1/11618	ADMIRALTY (5) and PREPARATION FOR WAR: (CIVIL) (48) and MERCHANT NAVY (64): Statement of merchant shipbuilding and repairs: need for urgent turn-around and directive to Repair Licensing Officers
ADM 1/11662	MERCHANT NAVY (64): Awards to Merchant Navy personnel for services in action against the enemy in various merchant ships
ADM 1/11838	DISCIPLINE (34): Defence of merchant ships in United Kingdom ports: outline scheme, disciplinary matters between naval and military personnel on defensively equipped merchant ships
ADM 1/11902	MERCHANT NAVY (64): Restrictions of powers and duties of Trinity House in time of war, with regard to wreck marking, navigational aids etc
ADM 1/12700	ESTIMATES AND FINANCE (69): Light vessels and light buoys transferred to war stations: payment to Trinity House
ADM 1/12703	MERCHANT NAVY (64): Dispersal of wrecks of SS NORWICH TRADER and barge MARTINET

Reference	Description
ADM 1/13716	DEFENCES - UNITED KINGDOM (32): Coastal Force action with `E'-boats night of 24/25 Oct: report
ADM 1/14247	DEFENCES - UNITED KINGDOM (32): Work of trawlers of 9th Minesweeping Flotilla off Great Yarmouth: awards
ADM 1/14251	DEFENCES - UNITED KINGDOM (32): Minesweeping in Humber area: awards
ADM 1/15815	CONVOYS AND ESCORTS (27): Difficulties regarding protection of coastal convoys on English Channel and North Sea routes from `E' boat attacks: Admiralty views
ADM 1/17680	ADMIRALTY (5) and ARMAMENTS (11) and DEFENCES - UNITED KINGDOM (32): Introduction of anti-submarine obstruction type "O" around the British Isles: report of laying in various locations in British waters
ADM 1/17963	MERCHANT NAVY (64): Monthly lists of wrecks dispersed, survey reports and notices to mariners
ADM 137/2640	Convoys: TU1 - TU37
ADM 137/2641	Convoys: MT1 - MT101
ADM 137/2642	Convoys: UT1 - UT100
ADM 137/2643	Convoys: TM2 - TM106 (TM1 missing at transfer)
ADM 137/2660	Historical reports on Scandinavian and East Coast convoys
ADM 199/100	Enemy air attacks on RN and merchant shipping: reports
ADM 199/2155	Index to Merchant Vessels Survivors Reports
ADM 199/33	FS and FN convoys: reports
ADM 199/6	East coast convoys: policy, routes and discipline
ADM 199/74	Enemy air attacks on merchant shipping: reports

A sense of the relevance of these archives can be gained from considering a few examples. The documentation on the TU (Tyne-Humber) convoys in 1918 (ADM 137/2640) consists of individual copies of telegrams reporting on convoys. These include lists of ships in convoy and their escorts, and references to vessels having been lost and their circumstances (Fig. 15). In one case, there is an extensive report on the loss of two ships, *Dirk* and *Caroline*, including written reports by officers in escort vessels and a completed 'Form for Reporting Submarine Attacks on Convoys (April 1918)' (I.D. Form A.C. 1) (Fig. 16), though there is a note to the effect that the report has been misfiled.

The Index to Merchant Vessels Survivors Reports (ADM 199/2155) is an alphabetical list that refers to the bound volume and page number of individual reports. The index includes merchant vessels from all theatres so it is necessary to pick out the names of ships known to have been lost on the East Coast. The individual reports (in ADM 199/2136 etc.) present first-hand accounts each loss: preceding circumstances; the attack; damage received; actions of the crew; casualties; rescue; and so on (Fig. 17).

Enemy air attacks on shipping (ADM 199/100) comprises reports by Intelligence Officers and completed pro formas 'Particulars of Attacks on Merchant Vessels by Enemy Aircraft' (I.D. Form A.A. (Issued July, 1939)). These contain detailed accounts of the circumstances and consequences of individual air attacks, including instances where the vessel did not sink. Reference may also be made to enemy aircraft crashing as a result of attack, which could correlate with or add to air crash records.

The file on coastal convoys (ADM 1/15815) comprises reports and related correspondence on a variety of issues, such as changes to individual sections of the War Channels, how best to deal with the threat from E-boats, the effectiveness of defensive minelaying, and the need to increase the number of convoys on the East Coast (Fig. 18). These include references to individual units, vessels and classes of vessel, but are perhaps of greatest value in demonstrating the complexity of interests and considerations that were ultimately expressed physically on the battlefield.

The UKHO Archive is another collection of material – predominantly cartographic – of central importance to understanding the ECWCs. Example charts are set out below.

Chart No.	Date	Title
<b>WWI</b>		
X 39	November 1914	German Squared Chart No. 1
A 1 etc.	Dec 1914	Aviation Charts
X 3	1915	Tracks of Incoming Merchant Vessels
Z 141	1915	Port Defence Chartlets
S 01 etc.	June 1916	Submarine Charts – Seabed Type
X 40	June 1916	German Squared Chart No.2
X 43	Nov 1916	Areas Forbidden to British Fishing Vessels
X 44	Nov 1916	Areas Forbidden to Neutral Fishing Vessels
X 74	1917	British Islands – Minefields
X 76	July 1917	Patrol Areas
S 058	December 1917	Submarine Chart – Wrecks
Z 21	1917	Special Squares
Z 14	April 1918	Dover and Calais to Orfordness and Scheveningen (lines)
Z 32	April 1918	Dunkirk Boom
Z 30		Scandinavian Convoy Chart
Z 41	July 1918	Dover and Calais to Orfordness and Scheveningen (areas)
Z 42	August 1918	ECMB Flamborough Head to River Tyne
Z 43	Sept 1918	ECMB Flamborough Head to Alnmouth
Z 41	October 1918	Dover and Calais to Orfordness and Scheveningen (areas)
Z 46	November 1918	Minefields Showing Through Routes
Z 43	February 1919	ECMB Flamborough Head to Alnmouth
Z 27	1918	Patrol Chart – Folkestone to Griz Nez
<b>WWII</b>		
Z 32	1939	Estimated Attacks by U-boats
Z 32	July 1940	East Coast Mine Barrier
Z 28	November 1940	Deep Minefields
Z 27B	October 1941	British Islands – Minefields
Z 61	1942	RDF Home Chain Surface Watching
MO 1192	Aug 1942	Hartlepool to St. Abb's Head
MO 1190	Jan 1943	Blakeney to Flamborough Head
MO 1089	March 1943	Orfordness to Blakeney
MO 1185	August 1943	River Thames Sea Reach
MO 1188	August 1943	River Humber
MO 1191	Sep 1943	Flamborough Head to Hartlepool
F 1081 etc.	1944	War Channel Chartlets German Swept Channels

For the Second World War, the MO series provide a firm base for recording the position of the War Channels (Fig. 3). Although a similar sequence has yet to be located for the First World War, S 058 (Fig. 2) appears to show the centre line and, as discussed above, the annotations and memoranda accompanying X 74 (Fig. 6) provide positions for the channels to seaward of the War Channel.

As well as providing point-in-time information, the charts can also be used to understand changes through time, such as the changing position of the ECWCs. Sequences of charts such as those for X 3 (Fig. 19) and X 74 (Fig. 6) provide time-series data on merchant vessel movements across the North Sea, and of the number of mines swept up. Such time-sequence data on historic charts has considerable potential for illustrating facets of the ECWCs in a dynamic way.

#### 4.2. National Organisations holding Archives

There are several organisations that have continuing functions and responsibilities relating to the ECWCs and which also hold historic data:

##### The Commonwealth War Graves Commission (CWGC)

The CWGC is responsible for the graves, cemeteries and memorials of those who died in the First and Second World War. This includes memorials such as the Tower Hill Memorials for merchant seamen and fishermen; the Lowestoft Naval Memorial for the Royal Naval Patrol Service (RNPS); and the naval memorials at Portsmouth, Plymouth and Chatham for Royal Naval Reserve (RNR), Royal Naval Volunteer Reserve (RNVR) and Royal Navy (RN) casualties. The CWGC maintains a database of the war dead that can be accessed online and downloaded. The data includes the name of the vessel on which the person died, and it can therefore be used to interrogate the database for casualties from specific wrecks. The following examples are given for a minor warship, HMS *Dirk* lost off Flamborough, and a merchant vessel, *Madame Renee* lost off Scarborough, both in 1918. These records help to provide an understanding of the ages, roles and backgrounds of the people who were lost in association with specific wrecks, as well as providing a link between the heritage assets and specific families and communities.

##### HMS *Dirk*:

Surname	Forename	Age	Rank	Regiment	Memorial	Additional Information
Ackroyd	Frederick		Ordinary Seaman	Royal Navy	Plymouth Naval Memorial	
Brant	Francis	30	Greaser	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of Anna Brant, of Exeter; Husband of Mary Brant, of 4, Cosway Court, St. Sidwells, Exeter.
Cammish	William Hanley	24	Second Hand	Royal Naval Reserve	Chatham Naval Memorial	Husband of Eliza Cammish, of 53, Quay St., Scarborough.
Challen	George	47	Boatswain	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of John and Charlotte Challen, of Warblington, Hants; Husband of Frances Elizabeth Challen, of 29, Mayfield Rd., Gosport, Hants.
Cooper	Augustus	55	Deck Hand	Royal Naval Reserve	Chatham Naval Memorial	Born At Aldershot. Son of John and Mary Cooper. Served In The Wiltshire Regiment (Duke of Edinburgh's) In The South African War.
Green	James William		Lieutenant	Royal Naval Reserve	Chatham Naval Memorial	
Grinyer	Arthur Charles	23	Deck Hand	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of Arthur and Janet Grinyer; Husband of Maud Elizabeth Grinyer, of 61, Reculver Rd., Rotherhithe, London.
Ingrey	Frederick George	26	Signalman	Royal Naval Volunteer Reserve	Chatham Naval Memorial	Son of Frederick Ingrey, of 53, Denmark Rd., Northampton.

Surname	Forename	Age	Rank	Regiment	Memorial	Additional Information
Madden	John Clifford	50	Third Engineer	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of John S. and Margaret Madden, of Blackburn; Husband of Mary Theresa Madeley (Formerly Madden), of 279, Grassmere Terrace, Brunswick St., Nelson, Lancs.
Morrison	Norman		Seaman	Royal Naval Reserve	Chatham Naval Memorial	
Mccraig	Samuel Gordan		Ordinary Telegraphist	Royal Naval Volunteer Reserve	Portsmouth Naval Memorial	
Pusey	Robert William	28	Fireman	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of William and Ellen Florence Pusey, of Hythe; Husband of Edith Kate Pusey, of The Marsh, Hythe, Southampton.
Quarm	Archibald	20	Ordinary Seaman	Royal Navy	Plymouth Naval Memorial	Son of Walter Henry and Elizabeth Amelia Quarm, 6, Sycamore Avenue, Southmilton St., Cattedown, Plymouth.
Redford	William Thomas		Fireman	Mercantile Marine Reserve	Plymouth Naval Memorial	
Stevenson	James Willasey	47	Engineer Sub-Lieutenant	Royal Naval Reserve	Chatham Naval Memorial	Son of William Henry and Ellen Stevenson, of Grasmere Villas, Grimsargh, Preston.
Tavner	Albert Ernest	22	Deck Hand	Mercantile Marine Reserve	Plymouth Naval Memorial	Husband of Mrs. C. E. White (Formerly Tavner), of 143, Silwood St., Rotherhithe, London.
Tillett	James Michael		Deck Hand	Mercantile Marine Reserve	Plymouth Naval Memorial	
Wall	Charles		Second Hand	Royal Naval Reserve	Plymouth Naval Memorial	Richard and Elizabeth Wall, of Milton St., Fairford, Glos.; Husband of Ellen L. Wall, of 92, Whitehouse Crescent, Bedminster, Bristol.
Whitnell	Roland Hubbard	19	Greaser	Mercantile Marine Reserve	Plymouth Naval Memorial	Son of George and Martha Whitnell, of Wind Mill Hill, Rainham, Kent.

*Madame Renee:*

Surname	Forename	Age	Rank	Memorial	Additional Information
Austwick	Charles Robert	33	Second Engineer	Tower Hill Memorial	Son of George and Martha Jane Austwick, of 6, Burrow St., South Shields. Born at South Shields.
Balmain	Robert Dunn	32	First Mate	Tower Hill Memorial	Husband of Isabella Wood Balmain (Nee Waugh), of 6, Fawcett St., South Shields. Born at South Shields.
Douglas	Robert	22	Able Seaman And Lamps	Tower Hill Memorial	Son of The Late William and Sarah Douglas; Husband of Jessie Douglas (Nee Kennedy), of 252, South Eldon St., South Shields. Born at South Shields.
House	John Evans Peel	22	Able Seaman	Tower Hill Memorial	Son of John and Eleanor Jane House (Nee Peel), of 132, Edith St., South Shields.

Surname	Forename	Age	Rank	Memorial	Additional Information
Manley	William	56	Steward	Tower Hill Memorial	Son of The Late J. C. and E. Manley; Husband of Mary Ann Manley (Nee Stratton), of 76, Bean St., Hull. Born at Hull.
Sutoe	Iwai	26	Donkeyman	Tower Hill Memorial	Son of Kiku Iwai, of 72, Sligashikata-Mura, Oshima-Gun, Kagoshima, Japan. Born at Kobe, Japan.
Woodward	Harold	24	Second Officer	Tower Hill Memorial	Son of Giles and Sarah Woodward (Nee Griffiths), of 17, Pentrebane St., Cardiff.

### Department for Transport (DfT)

DfT administers HM Government's continuing interests in wartime wrecks for which War Risks insurance was paid. In these instances, the Government became the owner of the wreck. DfT is responsible for transferring ownership and concluding salvage contracts in respect of these Government-owned wrecks where such transfers / contracts are agreed. Consequently, DfT has an archive of material relating to the wrecks of merchant vessels in which the Government has an interest. In the case of the First World War, this includes a large ledger of merchant vessels and fishing vessels that were sunk or damaged. This ledger was transcribed and converted into a database / GIS as part of *Assessing Boats and Ships* project (EH 5693), but it does not appear that a copy of the database has yet been made available to DfT (Cousins pers. com.).

### MOD Navy Command

MOD Navy Command is responsible for the administration of the Protection of Military Remains Act 1986 in respect of sunken warships. There are eight ships designated as protected places under the PMRA 1986 that are related to the ECWCs<sup>10</sup>:

Vessel	Date of Loss	Description
HMS <i>Amphion</i>	6 August 1914	Light Cruiser mined at outbreak of the First World War
RFA <i>Creosol</i>	7 Feb 1918	Tanker torpedoed by U-boat
HMS <i>Exmoor</i>	25 Feb 1941	Destroyer torpedoed by E-boat while escorting convoy
HMS <i>Fortuna</i>	3 April 1941	Requisitioned trawler lost to air attack
HMS <i>Patia</i>	27 April 1941	Catapult Aircraft Merchant (CAM) ship lost to air attack
HMS <i>Umpire</i>	19 July 1941	Submarine lost in collision while escorting convoy
HMS <i>Fitzroy</i>	27 May 1942	Minesweeper lost to mine
HMS <i>Vortigern</i>	15 March 1942	Destroyer torpedoed by E-boat while escorting convoy

MOD Navy Command may have archive material that can be requested in respect of these specific wrecks (Fieldsend pers. com.)

### MOD DES Salvage and Marine Operations (S&MO)

S&MO carries out desk- and field-based work in respect of legacy wrecks that have the potential to be a significant source of pollution, including both RN and Royal Fleet Auxiliary (RFA) vessels. Their principal focus is currently on larger warships and RFA tankers, and their

<sup>10</sup> A further vessel, the submarine G-8, was lost in the North Sea and is designated but it is not known whether it was engaged in activities relating to the ECWC.

information on minor warships is drawn from the public domain (Liddell pers. com.). However, there is potential for S&MO to have an overlapping interest with the ECWCs in respect of vessels such as RFA Creosol. There are a number of other tankers lost in the ECWCs, especially in the Second World War, which might also give rise to concern.

#### The Receiver of Wreck (RoW)

The RoW administers the sections of the Merchant Shipping Act 1995 relating to the reporting and disposal of wreck, which clearly includes wreck relating to the ECWCs. Although the RoW holds data relating to wreck that has been reported and may be able to assist in with data in respect of specific reports (droits), this information is transferred to the NRHE and can be accessed there. Notwithstanding, the RoW maintains contact with recreational divers who routinely report material from the East Coast, and can provide assistance with contacts (Kentuck pers. com.).

#### Trinity House Lighthouse Service (THLS)

THLS is the general lighthouse authority for England and is responsible for inspecting lighthouses and other aids to navigation, and for aspects of the training and certification of seafarers. Trinity House was established 500 years ago and, having such a rich history, has its own archives and archivist. Trinity House played a very significant role in the ECWCs in both the First and Second World Wars, being tasked to establish and maintain the buoyage of the War Channels as well as other buoys and light vessels. As a result, Trinity House vessels and staff worked in the front line and were in fact a specific target at some stages. As noted already, several Trinity House vessels were lost, sometimes with considerable loss of life and injury (Woodman 1983). The archives of THLS are therefore a potentially useful source of information about Trinity House vessels that are heritage assets, and about the organisation and implementation of the War Channels. Archive material so far provided by THLS includes lists of light vessel casualties in the First and Second World Wars; lists of air attacks on Trinity House property including light vessels and tenders; and the Trinity House roll of honour – naming individual who lost their lives – for both the First and Second World Wars.

#### The Royal National Lifeboat Institution (RNLI)

The RNLI remained on hand throughout both wars and played a significant role in rescuing the crews of vessels that were sunk or damaged. Its archives are likely to hold details of individual launches and rescues connected with the ECWCs. The RNLI also has its own museums: the Historic Lifeboat Collection at Chatham, the Henry Blogg Museum in Cromer, the Whitby Museum, the Zetland Museum and the Grace Darling Museum in Bamburgh all front the ECWCs. The Henry Blogg Museum overlooks the wreck of the *Fernebo* (recorded by NRHE as a casualty rather than a site), mined in 1917, the rescue of whose crew earned Henry Blogg the RNLI Gold Medal. The Henry Blogg Museum has previously organised a community project around the *English Trader* (Palmer pers. com.), which ran aground in 1941 having previously sailed on numerous convoys off the East Coast and elsewhere. The RNLI currently has its own touring exhibition to commemorate the centenary of the First World War, called *Hope in the Great War*, sponsored by Arts Council England.

#### Shipwrecked Mariners' Society

The Shipwrecked Mariners' Society provides welfare to merchant seamen, fishermen and their dependents in cases of need. The Society was active in both wars, and is still known for the collecting boxes made from defused mines in many ports and harbours. The Society's

archives include details of its help to wrecked seafarers, including lists of the numbers of seamen who were given relief from specific vessels, and the value of the relief. The example table for Lowestoft shows relief for 328 seamen totalling over £100 (Allison pers. com.).

Entry	Ship	Wrecked	Date	Survivors	Sent	Relief		
						£	s	d
03-Jul-41	Gasfire		21-Jun-41	26	Various	2	3	4
09-Jul-41	Homefire		Jun-41	16			5	6
09-Jul-41	North Devon		Jul-41	12	Scotland		10	0
09-Jul-41	Montferland	North Sea	Jun-41	31	London			
10-Sep-41	Eiklangs	At sea	07-Sep-41	3	London			
10-Sep-41	Duncarron	At sea	07-Sep-41	3	Various			
10-Sep-41	Marcrest	At sea	07-Sep-41	34	Various			
19-Sep-41	Tetela	At sea	17-Sep-41	17	Grimsby			
23-Oct-41	Various	Various	Oct-41	151	Various	37	15	0
04-Dec-41	Walbridge	At sea	Nov-41	11	Various	7	4	3
04-Dec-41	War Mehtar	North Sea	19-Nov-41		(12)Various	7	4	4
15-Jan-42	Leopold II	At sea	Jan-42	4	Various	3	13	8
15-Jan-42	Robert	At sea	Jan-42	12	Various			
29-Feb-44	Philipp M	Hearty Knoll Buoy	24-Feb-44	8	Various	47	13	6
				328		103	67	31

Further details may be gleaned from systematically searching the Society's Quarterly Statement for the war years, this example having been provided from 1914 (Allison pers. com.):

At Aldeburgh, on December 8, the crew (20) of the ss Ignis which had been blown up by the enemy, were landed and taken charge of (as usual) by the local Hon. Agent, Lieut. R Fry RN, and forwarded to their homes. The kindness shown by Colonel P Carleback TD, commanding the troops close by, in relieving the Society of the cost of the men's board and lodging was cordially appreciated by the Committee.

#### 4.3. National Heritage Organisations

The National Trust has numerous coastal properties where it hosts large numbers of visitors. As well as specific sites, it has a role as a coastal landowner, in facilitating access to the coast, and in liaising with other organisations such as National Parks and AONBs. The National Trust is organising a range of events relating to the centenary of the First World War<sup>11</sup>.

In the course of this project, a visit was made to the radar station at Ravenscar (Fig. 20), which is a scheduled monument (LEN 1020544) on land owned and managed by the National Trust. The station formed part of the Coastal Defence / Chain Home Low (CD/CHL) system for surface watching and low-flying aircraft, and retains several standing buildings and other remains. A War Watch Station, built around 1893 as a Coastguard Watch Station, is nearby on the coastal path and although outside NT ownership can be accessed from it. The wreck of the *Lerwick* lies about four miles immediately offshore, lost in 1942 in an aerial bomb attack. As the cliffs at Ravenscar are about 600 feet high they give a visual range (in

<sup>11</sup> <http://www.nationaltrust.org.uk/visit/days-out-and-itineraries/first-world-war-centenary/>

good weather) of 30 miles, encompassing many of the more numerous First World War losses in this section of the ECWC.

National Historic Ships maintains the National Register of Historic Vessels and provides advice to owners and Government about ships in preservation. NHS is planning its own activities to commemorate the centenary of the First World War and in initial research has identified 60 surviving vessels that have a connection to the First World War. Nine vessels have been identified as having a connection to the East Coast in wartime (Cunliffe pers. com.), including six Thames barges, an Admiralty tug that worked at Chatham, and the Alfred Corry Lifeboat, which served at Southwold until 1918. Also included is the *Result*, which was a schooner converted to a Q-ship (Q-23) that saw action against U-boats in the North Sea (Lake 2009): a reminder that Q-ships were not only active in the Atlantic and Western Approaches.

The Nautical Archaeology Society is supporting a major campaign to commemorate vessels lost in the First World War, called *Lost Beneath the Waves 1914-1918*. The campaign invites diving groups to visit wrecks as close to the centenary of their sinking as possible, and to upload photographs, videos and notes to the project's social media site. Dives on specific sites are also being planned, starting with HMS *Amphion*. Although the campaign's outlook on the First World War is global in scope, it certainly encompasses the North Sea and seems likely to generate data about the present condition of wrecks associated with the ECWCs.

The Council for British Archaeology has launched a community project to enable public recording of places associated with the First World War<sup>12</sup>. The initiative includes an online resource pack to facilitate recording. The focus is on places on land, but these could encompass onshore sites associated with the ECWCs. It may be possible to extend the toolkit to enable the recording of underwater as well as onshore archaeology (Ennis pers. com.).

#### 4.4. Heritage Data Initiatives

There are numerous websites and initiatives that make available data relating to the ECWCs, or which provide a means for raising awareness of the ECWCs. Importantly, web-based systems provide clear scope for engaging people in data enhancement, achieving both greater awareness and a more comprehensive archaeological record at the same time.

The range of initiatives also has a range of resourcing models: some are carried out or supported by public bodies as part of their wider remit; some have a commercial element; some are essentially voluntary. A comprehensive overview of all the sources of data online is not practical within this project, but some key initiatives are worth highlighting.

English Heritage's own data initiatives should be mentioned here, notably PastScape<sup>13</sup>, which provides access to data about heritage assets held within the NRHE, including maritime sites. The National Heritage List for England<sup>14</sup> provides access to data about designated assets. Although the NHLE encompasses maritime sites such as designated wrecks, there are as yet no designated wrecks associated with the ECWCs. There are, however, non-wreck assets associated with the NRHE that are designated, such as the Ravenscar radar station mentioned above, hence the NHLE offers a potentially important form of access. Britain from

<sup>12</sup> <http://www.homefrontlegacy.org.uk/wp/>

<sup>13</sup> <http://www.pastscape.org.uk/>

<sup>14</sup> <http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/>

Above, supported by English Heritage, makes available the Aerofilms collection of air photographs for the period 1919-1953 and enables members of the public to annotate features. The collection includes many images of ports and harbours. The collection encompasses the Second World War but may also be interpreted for features associated with the First World War but still visible in the interwar period. By way of example, air photographs of Dover in 1920 have been annotated with notes about the blockships sunk in the First World War<sup>15</sup>. Further relevant images relating to the ECWCs may be found in English Heritage Archives<sup>16</sup>.

One of the most engaging sites containing data relating to the ECWCs is the British Pathe site, which includes clips from newsreels. There are numerous clips relating to the ECWCs and related activities. These often have a propaganda element, at least in the soundtrack; but the films themselves have evidential value, as well as having potential in supporting the interpretation of heritage assets to the public. Examples include the following:

Title	Scope	Link
Captured submarine minelayer, 1914-1918	UC-5 on the Thames	<a href="http://www.britishpathe.com/video/captured-submarine-mine-layer/query/Captured+Submarine+Mine+Layer">http://www.britishpathe.com/video/captured-submarine-mine-layer/query/Captured+Submarine+Mine+Layer</a>
Victim of Nazi Frightfulness, 1939	Wrecks on south coast; lifeboat and survivors, including images of black seafarers	<a href="http://www.britishpathe.com/video/victim-of-nazi-frightfulness/query/victims+of+nazi+fright">http://www.britishpathe.com/video/victim-of-nazi-frightfulness/query/victims+of+nazi+fright</a>
Another Mine Victim, 1939	Wreck of HMT <i>Aragonite</i> near Deal, including injured survivors from crew.	<a href="http://www.britishpathe.com/video/another-mine-victim/query/another+mine+victim">http://www.britishpathe.com/video/another-mine-victim/query/another+mine+victim</a>
Sweeping the Sea, 1940	Minesweepers; sweeping equipment; wrecked ships.	<a href="http://www.britishpathe.com/video/sweeping-the-seas/query/sweeping+the+seas">http://www.britishpathe.com/video/sweeping-the-seas/query/sweeping+the+seas</a>
Naval Intelligence, 1940	Convoy	<a href="http://www.britishpathe.com/video/naval-intelligence/query/naval+intelligence">http://www.britishpathe.com/video/naval-intelligence/query/naval+intelligence</a>
Facing Danger with the Men of the Minesweeping Flotilla, 1940	Minesweepers and sweeping equipment	<a href="http://www.britishpathe.com/video/facing-danger-with-men-of-the-minesweeping-flotill/query/facing+danger">http://www.britishpathe.com/video/facing-danger-with-men-of-the-minesweeping-flotill/query/facing+danger</a>
Barge Balloon Barrage, 1940	Motor boats and barges deploying barrage balloons against low flying minelaying aircraft	<a href="http://www.britishpathe.com/video/barge-balloon-barrage">http://www.britishpathe.com/video/barge-balloon-barrage</a>
Unarmed Victim of Nazi Bomber, 1940	Aftermath of air attack on Trinity House Vessel <i>Reculver</i> , including footage of ship and survivors.	<a href="http://www.britishpathe.com/video/unarmed-victim-of-nazi-bomber/query/unarmed+victim">http://www.britishpathe.com/video/unarmed-victim-of-nazi-bomber/query/unarmed+victim</a>

A further example of relevant data being available on the web – in this instance on an apparently unrelated website – is the BBC Your Paintings site. This site includes a painting of the SS *Firth* held by Aberdeen Maritime Museum<sup>17</sup>. The SS *Firth* was torpedoed about 6 miles off Dunwich in July 1915 with the loss of four crew.

<sup>15</sup> <http://www.britainfromabove.org.uk/image/epw000358?search=dover&ref=21>

<sup>16</sup> <http://www.englishheritagearchives.org.uk/default.aspx>

<sup>17</sup> <http://www.bbc.co.uk/arts/yourpaintings/paintings/ss-firth-106101>

One initiative with particular potential to raise awareness of the offshore element of the ECWCs and to engage people in linking archaeological data with photographic sources is HistoryPin<sup>18</sup>, which enables the public to 'pin' old photographs of places to today's map. By way of example, a photograph of the remains of a crashed He 115 – a seaplane commonly used in attacks on shipping – has been pinned to its location on Sheringham beach<sup>19</sup>. HistoryPin is predominantly concerned with places on land, but has the potential to be used for places at sea also (Abraham pers. com.). Specifically, it would be possible to pin ship portraits to the location where the wreck now lies. Although this is not the same as pinning the photograph to its original location, it would effectively reconnect historic photographs with the location of their subjects to make a strong link between the remains on the seabed and what they once were. Geophysical images could also be pinned to the location, again reinforcing the connection between remains as and where they now are, with their original use. English Heritage is already a partner with HistoryPin having explored its use in enabling access to EH Archives and may have potential in respect of ECWCs (Evans pers. com.). HistoryPin currently has a First World War initiative focussing on the IWM's art collections, including its maritime paintings<sup>20</sup>, which could be extended to the very extensive IWM photographic collections of ship portraits etc. referred to above. HistoryPin has great potential for re-connecting wrecks in the ECWCs with a wide range of historic images – paintings, photographs, ship models, plans etc. – that relate to them.

As already mentioned above, and cited throughout this report, the Wrecksite is a very important source of shipwreck data that enables access to the UKHO wreck database but also enables the public to add their own information. Consequently, the Wrecksite includes a wide range of enhanced material ranging from diver reports to historic documentation.

A range of web sites provide access to detailed information about vessels and the context in which they came to be lost in the ECWCs. Key examples include uboat.net<sup>21</sup>, Convoy Web<sup>22</sup> and Naval-History.Net<sup>23</sup>.

#### *4.5. Regional Museums and Archives*

Regional archives and museums services are a further key source of data, on the one hand, and of opportunities for engaging with the public. As under other sub-headings, the following is by no means a comprehensive account, but rather indicates the range of interests, initiatives and opportunities.

Contact was made with Norfolk Museums and Archives, Tyne & Wear Archives & Museums, and Hull Museums, all of which have significant maritime collections and are each planning initiatives in connection with the centenary of the First World War (Stott; Whitehead; Diaper pers. com.). These examples illustrate different aspects of the ECWCs, with Tyne and Wear having a particular focus on shipbuilding and Hull having a focus on trawlers and shipping. Regional archives and museums also have online access to their collections, again

<sup>18</sup> <http://www.historypin.com/>

<sup>19</sup> <http://www.historypin.com/map/#!/geo:52.931034,0.926958/zoom:11/dialog:12644/tab:details/>. Probably UID 1399739.

<sup>20</sup> [http://blog.historypin.com/wp-content/uploads/2014/02/IWM\\_Invite\\_Chatham.pdf](http://blog.historypin.com/wp-content/uploads/2014/02/IWM_Invite_Chatham.pdf)

<sup>21</sup> <http://www.uboat.net/>

<sup>22</sup> <http://www.convoyweb.org.uk/>

<sup>23</sup> <http://www.naval-history.net/index.htm>

encompassing models, paintings, photographs and artefacts, such as the chest, documents and hat ribbon of a seafarer who worked on minesweepers in the First World War held by Hull Museum<sup>24</sup>. Another example of online access via regional museums and archives is the Cochrane Collection held by North Yorkshire Archives. This collection relates to Cochranes of Selby, which was a key builder of trawlers and minesweepers in both the First and Second World Wars. The archive<sup>25</sup> was the subject of a recent community project, *Trawling through Time*<sup>26</sup>.

Relevant collections in regional museums and archives are not limited to the regions along the East Coast. For example, the Dock Museum Barrow in Furness hosts the online Vickers Photographic Collection, which includes detailed images of some of the weapons and systems used on the ECWCs, and of their production<sup>27</sup>.

#### 4.6. Local Museums and Heritage Organisations

The range of organisations holding information relevant to the ECWCs multiplies again at a local level. Again, examples only are provided, not a definitive account.

The Excelsior Trust owns and operates the Lowestoft smack (sailing trawler) Excelsior<sup>28</sup>, which is in the National Historic Fleet. Excelsior was built in 1921 to a nineteenth century design and was skippered by Jimmy Strong, who had been the skipper of an armed smack in the First World War and fought U-boats in several actions. Lowestoft smacks were heavily targeted by U-boats in the First World War and the fleet had to be rebuilt in the interwar period. In the Second World War, Lowestoft smacks were confined to port, but some were anchored in Oulton Broad as an obstruction to any attempted landings by German flying boats (Wylson pers. com.). Although the Excelsior did not see service on the ECWCs in either the First World War or the Second World War, it represents the large numbers of smacks that did serve and were lost in the First World War in particular.

Felixstowe Museum<sup>29</sup> is a relatively small museum on the Landguard peninsula, with collections and archives relating to coastal forces based at Felixstowe (HMS *Beehive*), the Felixstowe RNAS station from which anti-submarine patrols were flown, and of the wrecks and channels offshore (Tod pers. com.). Felixstowe Museum is planning a special exhibition to commemorate the First World War in 1914.

Frinton and Walton Heritage Trust<sup>30</sup> has restored and maintained the motor lifeboat James Stevens No. 14, which served at Walton-on-the-Naze during the First World War. The Trust has a maritime museum at Walton and is planning to update its displays to reflect local

<sup>24</sup> <http://www.hullcc.gov.uk/museumcollections/collections/search-results/display.php?irn=169271>

<sup>25</sup>

<http://archives.northyorks.gov.uk/DServe/dserve.exe?dsqIni=Dserve.ini&dsqApp=Archive&dsqDb=Catalog&dsqC md=NaviTree.tcl&dsqField=RefNo&dsqItem=ZZU#HERE>

<sup>26</sup> <http://www.flickr.com/photos/northyorkscsc/sets/72157632107205990/>

<sup>27</sup>

<http://www.dockmuseum.org.uk/archive/browser.asp?subject=Armaments&title=Naval+Weapon&subtitle=Mine&searchtype=1>  
<http://www.dockmuseum.org.uk/archive/browser.asp?subject=Armaments&title=Naval+Weapon&subtitle=Paravane&searchtype=1>

<sup>28</sup> <http://www.excelsiortrust.co.uk/>

<sup>29</sup> <http://felixstowemuseum.org/>

<sup>30</sup> <http://www.fwheritage.co.uk/>

wartime heritage over the next four years. It has offered to post a request for information about the ECWCs (Jennings pers. com.).

Similarly, the Leigh Society<sup>31</sup> operates a heritage centre and publishes a newsletter relating to the history of Leigh-on-Sea, on the Essex coast near Southend. Again, this society offers both access to locally-derived sources and recollections, and a conduit for raising awareness about aspects of the area's heritage lying just offshore.

The Scarborough Maritime Heritage Centre<sup>32</sup> also operates a small centre where it maintains extensive archives that can be examined by the public. It also has a substantial presence on the web, which includes considerable detail on the effects of U-boat activity on the Scarborough fishing fleet in the First World War in particular. The Scarborough Maritime Heritage Centre – like other local and regional organisations – forms a particular focus for enquiries and submissions relating to family history: one example being a fragment of a First World War floatplane that crashed off Scarborough donated by a family historian from Australia (Fig. 21).

#### 4.7. Archaeological Units

Archaeological units may be a source of data relating to the ECWCs where they have carried out relevant investigations on their own behalf or for clients. These investigations may be area-based – covering an area that encompasses elements of the ECWCs in respect of a specific site, development or strategic study – or thematic. Examples include a recent geophysical survey by Wessex Archaeology of the U-boats UB-41 and UB-75 for English Heritage (Wessex Archaeology 2013) and a forthcoming report by Cotswold Archaeology on submarine wrecks in English waters, also for English Heritage. Most outputs from archaeological units can be accessed not from the unit itself but from the client or a relevant website (e.g. ADS archive; grey literature library), though these repositories are not always comprehensive and enquiries to the units may reveal further relevant work.

Examples of projects initiated by archaeological units include the *Forgotten Wrecks of World War One* project by the Maritime Archaeological Trust, which has received initial HLF funding to develop a project to raise public awareness of First World War wrecks around southern England<sup>33</sup>.

#### 4.8. Seabed Survey Organisations

A potentially important source of seabed data in respect of heritage assets associated with the ECWCs are the organisations that commission or carry out marine surveys. Most of the readily-available data on wrecks in the NRHE and the Wrecksite is limited to point positions and text descriptions. Whilst the last 10-15 years has seen a radical improvement in the quality of seabed data – both geophysical and photographic – this is not yet reflected in most records. Some examples can be found in project reports and occasional publications, but the majority of such material probably resides in the raw and processed data itself.

High quality seabed data is generally acquired in support of marine development or in connection with strategic or statutory investigations by public bodies. In both cases the data is often acquired and processed by commercial survey companies on behalf of private or

<sup>31</sup> <http://www.leighsociety.com/>

<sup>32</sup> <http://www.scarboroughsmaritimeheritage.org.uk/index.php>

<sup>33</sup> <http://www.maritimearchaeologytrust.org/ww1forgottenwrecks>

public clients. However, the data and its interpretation are not likely to be catalogued or made available by the survey companies, but remain under the control of the client. Reports relating to the data – which may include material relevant to the ECWCs – will be framed according to the aims of the survey, and will not necessarily be comprehensive with respect to findings that fall outside the area of the survey or its thematic objectives. That is to say, data relevant to the ECWCs may have been acquired but may not be included in reports. Progress is being made to archive publicly-acquired marine data through Data Archive Centres organised through MEDIN<sup>34</sup>; but in this case the focus is on enabling eventual re-use of the raw data, not necessarily on being able to access ‘products’ such as imagery of a specific wreck. With respect to private surveys, typically for developers, the best opportunity to intercept the kinds of data that are now available is likely to be through reports submitted in support of applications for consent<sup>35</sup>; but even this is not especially practical and the data reported may not be comprehensive for a variety of reasons. As a result, some of the best data on the remains of the ECWCs as physical heritage assets is likely to be the most intractable to obtain.

An indication of the potential presented by marine data to inform the understanding of the ECWCs is presented by comparable surveys carried out for archaeological purposes. Examples include the geophysical survey of UB-41 and UB-75 mentioned above (Wessex Archaeology 2013); and the investigation of several wrecks with direct connection to the ECWCs as part of the London Gateway project:

Site	Description	Reference to geophysical survey, including images (Firth et al. 2012)
SS <i>Storm</i>	Collier sunk 9 September 1917 by aerial torpedo attack by German floatplanes en route from Newcastle to Dunkerque <sup>36</sup>	Site 5960: pp. 58-59; Fig. 38.
SS <i>Erna Boldt</i>	Collier sunk 9 June 1915 by mine en route from Tyne to London.	Site 5961: pp. 62-63; Fig. 43.
HMS <i>Aisha</i>	Yacht built by Cochranes in 1934. Converted as Harbour Defence Patrol Craft. Sunk by mine, 11 October 1940.	Site 5057: p. 67; Fig. 48.
SS <i>Letchworth</i>	Collier sunk by aerial bombing off Southend on 1 November 1940 after arriving with convoy FS.322, having already participated in 26+ FS/FN convoys since Feb. 1940	Site 5005: pp. 59-61; Fig. 39.
German Aircraft	Possibly a Ju 87 ‘Stuka’ lost during air attacks on shipping, 1 November 1940.	Site 7453: pp. 61-62; Fig. 43.
<i>East Oaze Light Vessel</i>	Sunk by aerial bombing, 1 November 1940 (same day as Letchworth, 3 miles to south west)	Site 5056: pp. 69-70. Fig. 51.
THV <i>Argus</i>	Trinity House vessel sunk by mine 12 November 1940 after relieving crew of light vessel following air attacks. All but one of the crew were killed.	Site 5008: pp. 70-71; Fig. 53.
MV <i>Ryal</i>	Merchant vessel struck a mine 21 November 1940 en route for Middlesborough, having already participated in numerous FS/FN convoys	Site 5070: pp. 68-69.

<sup>34</sup> <http://www.oceannet.org/>

<sup>35</sup> e.g. [http://www.marinemanagement.org.uk/licensing/public\\_register/eia.htm](http://www.marinemanagement.org.uk/licensing/public_register/eia.htm)

<sup>36</sup> <http://www.gooleships.co.uk/gooleeng/rosa1875.htm>

Site	Description	Reference to geophysical survey, including images (Firth et al. 2012)
HMT <i>Amethyst</i>	Successful Fleetwood trawler requisitioned by Admiralty as anti-submarine patrol vessel. Sunk by mine 24 November 1940, the same day as MV Ryal about 1 mile to NE (and SS Alice Marie, about 1 mile north of Ryal)	Site 5063: pp. 64-65; Fig. 46.
HMT <i>Ash</i>	Built as an Admiralty Trawler by Cochranes in 1939. Sunk by mine 5 June 1941.	Site 5013: Fig. 67-68; Fig. 50.
SS <i>Dynamo</i>	Struck a mine 17 April 1943 carrying general cargo from London to Hull, having participated in numerous coastwise convoys around UK	Site 5100: pp. 56-57; Fig. 34.
Anti-submarine Boom	Remains of boom between Sheerness and Shoeburyness	Site 5195: pp. 63-64; Fig. 44.

Clear examples of seabed survey being capable of generating high-resolution data relating to ECWCs heritage assets where the primary objectives of the survey were not archaeological are presented by the Regional Environmental Characterisations (RECs). The RECs, funded through the marine ALSF, adopted survey methodologies broadly akin to strategic and development-led surveys in that wrecks were not targeted as such but fell within the pattern of survey lines. The RECs included sidescan, multibeam, magnetometer and sub-bottom survey. Three RECs covered elements of the ECWCs: the Outer Thames (EMU and University of Southampton 2009); East Coast (S.E. Limpenny et al. 2011); and Humber (Tappin et al. 2011).

Of these three RECs, the Outer Thames report includes only one relatively indistinct image of the *Terukuni Maru*. The Humber REC includes multibeam and sidescan images of HMT *Cape Spartel* sunk in an air attack in 1942 (Tappin et al. 2011, 168). The Humber REC also includes a series of other wreck-like anomalies that either correspond to unnamed wrecks in the UKHO or have not been recorded previously, but which may be vessels attributable to the ECWCs in the First or Second World Wars (Table 5.5.2; pp. 169 et seq. in Tappin et al. 2011). The East Coast REC generated survey data for an extensive list of wrecks from the First and Second World Wars associated with the ECWCs (Fig. 22), as well as known but unidentified wrecks and previously unknown wrecks that may be attributable to the ECWCs (Fig. 23). Other known and identified wrecks were not observed, probably indicating that the wrecks have been obscured by seabed sediment. The following table lists just those sites from Physical Region 1 of the East Coast REC that are associated with the ECWCs; further examples are available for Physical Regions 2 and 3:

Name / UKHO ID	REC ID	Date Lost	Cause of loss	Notes
<b>Identified Wrecks</b>				
<i>Blacktoft</i>	7203	22 Feb 1945	E-boat	
<i>Goodwood</i>	7204	22 Feb 1945	E-boat	
<i>Trevethoe</i>	7222	12 March 1941	E-boat	
<i>Rye</i>	7229	7 March 1941	E-boat	
<i>Stanmount</i>	7258	24 Dec 1941	Mine	
<i>Montferland</i>	Not observed	27 June 1941	Air	
<i>Voreda</i>	Not observed	Feb 1940	Air	
<i>Horseferry</i>	7205	11 March 1942	E-boat	Datasheet p. 151; (Fig. 22)
<i>Aruba</i>	7207	19 Nov 1941	E-boat	Datasheet p. 152
? <i>Glenprosen</i>	7235	3 Nov 1916	Mine whilst minesweeping	

Name / UKHO ID	REC ID	Date Lost	Cause of loss	Notes
?Loch Lomond	7261	1916	Gunfire	Smack – characterised as 'low importance'
?Light Vessel (10851)	7743			characterised as 'low importance'
<b>Known but unidentified wrecks</b>				
10849	7213			
10523	7259			
11242	7667			
11025	7260			
11222	7662			
<b>Previously unknown wrecks</b>				
	7211			Datasheet p. 150; (Fig. 23)
	7212			Datasheet p. 153

As noted above, seabed survey data of this type – which is available for large parts of the ECWCs as a result of both development-led and strategic surveys – has major potential for enhancing predominantly document-based records in the NRHE with information on the key characteristics of these assets: actual presence, form, extent, character, survival, condition and so on. As can be seen, seabed survey generates reliable data on the form and extents of known but as-yet unidentified wrecks that can be used to achieve (or at least narrow-down) their identification by reference to dimensions, ship plans, photographs and other documentary evidence. Further, these kinds of surveys still have huge potential in discovering previously unknown wrecks and features, including more ephemeral remains but – as can be seen – even quite substantial wrecks. It should be noted that the RECs adopted a corridor-based survey strategy rather than 100% coverage, so the discovery of new wrecks even within these corridors suggests a larger number of wrecks present but as yet unlocated. Using geophysical data in combination with documentary evidence should enable at least some of these previously unknown wrecks to be identified.

It is worth noting that the significant improvement in the resolution of geophysical survey is such that it can inform and enhance not only the record of wrecks, but also of the remains of the marine infrastructure of the ECWCs that has been highlighted by this project. Geophysical survey generates numerous records of small anomalies whose character is unclear. It is possible – even probable – that a proportion of these anomalies are attributable to moorings, buoys, mine sinkers and general debris resulting from the ECWCs. Smaller anomalies are not usually investigated in any detail, but there may be a case for looking at their spatial distribution relative to parts of the ECWCs and their infrastructure to establish whether there are any discernable patterns that warrant further investigation.

Geophysical survey may be accompanied or followed-up with diver-based or ROV survey. Again, the still and video photographic data that such surveys can generate – even if the purpose is not primarily archaeological – is a potentially rich source. Although there are no examples from the ECWCs as yet, the potential is indicated by imagery generated from the ALSF *Wrecks on the Seabed* project<sup>37</sup>, which adopted investigative methods comparable with those likely to be applied in development-led investigations. Where available, development-led diver and ROV-based data can help significantly in documenting and characterising the physical remains of submerged heritage assets.

<sup>37</sup> [http://archaeologydataservice.ac.uk/archives/view/wrecks\\_eh\\_2006/](http://archaeologydataservice.ac.uk/archives/view/wrecks_eh_2006/)

#### 4.9. Individual Researchers

So far, this section has focussed on the role and contribution of organisations. It is worth recalling, however, that all of these institutions depend on the efforts of individuals. Both within and outside any organisational context, individual researchers are a fundamentally important source of information and expertise relating to the ECWCs, and for the further elaboration of the significance of the ECWCs for various audiences.

Individual knowledge and expertise has traditionally been accessed through published books and articles. The role of publication is undiminished and there are numerous examples that demonstrate a mastery of aspects of the ECWCs that cannot be matched here. In the last decade or so, formal publication has been massively augmented by material available online, including unpublished reports and data as well as the wide range of online archive material already discussed. Much of this material is made available by individual researchers, through databases that accept public contributions, through thematic fora, and through all manner of group and individual websites. The background of contributors is extremely wide in terms of their expertise and formal qualifications (which need not coincide), and the character of online submissions varies in terms of the degree to which it is restricted to established contributors or otherwise 'moderated' for quality. As a result, web-based information relating to the ECWCs has to be assimilated with the same critical skills as other sources. Nonetheless, it is important to recognise that for an understudied yet apparently data-rich topic such as the ECWCs, the expertise and knowledge offered by individuals through the web and by follow-up communication is highly important.

The web resources offered by individual researchers are valuable both as historical sources and as an indication of peoples' interest in topics relating to the ECWCs. As well as the thematic sites relating to shipping, naval warfare, specific periods or more general military topics, connections with the ECWCs arise from family, employment, places and other locally-rooted relationships; and often from a combination of these forms of community and more. It is not the intention here to attempt to list all the useful sites, nor to favour one or the other amongst many examples. The point here is simply to emphasise: the potential value of such material and the individual researchers that generate it; the numerous strands through which the ECWCs can have significance to communities that are diverse and widespread; and the corresponding plurality of those with whom English Heritage could engage in furthering the appreciation, enhancement and protection of the ECWCs.

Not all of the individuals who have potential in enhancing the record of the ECWCs would necessarily regard themselves as researchers. The ubiquity of personal IT and cameras – including underwater still and video cameras – means that a wide range of people are now able to make easily recorded observations that are of archaeological value. Various initiatives are showing that the interest of members of the public can be stimulated and harnessed to 'crowd source' archaeological data. The CBA's First World War initiative is intended to work on these lines, and the NAS is also inviting the submission of notes and images through its *Lost Beneath the Waves 1914-1918* project. With respect to the individuals that these initiatives will reach and others, English Heritage should consider how best to encourage and enable individual members of the public – whether visitors or divers – to make observations about the heritage assets relating to the ECWCs that they encounter, and to pass on these observations in a way that makes a lasting contribution to the archaeological record.

#### *4.10. Representing Heritage Assets Spatially*

This section had demonstrated the variety of sources of data relating to the ECWCs that could be used in enhancing archaeological knowledge and understanding, and in harnessing and extending public appreciation of the ECWCs.

In many respects, the heritage assets associated with the ECWCs are comparable to the more familiar heritage assets associated with the First and Second World War on land, which have been the focus of extensive record enhancement previously. It is advisable to retain a high degree of commonality in approaches to recording heritage assets on land and at sea to ensure standards, overall coherence and a capacity to make comparisons across environments. However, there are aspects of being at sea that are different to being on land as far as the implications of heritage assets as places are concerned, and this may require a distinct approach to the spatial representation of heritage assets. Although arising out of this appraisal of the ECWCs, the following points may have a wider relevance to recording and representing marine heritage assets in other contexts.

There are four ways in which heritage assets at sea are represented spatially by English Heritage:

- points indicating known sites (shipwrecks; air crash sites; findspots; fishermen's fasteners);
- points indicating the nominal position of casualties (recorded losses), with reference to 'named locations' that are often common to multiple assets;
- polygons representing the extent of designated areas (scheduled monuments and designated wrecks);
- points indicating buildings that are designated (listed buildings), which includes buildings at sea.

Relatively extensive polygons have also been used to indicate historic seascape character areas, but these polygons indicate historic character, not heritage assets as such.

The principle focus of this project has been the War Channels. The War Channels could be recorded as heritage assets: they are areas that have a degree of significance because of their heritage interest. The War Channels can be represented spatially by simple polygons, and named according to their contemporary identification, where known. The extents of the War Channels in the Second World War are – in most cases – depicted on charts so they can be digitised directly. In the First World War, the best depictions so far obtained are centrelines, or a description of start and end points / bearings, with a description of width; these are sufficient to create polygons also. In both the First and Second World Wars the War Channels changed, which is to say specific channel extents had start and end dates. This can be accommodated within 'from and to' fields, so there is no difficulty in principle in accommodating multiple extents of channels, and in being able to show changes. By recording the extent of each channel segment as a separate asset, then grouping the resulting assets, it will be possible to accommodate changes to individual segments whilst still be able to represent the whole.

Minefields could also be regarded as heritage assets and can be recorded as polygons on the basis of historic chart evidence. Again, the 'from and to' fields will enable the sometimes rapid changes to minefields to be accommodated. It should be noted that the extents of minefields are more 'fuzzy' than those of the War Channels; but this need not be a problem. Insofar as they were charted as having firm edges on contemporary charts and these edges

affected behaviour, then it is the charted minefield that is the ‘place’, not the actual spatial extent of the mines. Indeed, the ‘paper minefields’ declared by Britain (Naval Staff 1973) could also be recorded as discrete heritage assets, because they were places that formed part of the defences directed towards Germany, even if no ordnance was laid.

There is also firm spatial data in respect of individual lays of mines and other forms of seabed obstruction. These lays could be recorded as individual heritage assets in addition to the minefield areas. Although mines were not connected to each other when laid (other than in the case of controlled minefields in port approaches), there is no documented spatial information on the position of individual mines; as they were conceived of and represented as lines, then this is an appropriate way to represent them. However, it will probably be appropriate to represent them as polygons rather than polylines, because they would have had a physical ‘width’. It is open to question as to what width they be given: either representing their physical presence (allowing for the area encompassed by a mine moving on a cable in the tide, for example); or providing a ‘buffer’ to allow for likely discrepancies between the charted position and the actual positions of the mines once laid and deployed from the seabed.

Other charted linear features such as booms, indicator nets etc. could be recorded as heritage assets and represented as polygons.

It should be borne in mind that where assets are represented as extensive areas or polylines, displaying them as points on the basis of their nominal centroids will be misleading.

Navigation aids are another class of places that could be recorded as heritage assets because they have significance in understanding how people used the sea, and probably had a strong structuring role in the spatial patterns of sea use – both in war and peace. It is particularly important to record the positions of light vessels as places, because they were so important as the principal frame of reference for navigation by both air and sea in the southern North Sea. Key peacetime buoys could also be recorded as heritage assets because again they have such a clear role in the marine landscape of sea-users. The individual buoys that marked the War Channels ought to be recorded as heritage assets also, in addition to recording the War Channels themselves. They too formed part of the landscape and are referred to in accounts of activities and losses; their role for aviators in the First World War has also been remarked on.

The buoys that formed the inner and outer Z lines in the Second World War were not navigation aids but ‘stations’ to which defensive craft moored during the night to await E-boat raids. Again they are places that formed a defensive structure from mid-1942 onwards and warrant recording as heritage assets that can be represented spatially.

In the case of buoys and light vessels indicating places, it is probably acceptable to represent them as points rather than as polygons, as this is how they are depicted on contemporary charts.

The various assets discussed above warrant recording as historically significant places that are likely to have physical remains associated with them, though not necessarily because physical remains are known to be present. Where physical remains are found – mine sinkers; sunken buoys; mooring chains; sunken light vessels – then it will be a matter of judgement whether the physical evidence is recorded as a separate asset and associated with the existing record for the place, or incorporated into a single asset that records both the place

and the physical remains. The exercise of such judgement will probably be led by the spatial coincidence between the place and the physical remains. Where they coincide closely then a single record will convey all the information in a manner that is appropriate spatially. However, if the physical remains are located some distance from the charted place, then it would be better to record them as separate assets, unless it can be shown that the physical remains better reflect the original position rather than a position attributable to subsequent 'scrambling' processes.

It would be preferable, where possible from geophysical data, to record wrecks as polygons rather than points. Wrecks have extents and in the case of some of the vessels lost in the ECWCs they are quite large. A convention may be required to reflect the overall extent of debris associated with the wreck as opposed to coherent hull. That is to say, even where a recognisable hull form is apparent, the polygon could also take into account the maximum extent of known debris. Where a wreck is in several discrete pieces it may be more appropriate to record it as multiple assets, as is the case currently, depending on the separation and the likelihood of coherent archaeological material in the 'gaps'.

It has already been noted that the wrecks of many ships that were fatally damaged within the War Channels themselves – due to attack, collision or other calamity – actually came to rest outside the War Channels. This may have been due to drifting in the course of being lost, the efforts of the crew to get the vessel out of the channel to avoid presenting a hazard, or attempts to tow or otherwise salvage the vessel that were ultimately unsuccessful. In order to understand and better represent the actions that occurred, it would be preferable to be able to represent the point of the initial calamity – which is often documented – as well as the position of the wreck. For example, the 'group value' of wrecks lost in the same attack by E-boats is not necessarily captured effectively by representing them where they came to rest. Equally, understanding the overall patterning of cause of loss in the ECWCs – representing German strategy or tactics for example – is not readily achievable from the position of wrecks as opposed to the position of attacks. One option would be to record the place where the initial loss occurred as a separate asset, but this would result in a very high level of duplication. Being able to record – and therefore represent spatially – the point of initial loss as separate fields would appear to be a better solution. This is a requirement peculiar to assets that move in the course of entering the physical archaeological record – such as ships and aircraft – so it is not clear that there is a comparable requirement for heritage assets on land.

The approach to representing casualties – vessels lost but not yet associated with physical remains – also warrants review in the light of the data available from documentary sources for the ECWCs. In general terms, casualties are assigned a nominal point-position classed as a 'named location' to represent a general area in which losses occurred. The named locations are not places in themselves; they are simply a common position shared by vessels considered to have been lost in their vicinity. As they share the same nominal position, casualties from the area are stacked on a single point. Generally, in ascribing casualties to the appropriate named location, more specific locational information for the asset is disregarded in how it is represented spatially. For example, the NRHE record of the *Vianna* torpedoed in March 1918 includes '4 Miles East Of Seaham Harbour' in the field 'Location', but is assigned to the Associated Named Location 'Seaham Durham' at Lat/Long N 54 50.20 W 001 19.00 together with other casualties lost in the general vicinity. The position N 54 50.20 W 001 19.00 does not represent the position of the loss of the *Vianna* or of any of the other casualties, nor is this position the best available spatial data for the asset even within the NRHE record. The spatial representation of casualties using named locations continues to be a source of confusion for developers, consultants and some archaeologists.

Nonetheless, there is good reason to use named locations for representing some casualties, especially in earlier periods and/or where confidence in the reported position of loss is low. It should also be borne in mind that named locations were introduced before the widespread use of polygons and GIS to represent heritage assets spatially. There might be a case for converting named locations into heritage assets as places in their own right with which casualties might be associated. An alternative would be to position the loss according to the best available information in the record (i.e. a position '4 Miles East Of Seaham Harbour' in the case of the *Vianna*) rather than a de-tuned named location, though perhaps representing these locations as a polygon to indicate imprecision rather than a point. Certainly, in the case of the ECWCs where there is relatively good spatial information available for many casualties – in the form of reported Lat Long or by reference to buoys marking the channel, for example – then there is a strong case for using 'best available position' rather than named locations. Again, the reason is to enable a better understanding of the ECWCs in spatial terms – identifying patterns of activity and loss – as well as to provide more precise and transparent data for use in development-led assessments and other casework.

A further point about spatial representation is concerned with the recording of vessels that came to grief in the ECWCs but did not result in wrecks. As noted above, strenuous efforts were made to rescue ships that were damaged. These were not always successful, resulting in wrecks away from the place where they were initially damaged, as discussed above. In many cases, however, vessels did escape even major damage, either through their own efforts or with assistance. The NRHE already records vessels that were damaged, sank and were subsequently removed (as 'lift' wrecks in UKHO parlance); but not vessels that were damaged and subsequently removed without sinking. The case for recording 'lift' wrecks in the NRHE is that some physical material may have remained at the place from which the wreck was recovered. In view of the degree of damage suffered by some wrecks without sinking – losing whole sections of hull, for example – there is an equal case for the potential for physical material to be present at that place. Even if the damage was unlikely to have had major consequences in terms of material lying on the seabed, there is a good case for recording places where major damage occurred – ships mined, bombed, torpedoed etc. – so as to more fully represent the activity that took place in the ECWCs.

The question of representing spatially the places where ships were damaged but not lost bleeds into a consideration of recording attacks (where there might have been little damage) and engagements more generally. The case has been made already for regarding the whole of the ECWCs as a battlefield, but there were also many relatively discrete engagements. How to address engagements involving multiple units – with and without losses – is perhaps the most thought provoking, especially given the speeds, distances and confusion that applied in – for example – some of the major convoy attacks and counter-attacks involving E-boats and RN Coastal Forces. This certainly warrants discussion, as these places of engagement can be regarded as heritage assets. However, if the measures suggested above are taken up, a better solution might be to group and associate the wrecks, casualties, buoys and channels etc. that were involved in an engagement, rather than to create an additional asset of which they form part.

## 5. Public Interest in ECWCs and the Scope for Greater Awareness

### 5.1. A Story Waiting to be Told

The point has been made already that the East Coast War Channels are largely unrecognised. Whilst there is a degree of interest in specific sites and episodes, there seems to be little sense of a ‘big picture’ for either the First or Second World Wars even amongst researchers and heritage professionals. The absence of narratives makes it unsurprising that any wider awareness appears to be low. Clearly, there are other aspects of both wars for which public awareness is high; the broad narratives of many aspects of the First and Second World Wars are common knowledge and form an important part of the cultural lexicon of the UK. In the meantime, the North Sea – in England’s history – remains as blank as the area of light blue that is shown on most maps. This was not the case at the time. In both the First and Second World Wars, the maintenance of civil shipping up and down the East Coast was understood as a concept, and as a concept of vital importance to national survival. The photographs and newsreels suggest that this understanding was not limited to the officers, civil servants and politicians who had the overview; there appears to have been a broader awareness and appreciation of what was going on. For some reason the war on the East Coast seems to have faded quickly from public memory: no books, no films, no programmes, no commemorations, no museum displays, no recording initiatives, no designations.

Establishing why this is the case is perplexing. Perhaps it was because in both wars the East Coast just saw steady attrition rather than obvious offensives, or perhaps because ultimately the Allied effort on the East Coast was successful in both wars. Perhaps it was because at the end of each war, the protagonists just got back to their normal business, and perhaps because the ruined ships and lives lay invisible beneath the waves.

There are several paradoxes, beyond the disjunction between the effort and importance of the conflict at the time and it being overlooked today. First, there are large numbers of heritage assets and a huge amount of data relating to them, once you start looking. Second, the conflict took place so close in familiar places. Added to this, the conflict touched many families and communities up and down the East Coast and much further afield. Taken as a whole, these factors suggest that the ECWCs have enormous potential as a rich and engaging story for large numbers of people.

The reason for seeking to tell this story is to bring back to light some important facts about the history of England in the First and Second World Wars, and to broaden the commemoration of those who died and suffered especially in the centenary period of the First World War. Many people are likely to be stimulated by the story for all sorts of reasons, and for some this will mean carrying out their own explorations and investigations. This creates an opportunity to engage such people in generating data about the ECWCs that can be incorporated within records of the historic environment. Through communicating information about the ECWCs and the interest in them, there will also be opportunities to improve the recording and protection of some of the specific heritage assets associated with the ECWCs. As a result, the ECWCs can create social value and an environmental value in terms of the better management of the historic environment as a resource going forward.

There are also grounds for expecting the ECWCs to generate economic value, though the basis for estimating the contribution to economic growth of heritage assets is currently underdeveloped. There is increasing recognition from the Minister downwards<sup>38</sup> that public

<sup>38</sup> ‘Our rich and varied heritage ... delivers real economic benefits’. Ed Vaizey, Minister for Culture, Communications and Creative Industries, Foreword, English Heritage New Model: Consultation, December 2013.

interest in heritage creates an economic dividend from recreation and place-making. The characteristics of the ECWCs as a 'story' with wide appeal, as outlined above, suggest that this dividend could be significant and extensive.

Very many people visit the East Coast and its inshore waters, so there is already a potentially large audience. English Heritage and others have major sites for visitors on the East Coast and there is a high level of public access from coastal paths and beaches. The 'site visits' carried out in the course of this project (Fig. 24-25) made it plain that much of the battlefield is within sight of the coast. There are numerous focal points from which a sense of the ECWCs can be projected, both in connection with onshore heritage assets and on the open coast. That is to say, the battlefield can be made readable without too much difficulty.

The key question is how to convey the position of physical remains that are still present but not visible, when the surface of the sea contains few prompts. In some cases this is relatively straightforward; there are buoys or other features such as headland and bays that can serve. But equally, there are stretches of open water where judgement is less easy. Nonetheless, once a sense of 'where to look' can be provided for the observer on the coast, it can be used to convey a wide range of information using the conventional means of viewpoints, signboards and leaflets, or newer technologies such as podcasts and downloads.

Mobile technologies have great potential to use the position, orientation and tilt of the device to project a point or image onto the seascape in the place corresponding to a submerged asset. The information conveyed using such individual positioning need not be solely from the ether to the observer. Digital initiatives such as the ShoreUPDATE mobile application by SCHARP<sup>39</sup> enable observers to upload information that they collect about heritage assets to the underpinning database, ensuring that engagement is two-way.

For people on the sea such as ferry passengers, sea anglers, boat owners and divers the possibility of providing engaging information about the ECWCs is much simpler. Many significant wrecks are already charted, so supplementing this information with conventional leaflets and guides is straightforward. Again, mobile devices can convey such information in a more interactive manner, using their internal position-fixing. For divers, dry materials can be accompanied by waterproof site maps, for example.

Not everybody is either able or wishes to explore the historic environment by being within it. Being on or in the water is definitely a barrier for some, hence the advantages of online access are even greater for the marine environment than on land. With the right content, people could be enabled to explore – and contribute to – the archaeology of the ECWCs from armchairs far inland, or across the world.

The new technologies are not the only way to overcome the invisibility of the ECWCs. That the marine components of the ECWCs are not self-evident can be turned to advantage because of the space it allows for imagination and creativity. Given the strong human interest of many of the events in which heritage assets were involved on the East Coast, the opportunities to explore the ECWCs through art, storytelling, poetry, performance and so on are especially rich. Using varied media promises to engage different audiences in what can seem a very technical subject.

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<sup>39</sup> Scotland's Coastal Heritage at Risk Project -- <http://scharp.co.uk/taking-part/shoreupdate/>

## 5.2. Outline Communication Plan

### Challenges

- To overcome the absence of the ECWCs from England's story;
- To create durable narratives with which many people can engage;
- To enable participation with respect to heritage assets that are not visible or physically accessible to most people;
- To harness people's interest in a way that augments archaeological knowledge;
- To achieve attitudes that will facilitate the physical survival of significant heritage assets for the future;
- To commemorate the ECWCs in a way that creates positive outcomes for this and future generations.

### Goal

To kick-start the heritage cycle with respect to the ECWCs – understanding; valuing; caring; enjoying.

### Audiences and Messages

Audience	Messages
Heritage Community	<ul style="list-style-type: none"> <li>• The ECWCs are a significant part of England's story.</li> <li>• The ECWCs warrant equal consideration and management alongside other themes from the First and Second World Wars.</li> <li>• The ECWCs provide fascinating insights into other aspects of C20th history and archaeology.</li> </ul>
Sea-users and Planners	<ul style="list-style-type: none"> <li>• The ECWCs were an important battlefield in the First and Second World Wars.</li> <li>• The battlefield is still strewn with physical remains that are both a memorial and a significant component of the historic environment of the East Coast.</li> <li>• In your activities, take care not to cause unnecessary damage to the remains of the ECWCs.</li> </ul>
Inhabitants and Visitors	<ul style="list-style-type: none"> <li>• There was hard fighting within sight of this coast in the First and Second World Wars.</li> <li>• The conflict in the ECWCs touched many people up and down the East Coast, and further afield.</li> <li>• You can take part in finding out more about the ECWCS and its heritage assets and help add to the available knowledge and understanding.</li> </ul>

### Channels

Part of the lack of awareness of the ECWCs appears to be attributable to the lack of unifying concept or narrative that can hold together such a complex, inter-related and extensive

campaign. This project has used the ‘East Coast War Channels’ to try to provide a conceptual handle, though even this term is not altogether satisfactory. As noted above, other aspects of the First and Second World Wars have labels that provide an effective shorthand that – in terms of communication planning – can be seen almost as a ‘brand’. Considered in these terms, the ECWCs would benefit from having an identity that will aid recognition and understanding across disparate audiences. Not surprisingly, many other facets of the historic environment have ‘brands’ either as historical events – the Somme, Gallipoli, Passchendaele, Dunkirk, the Battle of Britain, the Blitz, the Battle of the Atlantic, the Arctic Convoys, D-Day – or as organisations and initiatives in the present. Potential problems for the ECWCs are that it could get lost amongst these other strong institutional and event-based identities; or it could cause confusion if added to the mix. The likely advantages of promoting the ECWCs in a way that enables widespread recognition probably overrides these reservations.

An effective concept that can be used in communications is necessary because the most appropriate way to build awareness of the ECWCs and realise the benefits that follow will be to use multiple channels, most often in connection with other partners. A common identity will mean that effort can be spread widely without becoming diffuse. As noted in earlier sections, many organisations are planning events and initiatives around the centenary of the First World War. Simply adding another separate initiative seems unlikely to make much impression. Rather, it appears advisable to work with multiple partners in the course of their own First World War Centenary activities to draw attention to maritime and archaeological aspects of the conflict on the East Coast that would otherwise be ignored. Combining a single identity for the ECWCs with partnership delivery across multiple channels offers a good approach to making the most of the opportunities that a very busy four years will offer.

Specific channels for delivering key messages about the ECWCs have been outlined above. It is anticipated that communication will normally accompany activity. That is to say, messages about the ECWCs will be woven into the measures taken to engage people in the ECWCs and to enhance knowledge and understanding. In practice, this would mean that the common identity and messages will form part of such leaflets, booklets, posters, signboards, websites, events etc. that take place, rather than being issued as discrete media releases.

Some communications have already been anticipated and provided for within the current project, notably this project report – which will be made available on the web and circulated to stakeholders – and its Executive Summary, which will be suitable for yet wider distribution. Provision has also been made for a note to be prepared on the results of this initial work for publication in a peer-reviewed journal. The intention of the published note is to start communicating results and key messages to the heritage community in a manner that can be cited formally. In addition, provision has been made to draft and submit some articles to a range of magazines with readerships among sea-users and the wider community with interests in heritage.

The Project Design noted the potential to develop interest through the media, including broadcast media. The findings of the project underscore the potential interest to the media at many levels, from local to international, but no steps have been taken in this direction pending discussion of this outline communication plan with English Heritage.

## 6. Conclusion and Recommendations

### 6.1. Recognition

In both World Wars a pitched battle was fought within a few miles of England's East Coast, which in both cases was of vital importance to the survival of the country. The losses were traumatic and on a large scale. Hundreds of heritage assets still feature on the battlefield, but it is not simply the losses that warrant attention: of key importance is the phenomenal effort that went into keeping the battle going. In this regard, the remaining heritage assets stand for not only what was lost, but also for what was not. It is also important that the effort was maintained – *had* to be maintained – even when enemy action became less intense. For this reason, each battle can be said to have continued for the entire duration of each war, including the years 1943-44 when defence against attack was relatively secure. In both wars, the East Coast War Channels were constructed and maintained, creating a highly structured battlefield – perhaps the largest defensive structure in the UK.

Despite all of this, the battle of the East Coast in both wars is largely unrecognised. The history and the surviving heritage assets have received little attention. A small number of historians and researchers have done a great deal to shine light on the ECWC, but both the 'big picture' and much of the detail remains obscure. This is not for want of data. There is a huge amount of primary documentary information, photographs, charts, personal accounts and so on. There are also large numbers of surviving heritage assets that can be investigated and recorded using readily-available tools. As well as heritage assets at sea there are important heritage assets on land, some of which are recognised and protected, even if their intended purpose and relation to the ECWCs is only vaguely sensed.

The principal conclusion of this assessment is, therefore, that there is a huge gap in the appreciation of England's story in the First and Second World Wars, and a commensurate gap in the approach to protecting significant heritage assets relating to both wars. Accordingly, the principal recommendation is that the ECWCs be recognised by English Heritage as a highly significant feature or theme that warrants specific action to raise awareness and facilitate protection.

The ECWCs are critical in both the First and Second World Wars, but in view of the approaching First World War centenary, initiatives focussing on the ECWCs in the First World War alone could provide a pragmatic and practicable first step.

In suggesting a focus in the first instance on the ECWCs in the First World War, it should be borne in mind that the ECWCs in the Second World War has been almost totally overlooked in previous heritage initiatives. Heritage assets relating to anti-invasion defences, anti-aircraft sites, airfields, D-Day sites and various other forms of infrastructure have been the subject of detailed assessment, recording and protection (including designation). Given the enormity of the effort and the duration of the conflict on the East Coast in the Second World War – especially relative to the aspects of the Second World War that have received attention to date – then the ECWCs in the Second World War require remedial action also.

A final comment on the priority to be afforded to the ECWCs is the level of development pressure and the planning context. The East Coast is subject to a high level of development and use for renewable energy, aggregate dredging, port development and fishing. Although there is a general tendency to avoid known wrecks, protocols for archaeological discoveries are repeatedly demonstrating that development has effects on as-yet unknown sites. The current invisibility of the ECWCs also renders difficult the attribution of significance to wrecks from the First and Second World Wars because they can seem just like an innumerable

mass, to the developers if not their archaeological consultants. The invisibility of the ECWCs also means that the potential cumulative effects of development and other marine activity are not being recognised. That is to say, attrition may be occurring at a landscape scale from developments which have themselves only a limited footprint because the landscape itself has not been identified. It is recommended that the presence of the ECWCs as a distinctive attribute of the East Inshore and East Offshore Zones is made apparent through the marine planning and licensing system, including the draft East Inshore and East Offshore Marine Plan. Consideration of the ECWCs as being eligible for designation as a battlefield is recommended as a means through which awareness of the ECWCs can be raised across marine sectors.

### *6.2. Maritime Aspects of C20th Conflict elsewhere in England*

The gap through which the ECWCs have fallen in terms of heritage protection is clearly wider than the East Coast. It is only recently that maritime aspects of C20th conflict have become subject to specific action by English Heritage, though some heritage assets with a maritime character have been addressed – to some degree incidentally – through work on naval bases and radar stations, for example. As a result, civilian shipping in the other theatres immediately around the UK have also fallen through the gap, as have RN operations more generally. Accordingly, what makes the ECWCs a special case warranting priority attention?

The other theatres akin to the ECWCs can be summarised as Dover, the South Coast, the Western Approaches, the Bristol Channel, and the Irish Sea. These other theatres have not been appraised in the course of this project, but some preliminary comments arise from it nonetheless. The overriding point is that the history and heritage assets of these other ‘home waters’ theatres certainly deserve specific consideration. Dover in particular should be given prompt attention as it is in many ways similar to the ECWCs – especially in the sense of there being a physical defence landscape of minefields, booms, channels, gates etc. supported by heritage assets at the coast and heavily populated by sunken vessels and aircraft. Assessment of the Dover area really needs to extend across the Channel to encompass the Belgian coast and the French coast south to Boulogne.

The South Coast, Western Approaches, Bristol Channel and Irish Sea could each be approached in a similar way to the ECWC. They were certainly subject to specific action by German forces and countermeasures, and there were heavy losses especially on the South Coast and in the Western Approaches. In general terms, the intensity of sites is not as great as in the ECWCs as the routes in and out fanned into the Atlantic. Nonetheless, a preliminary quantified spatial characterisation of these theatres relatively to the infrastructure of channels and minefields would be worthwhile.

### *6.3. Potential for Enhancement and Integration*

The ECWCs has not fallen through the gap of heritage provision in one important respect, which is the NRHE. EH already has a good preliminary inventory of heritage assets relating to the ECWC, representing years of recording activity. As this report has shown, however, there is great scope for major enhancement of NRHE records relating to the ECWCS: in adding to the content of records; in developing recording practices – especially relating to spatial aspects of the ECWCs; and in changing the structure and thesauri to facilitate overarching queries. PastScape enables public access to the NRHE, but further attention to records relating to the ECWCs might make it more useful as a means of discovering data about the ECWC. The availability of good ‘discovery’ summary data about ECWCs heritage assets – perhaps helped by a thematic ECWCs application akin to EH’s ‘Britain from Above’

initiative – would both increase access and awareness of the ECWCs amongst the public at large, and open the way to ‘crowd-sourced’ enhancement.

One aspect of the NRHE record that causes a particular problem in understanding and appreciating the ECWCs is the limitation of recording to the English Inshore Zone, i.e. the Territorial Sea. The ECWCs extend beyond the English Inshore Zone off Norfolk in particular, hence ECWC-related sites are not fully recorded. As well as meaning that EH’s record of the ECWCs is only partial, this limitation reduces the capacity to understand the significance of those ECWCs sites that are within the Inshore Zone. It is also a major impediment to marine planning and licensing, as many of the activities being considered in this region – including specific developments – extend into the Offshore Zone where there is an absence of heritage data but not of heritage assets. It is strongly recommended that this limitation in the NRHE is brought to the attention of the marine planning and licensing authority and addressed by the NRHE formally or informally.

As indicated above, there is a great deal of documentary, photographic, cartographic and other data relating to the ECWC. Generally, this data is severed from the heritage assets to which it relates. The separation of data from heritage assets renders both much less coherent and much less meaningful. From the point of view of the public, this means that both the heritage assets and the data may appear as an overwhelming, unnavigable jumble, unless they have a very specific route of their own to follow, such as a family history. From the point of view of the archaeologist, it makes it difficult to make sense of the significance of individual heritage assets relative to the whole. The apparent meaninglessness of many heritage assets and data when severed is in huge contrast to the richness of heritage assets when re-connected. The Wrecksite has done a great deal to re-make connections, generally by harnessing the effort of individual researchers, which is why it is such a valuable resource; but much more could be done to re-connect English Heritage’s public records. Hence, a key recommendation of this project is that English Heritage takes steps by collaborating with institutions and the public to re-connect ECWCs heritage assets to the rich data that relates to them. This could be a major public focus of commemorating the First World War centenary.

#### *6.4. Enabling Access*

Because of their situation underwater, access to ECWCs heritage assets by the majority of the public is going to be based on access to information. Only the diving public can access heritage assets that are submerged, and even their access to a wreck as a meaningful heritage asset is dependent on information about what they are observing. Enabling access through information should be a major thread, encompassing the diving public but other sea users such as people engaged in recreational boating and sea angling, for example. Although they are not underwater, recreational sea-users have physical access to the battlefield nevertheless. They frequent its topography and features – even the humps and bumps of its heritage assets – without necessarily being aware of it. So again, providing accessible, rich information is the key to increasing access to the ECWCs to these user-groups also. The same can be said of the thousands of people who visit the coast but do not venture far from the beach or cliff top. The ECWCs is laid out before them; most of the action in both wars took place within the visible range of the coast. All of these people too can have access to the ECWCs through the provision of suitable information.

The opportunities for enabling access to the ECWCs to the public at the coast and at sea are very great. Mobile technology in particular provides scope for the public to explore existing records through PastScape and the Wrecksite, though neither of these is optimised for this

purpose – in terms of either the application or the content. As noted above, a thematic application that provided access to NRHE records and information about the broader picture could be a useful step forward. Historypin, which already has a mobile application and is being used by English Heritage to enable greater access to its photographic archives, also has potential as a way of enabling people to explore the ECWCs either while they are out and about in its vicinity, or in their armchairs.

English Heritage also has a great opportunity – especially in the course of the First World War centenary – to use its own historic properties to increase access to the ECWCs. Such access seems likely to generate a dividend from increased visitor numbers, increased visitor dwell-time and – given the scope to pick out different themes over the duration of the centenary – from repeat visits. English Heritage has several coastal properties that are especially well situated in this respect, such as Reculver, Landguard Fort, Scarborough Castle, Whitby Abbey, Tynemouth, Dunstanburgh and Lindisfarne. In some instances, these properties include heritage assets contemporary with the ECWCs in the two world wars. It is recommended, therefore, that the potential to use English Heritage properties to facilitate access and appreciation of the ECWCs is explored.

Equally, there are a number of other organisations that already enable access to the East Coast and North Sea that could be encouraged to develop initiatives relating to the ECWCs either in the context of the First World War Centenary or more generally. Examples include local authority archaeology services along the East Coast; the National Trust, which has many coastal properties fronting the ECWC; museums such as Tide and Tide (Norfolk Museum Service) and the Henry Blogg Museum (RNLI – Cromer); and organisations who operate coastal paths and activity centres, such as the North Yorkshire Moors National Park. There are also smaller local organisations that encourage access to the coast and/or coastal heritage, such as the Scarborough Maritime Heritage centre and Frinton and Walton Heritage Trust, which could also be assisted in drawing greater attention to the heritage assets of the ECWC. Often these organisations – whether national or local – have their own data and expertise that it would be productive for English Heritage to gain access to; hence there is potential for symbiosis whereby English Heritage, the organisations they engage with, and the public all gain from a relationship built around the ECWC.

What is proposed here is effectively a form of community archaeology directed at investigating and appreciating the heritage assets of the ECWCs by support for local projects either directly or in collaboration with larger organisations. The number and variety of First World War initiatives planned on the East Coast adds to the scope for a productive, symbiotic approach to the ECWCs as community archaeology. The benefit for the ECWCs of resources directed towards the First World War centenary could be magnified significantly by helping these organisations to access archaeological data; guiding them to sources; providing information about context and significance; and helping with a toolbox of materials and approaches.

It is a conclusion and recommendation of this project that the impact of English Heritage engagement with the ECWCs in the context of the First World War centenary will be greater if it provides archaeological support to other initiatives, rather than embarking on its own separate initiative. This archaeological support should encourage other initiatives to focus upon heritage assets in the historic environment and to draw upon archaeological approaches; and seek to ensure that information generated by these initiatives is in a form that can be used to enhance historic environment records and to further the understanding of significance. The overall intention should be that commemoration of the First World War

centenary achieves a tangible and durable contribution to understanding and awareness of the ECWCs that lasts much longer than the centenary itself.

### *6.5. An Outline Research Framework?*

In order for English Heritage to get the most from its support for and engagement with other initiatives – and indeed for any other actions it takes with respect to the ECWCs – it would be helpful to develop an outline ‘research framework’. This need only be a brief exercise, to review what is known as a result of this project and others, and what EH’s own priorities are for enhancing records and understanding significance. These priorities could be chronological, spatial, thematic, source-based or based on specific asset types. At this stage, it seems more likely that priorities will be based on subsets of assets rather than individual heritage assets themselves; but there are nonetheless a few specific assets that could benefit from particular attention. The following priorities are given solely by way of example:

#### Chronological

- 1916 – period of greatest losses in ECWCs in First World War
- May 1940 to Dec 1942 – period of intense losses in the Second World War

#### Spatial

- Flamborough to Redcar (intense focus of U-boat activity in First World War)
- Essex Coast (area of very heavy losses in both wars)
- Humber / Humber Approaches
- Position of ECWCs in First World War
- Heritage assets associated with the War Channels in the English Offshore Region (notably off Norfolk)

#### Thematic

- Aerial anti-submarine patrols and escorts in First World War
- E-boat actions ('E-boat Alley'; the group value of vessels lost in attacks; actions against E-boats)

#### Source-based

- Ship models held in museums (e.g. Tyne and Wear Museums)
- Ship portraits in IWM collections and elsewhere
- CWGC casualty records
- National Archive survivors’ accounts and pro forma reports of submarine attack / air attack

#### Asset Type

- Fishing vessels engaged in fishing
- HM Trawlers – minesweepers and patrol craft
- Other minor warship classes – e.g. motor launches, HDML, MMS

- Wireless Stations: Direction-Finding; Intercept; Headache
- Surface-watching CD/CHL radar sites
- Sea forts and towers (Humber; Thames-Essex; Nab tower)
- Booms and other physical maritime defence structures

### Specific Assets

- HMS *Amphion*; RFA *Creosol*; HMS *Exmoor*; HMS *Fortuna*; HMS *Fitzroy*; HMS *Patia*; HMSM *Umpire*; HMS *Vortigern*; (sites protected under PMRA 1986)
- THV *Irene*; THV *Reculver*; THV *Argus*; THV *Strathearn* (Trinity House vessels sunk by enemy action)
- RNAS Seaton Carew; RNAS Killingholme; RNAS South Shields (air stations with surviving features)

### *6.6. Management, Investigation and Designation*

One area that remains particularly problematic is the attribution of significance to the merchant vessels themselves: cargo ships; passenger-cargo ships; passenger ships and tankers. According to the Wrecksite, merchant vessels total over 900 wrecks in the area of the ECWCs across both wars; they are therefore the most commonly encountered form of wreck especially in the context of marine planning and licensing. Further work could be done on the basis of EH's general guidance on ships and boats (English Heritage 2012b), the previous *Assessing Boats and Ships* project (EH 5693)(Wessex Archaeology 2011a; Wessex Archaeology 2011b), and more refined quantification of data from the NRHE and/or the Wrecksite. The intention should be to arrive at either a simple guide as to how the significance of merchant vessel wrecks in the ECWCs is to be approached; or an upfront indication of which (classes of) merchant vessel wreck will be considered most significant by EH.

Field investigation to support the assessment of significance is not advocated here except where opportunities arise in the course of other investigation programmes (e.g. recent geophysical survey of UB-41 and UB-75 (Wessex Archaeology 2013). Nonetheless, field data is obviously desirable and efforts should be made to make best use of existing data and to encourage the acquisition of archaeologically-useful data from proposed investigations. Further work could be carried out to incorporate into the NRHE existing geophysical images acquired in the course of strategic surveys (e.g. the REC surveys; surveys associated with Marine Conservation Zone (MCZ) designation) and development-led surveys, for example. Previous dive reports – and data such as images and video – might also be 're-used' in this way where there is sufficient confidence in the observations and positioning. The prospect of further diving in connection with initiatives such as the NAS *Lost Beneath the Waves 1914-1918* project could also be used to harvest primary observations, including photographs and video clips, though it should be noted that the primary purpose of this initiative is commemoration rather than data gathering.

At this stage, no firm recommendations are given with respect to designation of heritage assets except, as already mentioned, the desirability of giving serious consideration to the eligibility of the ECWCs as a whole as a registered battlefield. Some heritage assets relating to the ECWCs are already designated (e.g. Bull Sand Fort (LID 1083477); Haile Sand Fort (LID 1240990); Radar Station East of Bent Rigg Farm, Ravenscar (LID 1020544)), and in these cases it is recommended that their relation to the ECWCs is made explicit in their

reasons for designation. Other equivalent heritage assets appear not to have been designated: the sea forts of the Thames Estuary and Essex Coast, and various elements of boom defences being examples. As noted above, several ECWCs heritage assets are designated under the PMRA 1986, not on account of their historical significance, but principally because of the huge loss of life associated with them. In these instances, useful work could be carried out to elaborate the significance of these sites in the context of the ECWC, raising awareness of the ECWCs but also making the best of the incidental protection that designation under the PMRA 1986 affords.

### *6.7. A Renewed Commitment*

It seems remarkable that the ECWCs do not feature much more strongly in our historical awareness of the First and Second World Wars, whether it be amongst archaeologists, historians, researchers or the general public. This generation has apparently failed to recognise the effort and archaeological legacy of all those who persisted in maintaining civilian shipping on the East Coast in both wars. Whether they were on the water or not, and whether they were lost or survived, we appear oblivious, not indebted. The approaching First World War Centenary presents an opportunity to correct this, and to start making amends in respect of the ECWCs in the Second World War also. It is difficult to comprehend what it must have been like to traverse the War Channels day after day, year after year, whilst expecting a massive explosion at any moment – never mind actively seeking to drag a live mine from the depths. It is also difficult to comprehend the enormity and complexity of the interlocking systems that built, manned, armed and organised whole convoys, individual ships, escorts, aircraft, wireless stations, naval bases, booms, radar stations and so on. Commemoration is important and necessary but a few minutes' silence and flowers scattered on the water does not seem a sufficient response. Faced with what our predecessors endured and achieved, our obligation must be to try to comprehend: to understand what they did, why they did it, and why it was so important – starting with the places where it actually happened. Hence, commemoration has to be accompanied by an effort to understand, appreciate and if necessary protect the physical remains of the ECWC. There is a commitment we need to renew: we *will* remember them.

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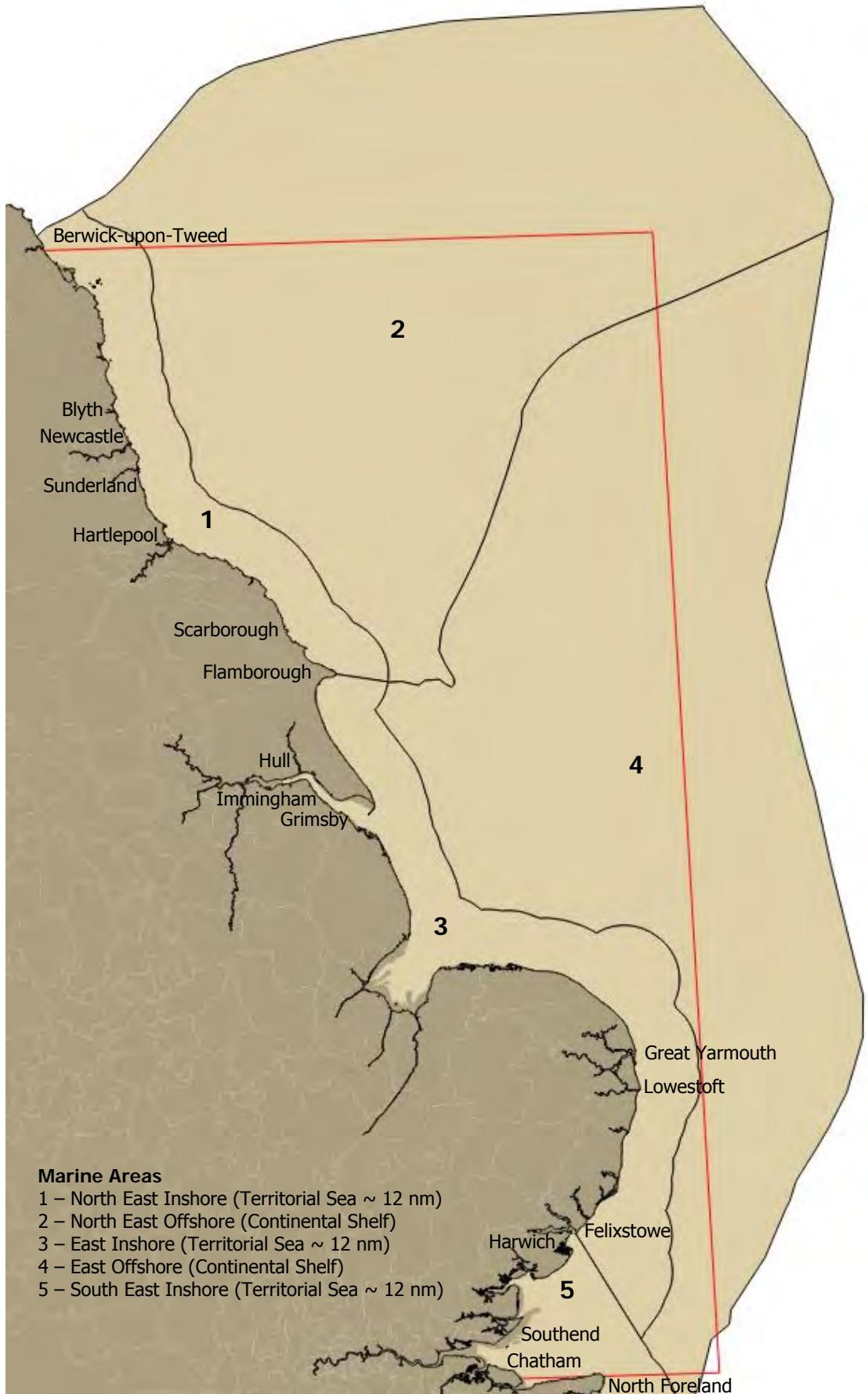
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## 8. Appendix I: Wrecks referred to in the Text

Name	NRHE (UID)	The Wrecksite
Aisha	904791	73826
Amethyst	904800	73856
Amphion	-	9536
Aragonite	-	73539
Argus	904776	72644
Aruba	1349687	10079
Ash	1441450	72658
Athelduke	943562	64181; 30767
Avondale Park	-	4878
Blacktoft	-	58409
Boulderpool	907520	70275; 11239
Bradglen	904806	73872
Bulwark	904919	10834
Cape Spartel	1352220	2794
Caroline	1377174	66277
Corduff	907486	10088
Corton Light Vessel	912968	9847
Creosol	1539528	6451
Dirk	907965	66275
Dotterel	1349627	-
Dynamo	901512	74293
East Goodwin Light Vessel	-	73567
East Oaze Light Vessel	904787	73816
Emile Deschamps	904914	11824
English Trader	907489	17801
Erna Boldt	908138	13404
Exmoor	880002	401
Fernebo	927611	147175
Firth	912889	13430
Fitzroy	929049	10098
Fortuna	1349411	119120
G-8	-	16136
Glen Prosen	907436	170869
Goodwood	907954	70903
Horseferry	-	10106
Irene	904782	73806
Kenton	907494	70369
Konigin Louise	-	9543
Lerwick	909188	65743
Letchworth	904766	72618
Loch Lomond	-	70869
Madame Renee	909156	10993
Monarch	987723	564
Montferland	907461	70321
Nautilus	-	68616
Norman Queen	907475	70353
Patia	1001497	12770
Princes Irene	904923	11621

Name	NRHE (UID)	The Wrecksite
Reculver	907843	68599
Rohilla	909206	1813
Ryal	1300265	73888
Rye	907459	70316
Simon Bolivar	908117	1865
Sneland I	-	4879
Speedy	1353859	68811
Stanmount	929155	9881
Storm	901535	13351
Strathearn	1025747	74183
Taber Park	912908	11029
Terukuni Maru	908125	10644
Togston	1376768	70880
Trevethoe	907460	10848
U-1274	-	4819
Umpire	907582	11044
Vianna	1367515	13346
Vimiera	904747	461; 72590; 72591
Voreda	1227484	31423
Vortigern	907560	463

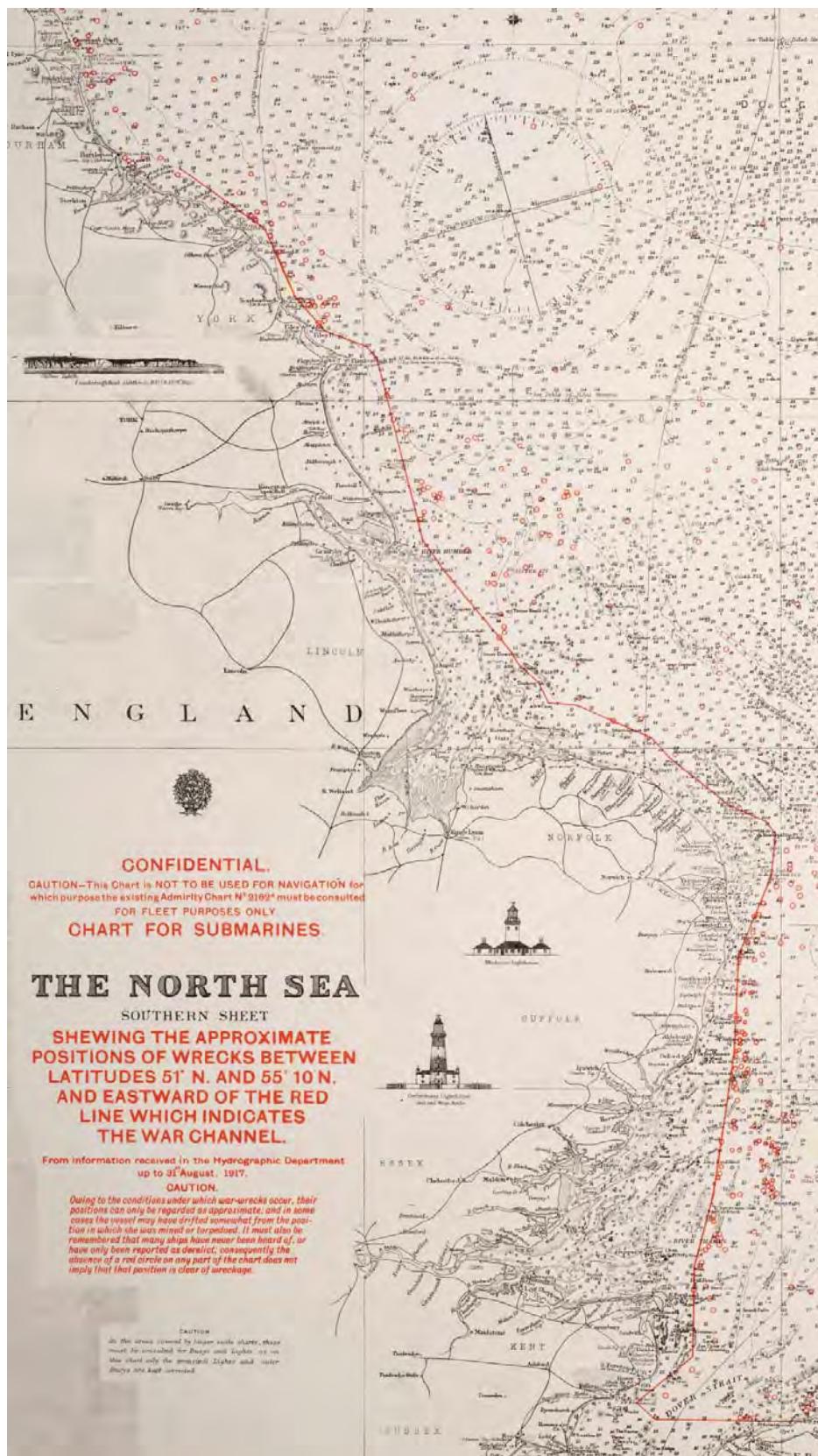


#### Marine Areas

- 1 – North East Inshore (Territorial Sea ~ 12 nm)
- 2 – North East Offshore (Continental Shelf)
- 3 – East Inshore (Territorial Sea ~ 12 nm)
- 4 – East Offshore (Continental Shelf)
- 5 – South East Inshore (Territorial Sea ~ 12 nm)

— Extent of NRHE Search

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<http://www.nationalarchives.gov.uk/doc/open-government-licence/version/>



Sourced from the UK Hydrographic Office ([www.ukho.gov.uk](http://www.ukho.gov.uk)).

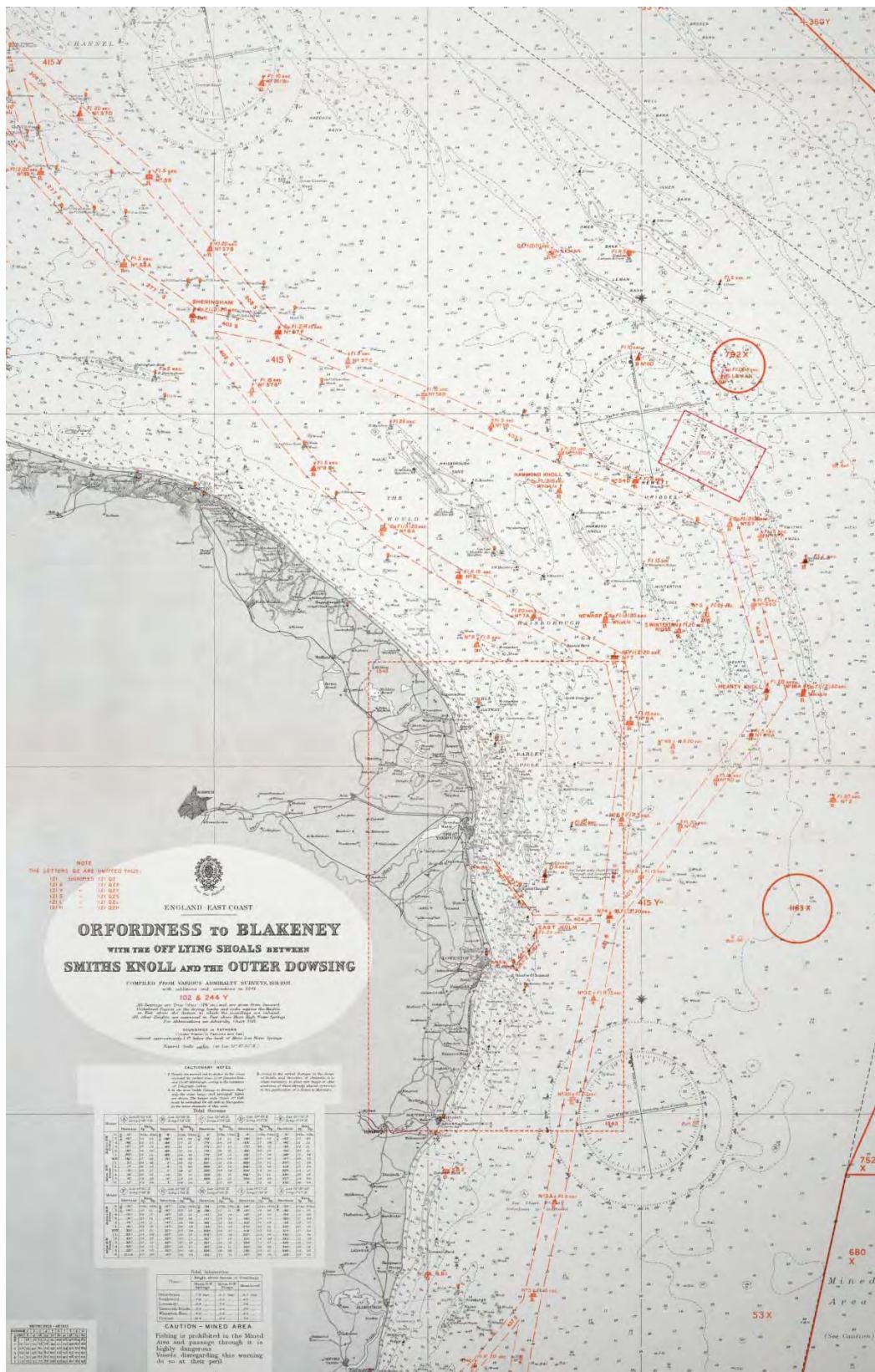
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The War Channels in the First World War

Figure 2



Sourced from the UK Hydrographic Office ([www.ukho.gov.uk](http://www.ukho.gov.uk)).

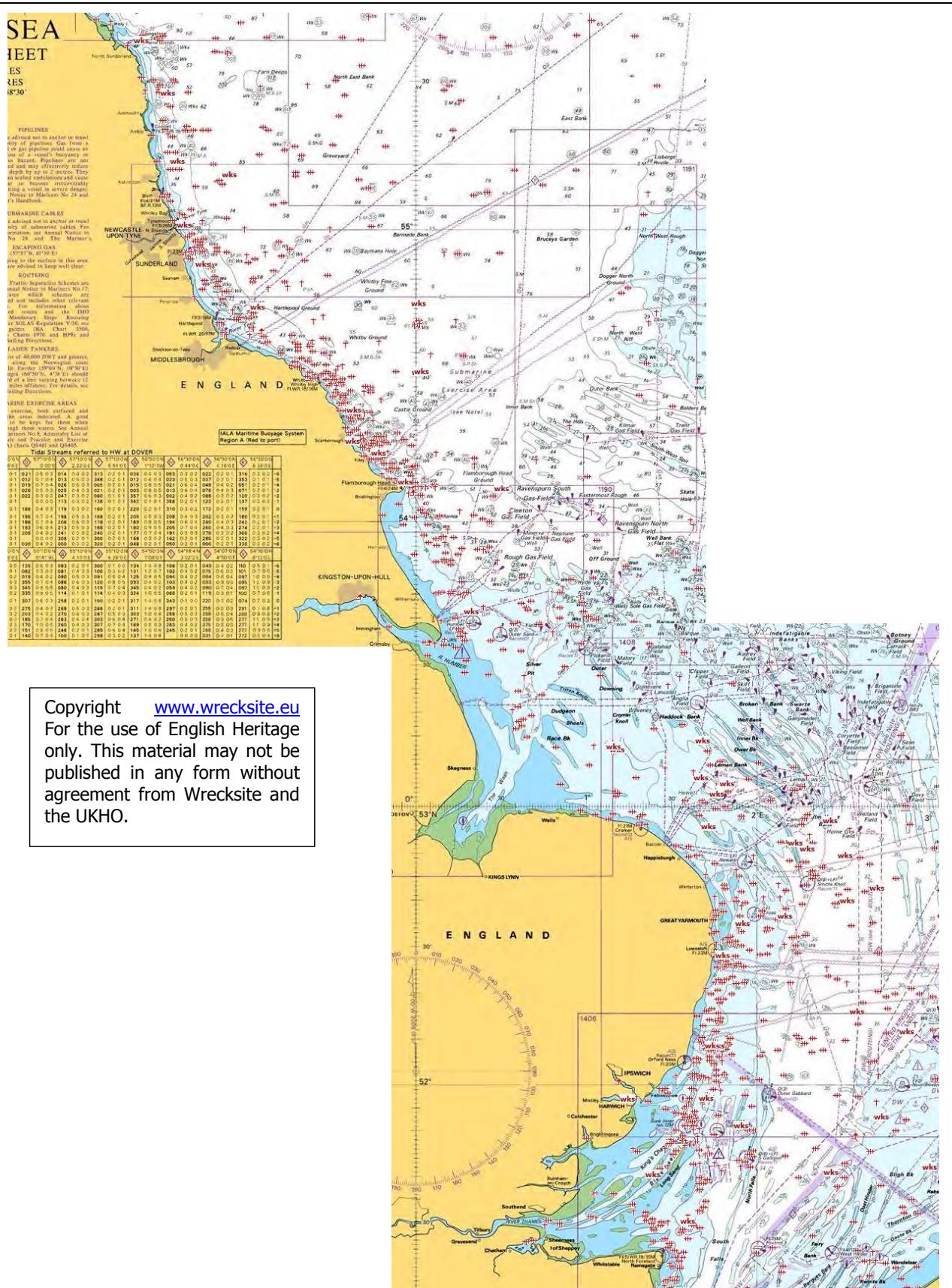
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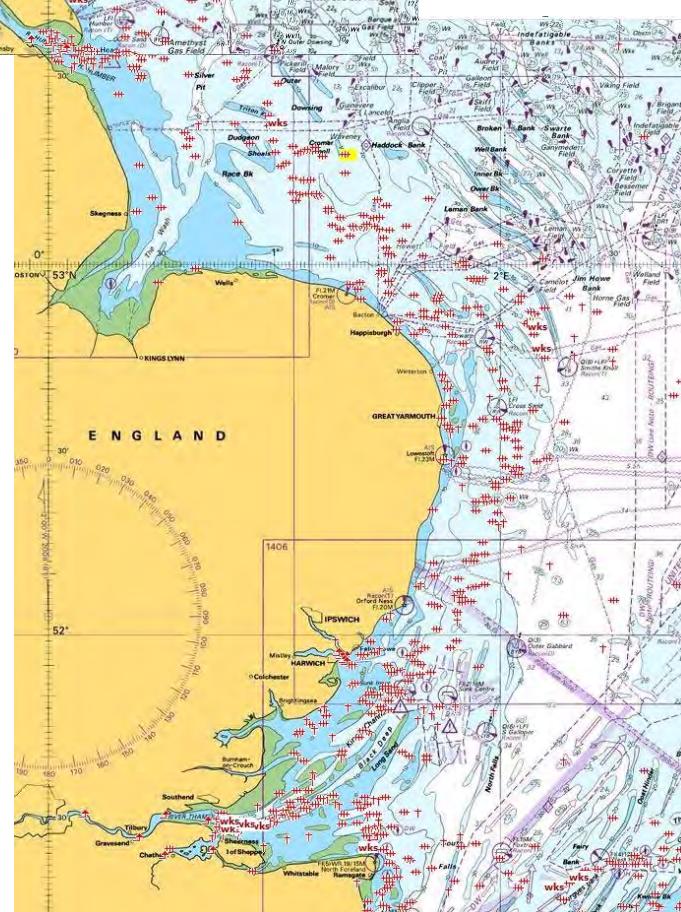
The War Channels in the Second World War – off East Anglia

Figure 3





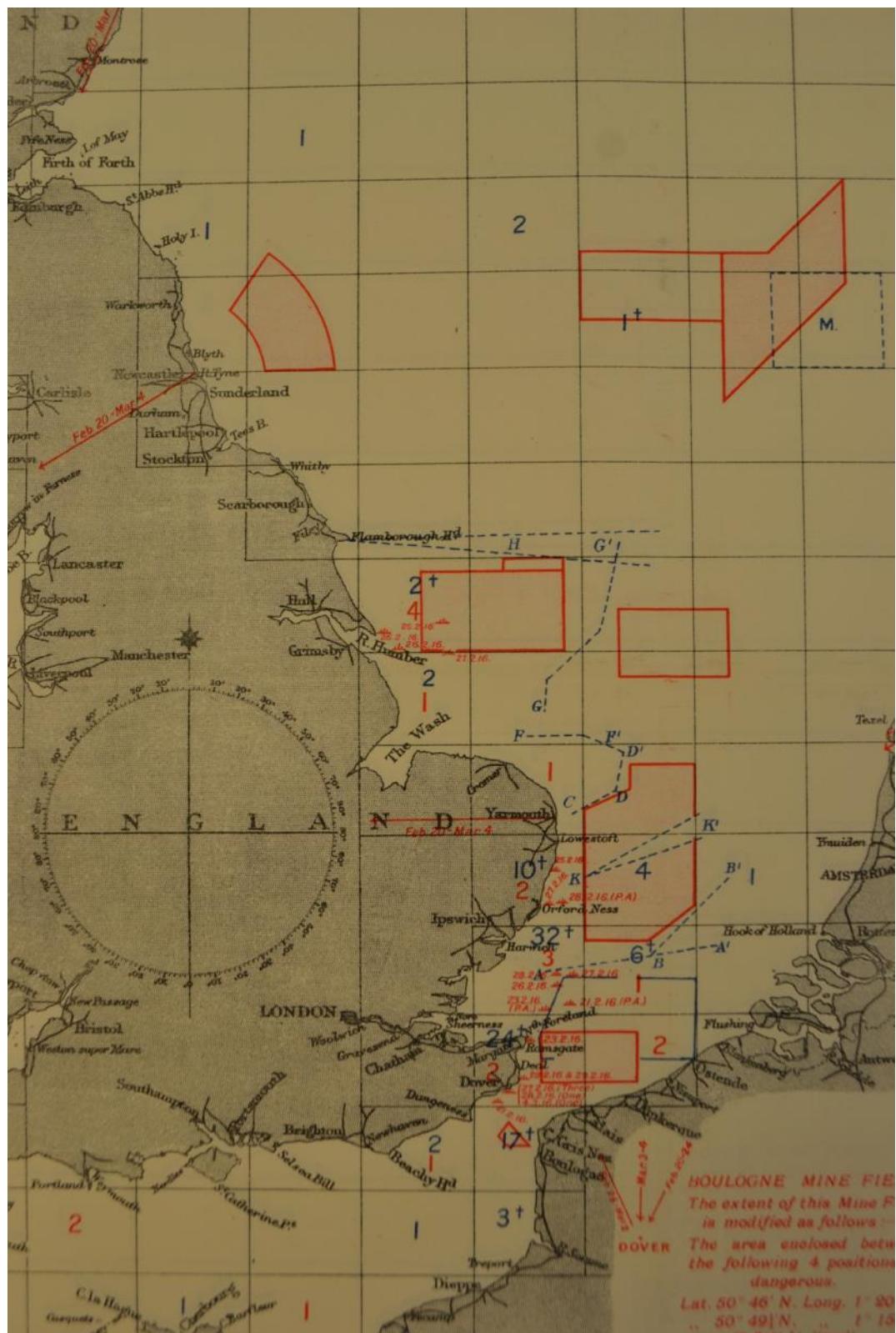
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X 74 6<sup>th</sup> March 1916 (Extract)

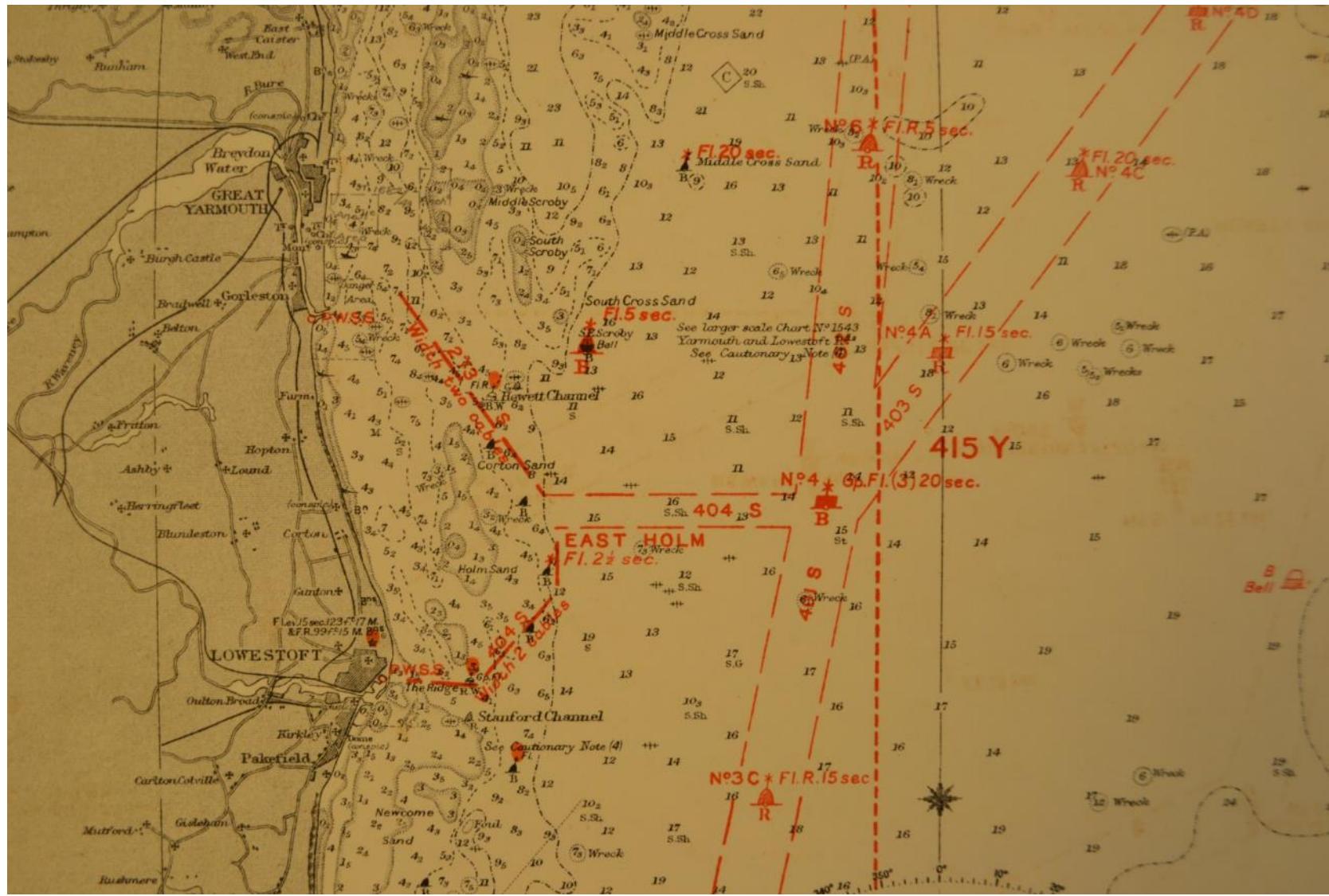
Photograph by AJ Firth / Fjordr from material held at UK Hydrographic Office ([www.ukho.gov.uk](http://www.ukho.gov.uk)).



Courtesy of Cross & Cockade International. With thanks to Mick Davis.

Airman's Chart showing War Channel buoys in the First World War

Figure 7



MO 1089 26<sup>th</sup> March 1943  
(Extract)

Photograph by AJ Firth /  
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at UK Hydrographic Office  
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## Detail of War Channels off Great Yarmouth and Lowestoft

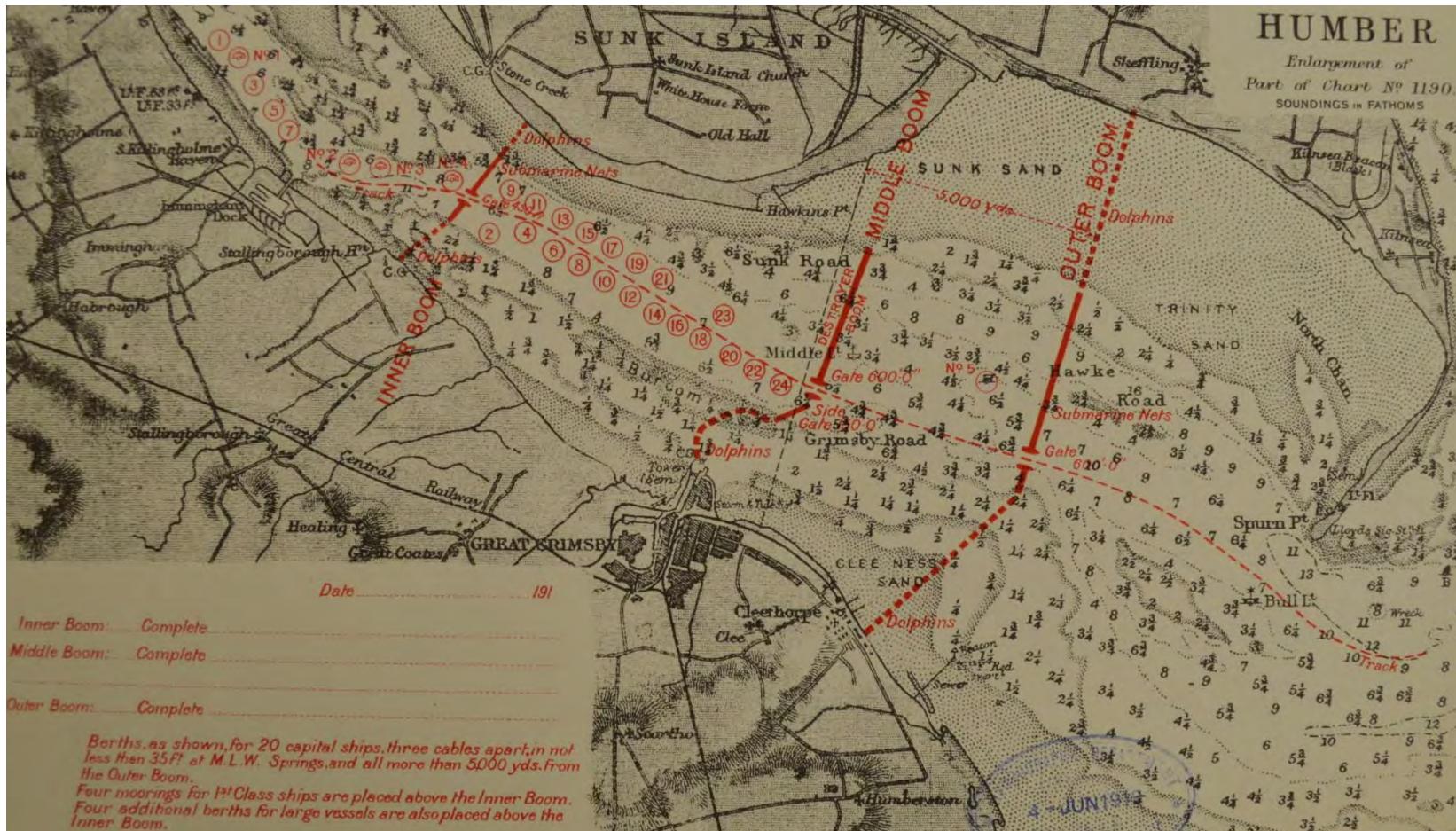
**Figure 8**



HZ Mark II mine on a Mark VIII sinker  
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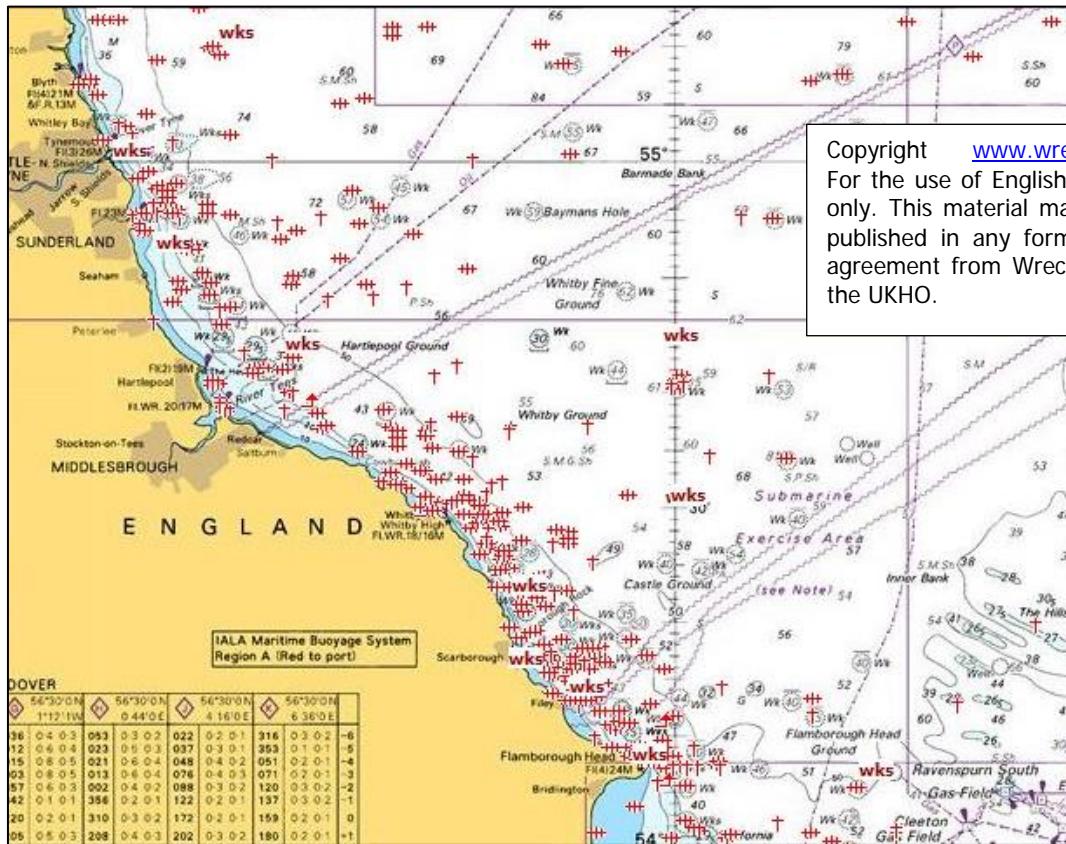
Z 141J 16<sup>th</sup> June 1916  
(Extract)

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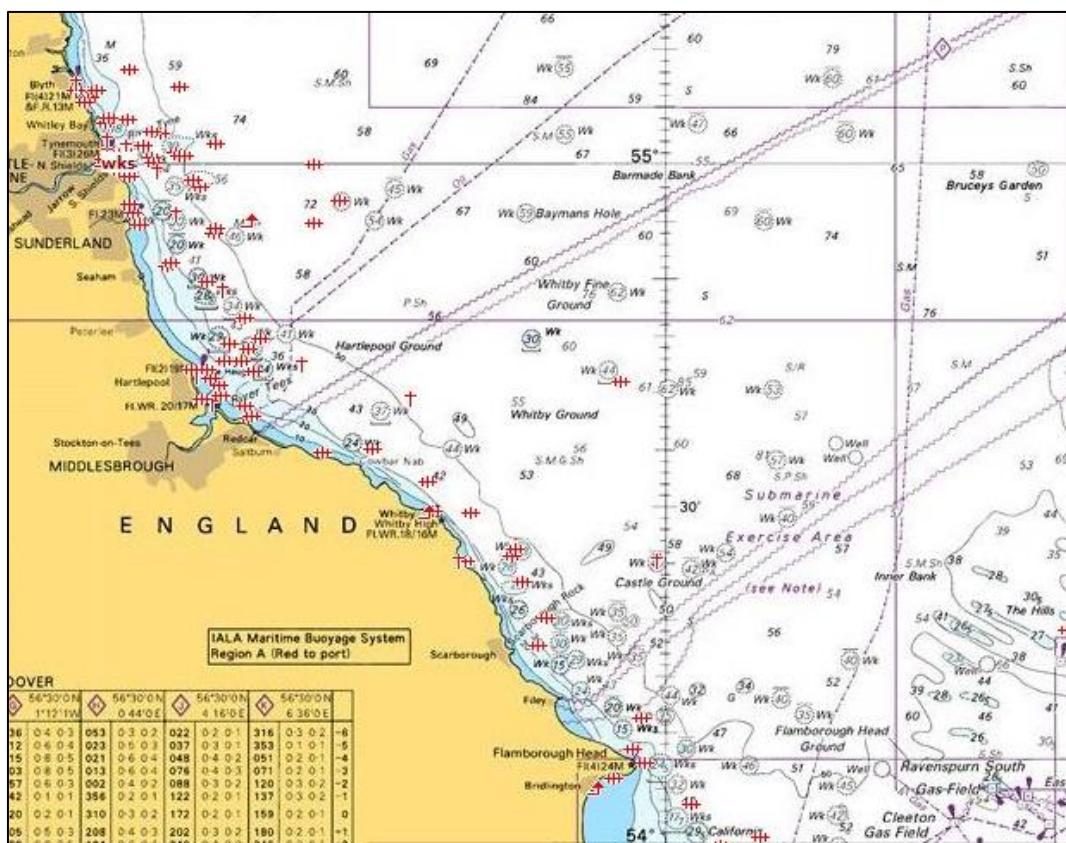


## **Boom Defences in Humber, First World War**

Figure 10



First World War

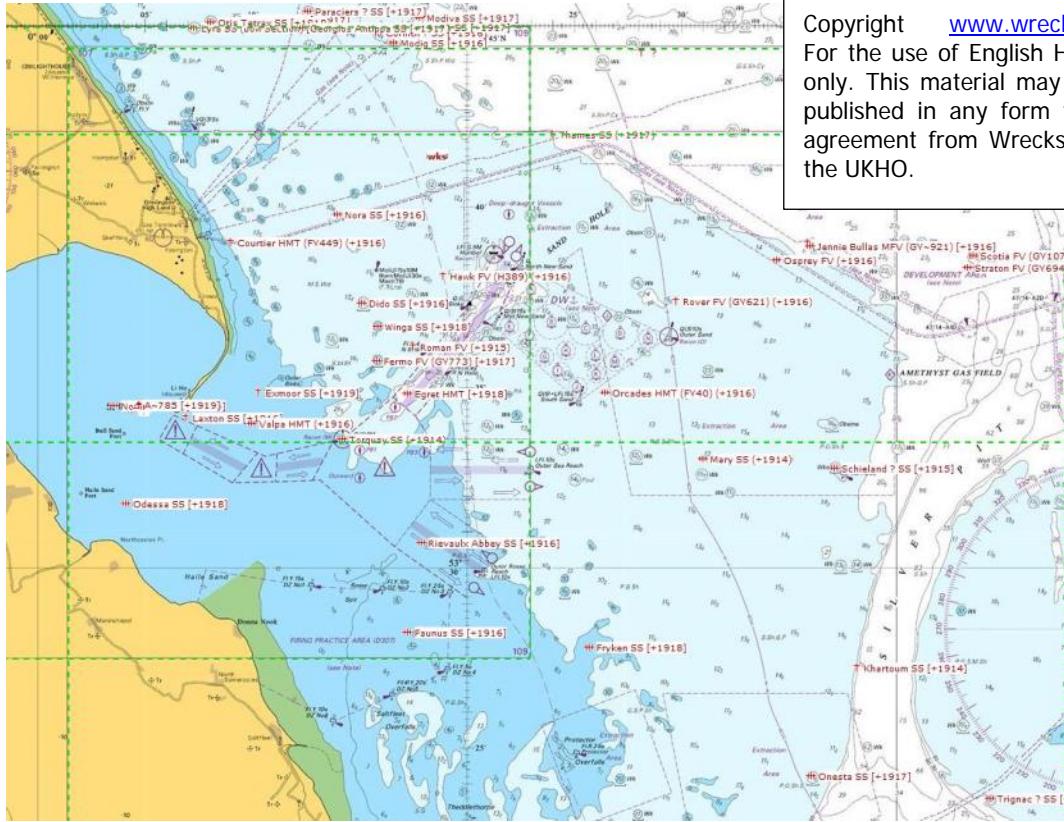


Second World War

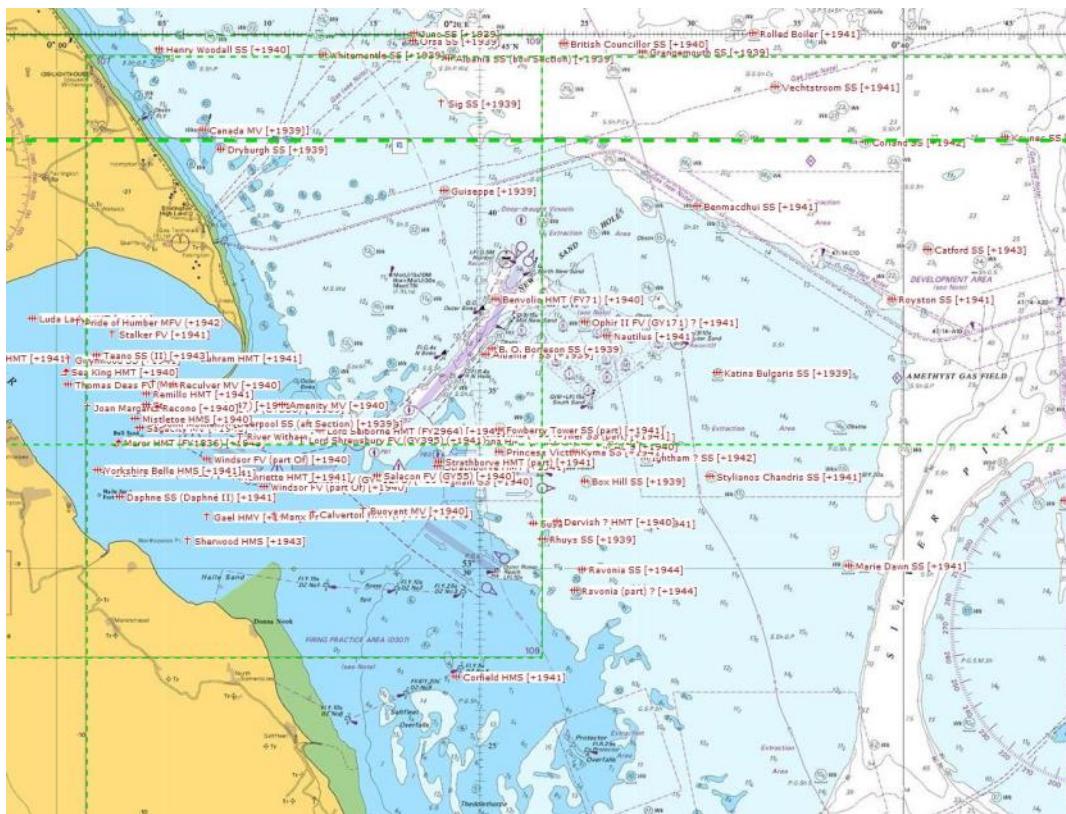
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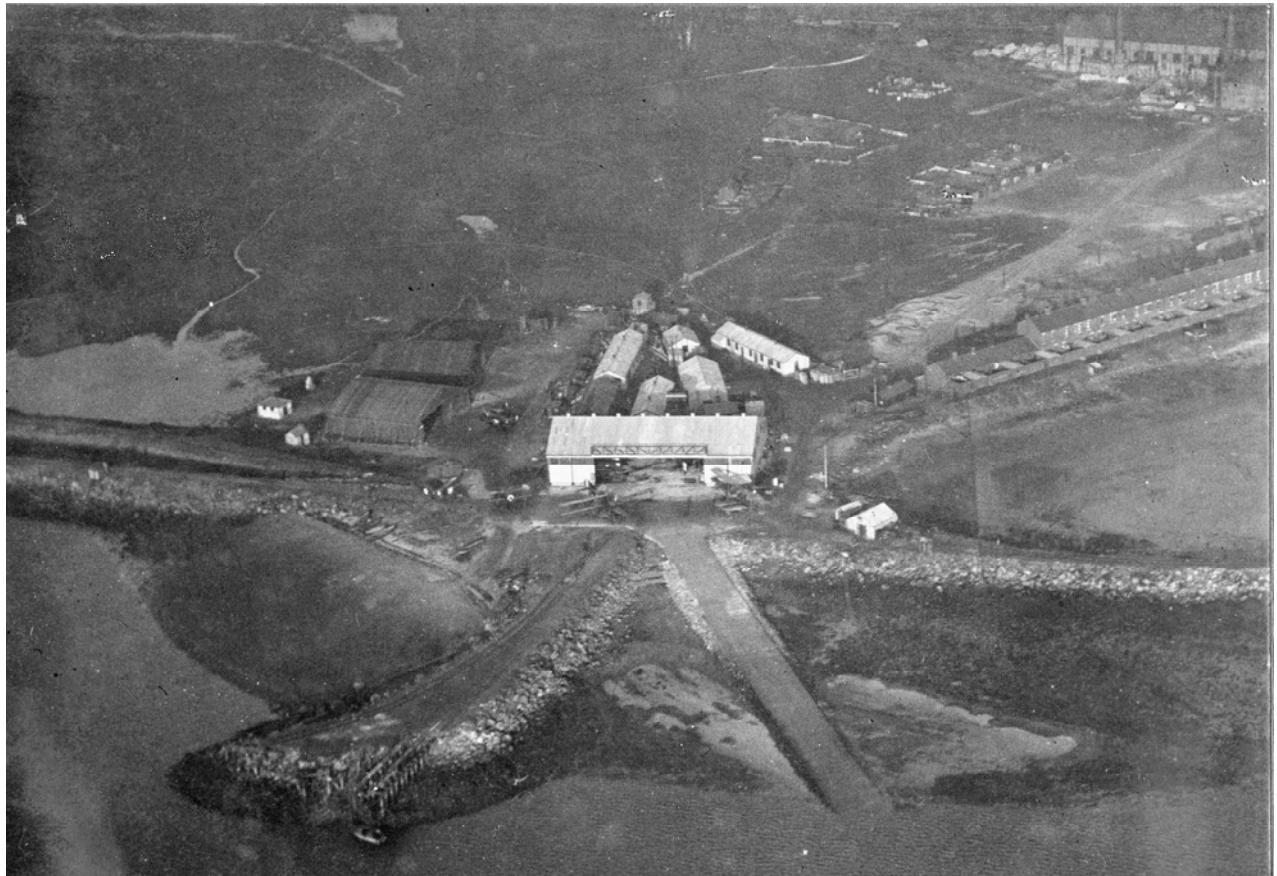
First World War



Second World War

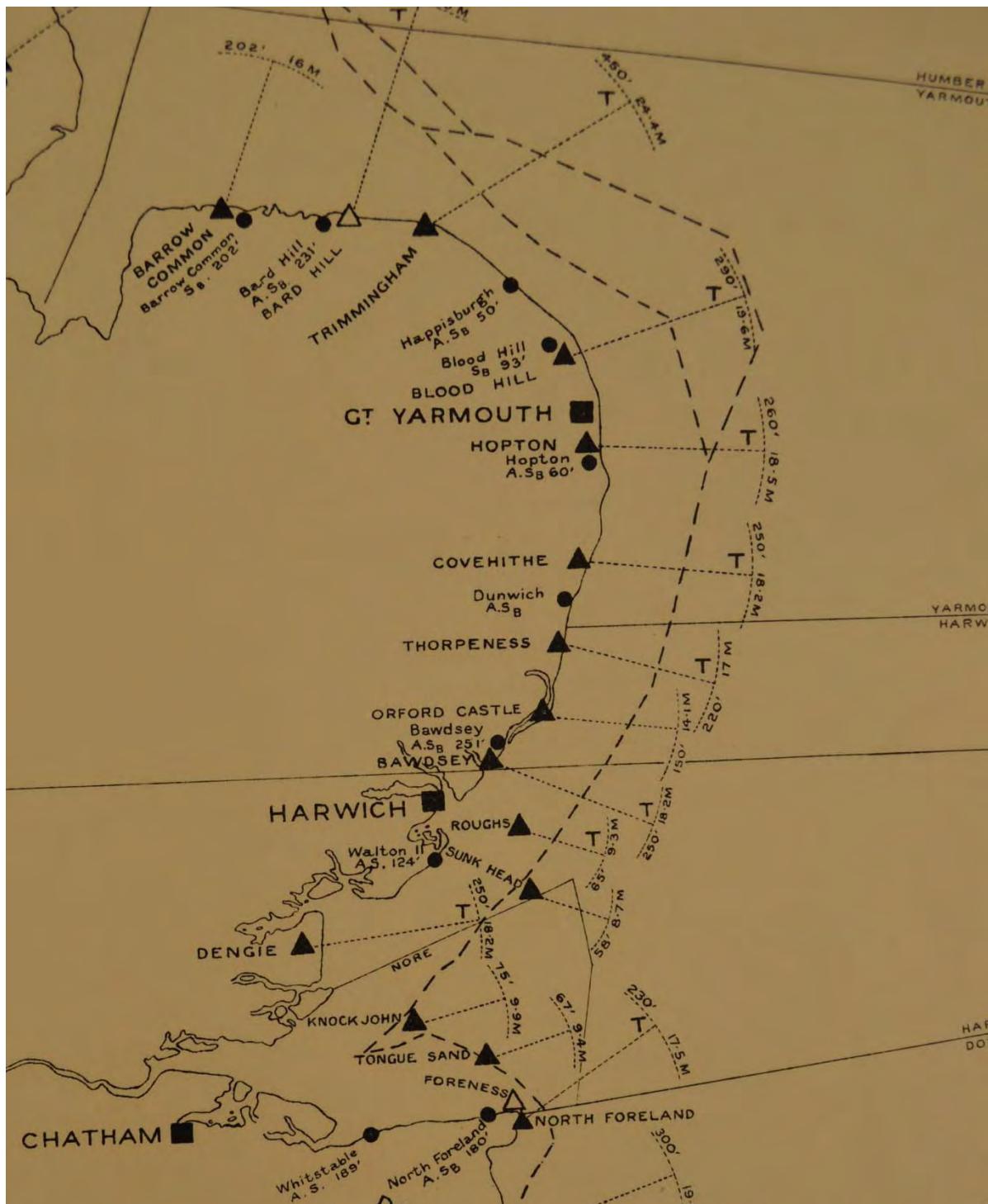
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Z 61 1942 (Extract)

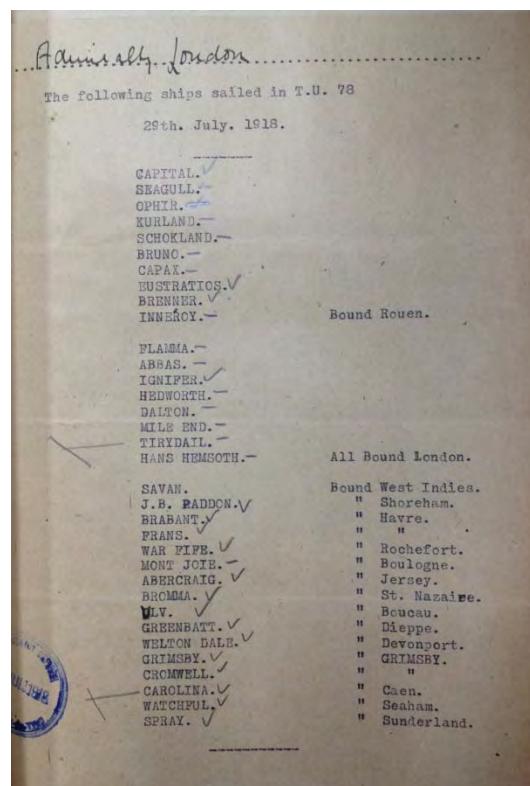
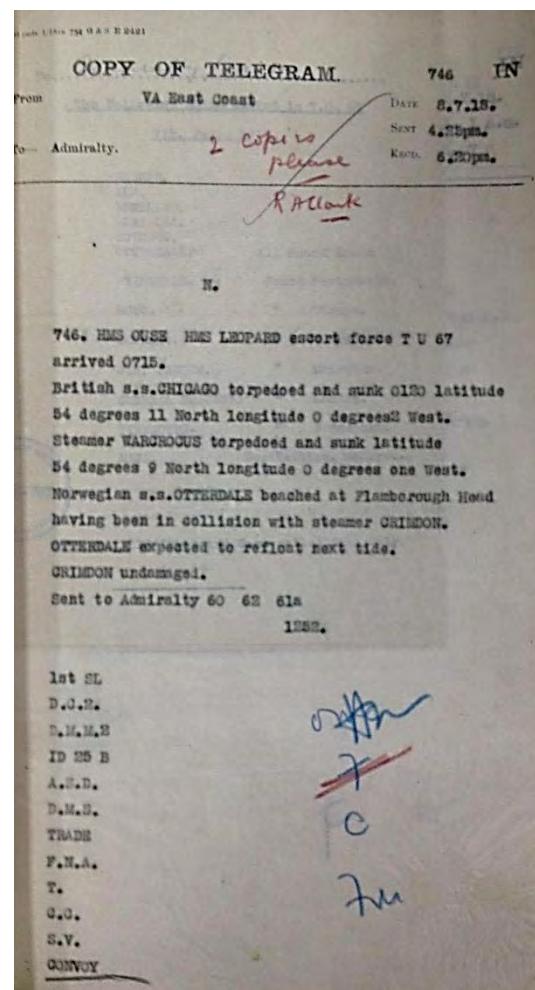
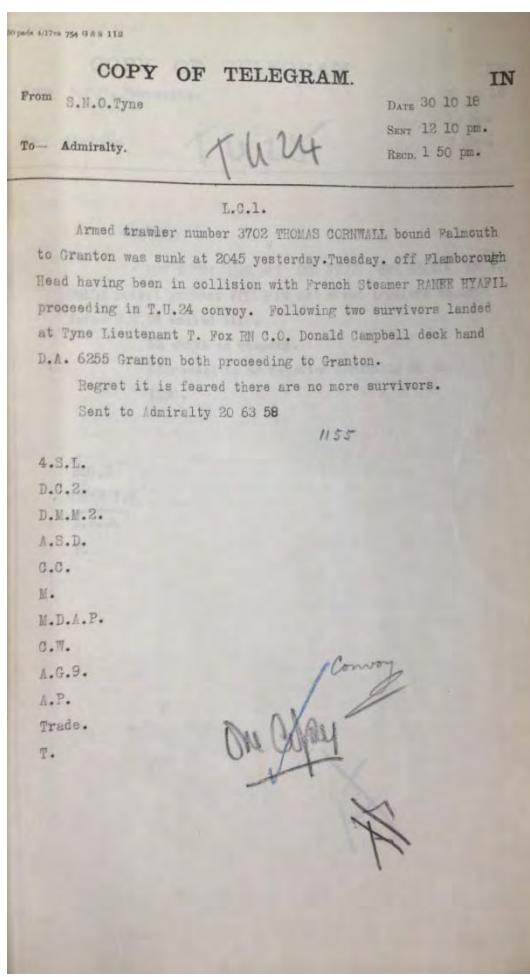
Photograph by AJ Firth / Fjordr from material held at UK Hydrographic Office ([www.ukho.gov.uk](http://www.ukho.gov.uk)).

## Coverage of War Channels by Surface Watching Radar Stations

**Figure 14**

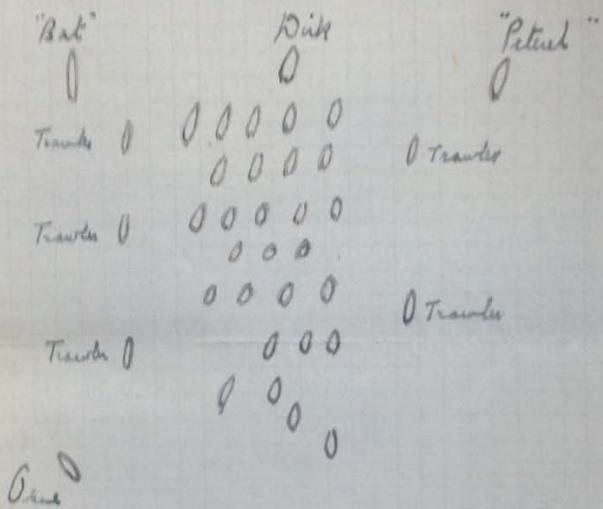
ADM 137/2640 (Extract)

Photographs by AJ Firth /  
Fjordr from material held at  
National Archives.



27. Diagram to show on which "leg" of zigzag diagram, and at which part of the "leg," the attack was made.

28. Diagram showing formation of convoy and escorts, distances between columns and between ships in column, bearings and distances of escorts, and, if possible, bearing and distance of submarine, at the moment of firing torpedo.



*A.W. Hughes.*

Commanding Officer.

29 - 5 1918.

a (33) AS 5098 Pk 3081 2000 5/18 E & S

ADM 137/2640 (Extract)

Photographs by AJ Firth / Fjordr from material held at National Archives.

HMS Dirk, in the front centre of the convoy, was lost.

37.

CONFIDENTIALREPORT OF AN INTERVIEW WITH CAPTAIN J.W. GOVANMATEM OF THE S.S. BOULDERPOOLSHIPPING CASUALTIES SECTIONT-JADE DIVISION

10th March, 1941.

CAPTAIN GOVAN:

We were bound from Southend to the Tyne in ballast. We were armed with 1-4" gun, 1-12 pdr. H.A. gun, 2 Hotchkiss, and a Lewis gun. The confidential books went down with the ship. The number of crew, including 2 Seamen Gunners, 2 soldiers and myself, was 42, and there were no casualties. The ship was degummed and the apparatus was working.

We left Southend on 7th April at 0731, proceeding in convoy F.N.426. We were sailing in two columns and we were in the port column, with three ships astern of us. At 1400 that afternoon we were attacked by a single aircraft, which I think was a Heinkel 111. He dropped one stick of bombs which fell about 40 ft. away from the ship on the starboard side, without causing any damage. We had continuous attacks by single aircraft throughout the afternoon, but these were all successfully driven off. At 1630, two aircraft approached us flying in formation from our port quarter and dropped 6 bombs, in a deliberate attack on my ship. The first stick of bombs fell about 20ft. off on our port beam, and the other about 40 ft. off on our starboard bow. I saw the bombs actually leaving the plane - and all the bombs, both in this attack and in the first, exploded on contact and threw up a 40 ft. column of discoloured water. The bombs appeared to be about 4 ft. in length. On the second attack the ship was lifted by the force of the explosion. I sounded immediately but found that we were not making water. We were firing all the time with our 12 pdr., Hotchkiss and Lewis gun. After this we had no more aircraft attacks.

We then proceeded until 2000 when the convoy was attacked by E-boats. At 2030 one torpedo missed my ship by about 3 ft. passing astern from starboard to port. Between 2030 and 2200 two more torpedoes were fired at us; both of these came from starboard and passed underneath my ship right amidships.

At 2225, when in position 10 miles S. of Sheringham, another torpedo was fired at us from our port side and this struck the ship 6 ft. forward of the bridge in No. 2 hold, about 175 ft. from the bow. The sea at the time was calm with a slight swell and light wind; the weather was moderate with

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38.

- 2 -

S.S. BOULDERPOOL

a visibility of 2 - 3 miles. There was one loud explosion. There was smoke, but no flame or water thrown up, nor did I smell anything. The hatches were all blown off No. 2 hold, and the superstructure on the bridge was all smashed.

I should think there were 10 or 12 E-boats attacking the convoy. They seemed to be moving along with the convoy and concentrating round the red flashing buoy. All the ships in the convoy which were attacked were at the rear of the convoy. Four ships were torpedoed before we were hit, we did not see the E-boats at all, but we could distinctly hear their engines. We saw the tracks of all the torpedoes including that of the last one about 100 ft. from the ship, but by then it was too late to alter course to avoid the torpedo. We had two Destroyers as escorts, one ahead and the other on our starboard beam. They were both firing star shells, but neither they or any of the ships of the convoy, fired at the E-boats.

Immediately after she was struck the ship commenced to sink, I think the bulkhead had been broken by the force of the explosion. Within 5 minutes of being hit the fore well deck was awash, and about  $\frac{1}{2}$  hour later she appeared to be sunk forward with her bow on the bottom, and her stern projecting out of the water. Before this, however, we had taken to the boats, and were picked up by H.M.S. BRENDA, and were taken to Middlesborough where we landed at 1300 on 8th March.

I would like to recommend Firemen N. Lupton. Someone slipped the after tackle of a lifeboat without orders. Foreman Lupton and myself put this right, but without his help I should never have been able to do it, and therefore we were able to get both boats away.

ADM 199/2136 (Extract)

Photographs by AJ Firth /  
Fjordr from material held at  
National Archives.

SECRET.

ACNS(H) seen



MINISTRY OF WAR TRANSPORT.

19th November, 1943.

Dear Edelsten

For some time past we have been hoping that it might be practicable to institute a daily convoy on the East Coast instead of the present arrangement of six days out of seven. The necessity for a daily convoy was accepted in principle at a meeting presided over by A.C.N.S.(H) on the 6th July last but up till now it has not been possible to put the arrangement into effect.

I have recently discussed the internal transport position with the interested Ministries, and the coming months present a most difficult situation. The railways are working to capacity, and coastwise shipping has been considerably reduced in tonnage as compared with last year, owing mainly to Service commitments of which you are aware.

One way of relieving the position would be to speed up the turnaround of coastwise tonnage. Last winter we were fortunate in weather conditions on the east coast, but we cannot rely on being so fortunate during the coming winter. The institution of a daily coastal convoy between London and Methil would be a material contribution to the general transport problem, and I should be grateful if you could give it special consideration.

Yours sincerely,

*John Haworth*

Rear-Admiral J.H. Edelsten, CBE.

ADM 1/15815 (Extract)

Photograph by AJ Firth / Fjordr from material held at The National Archives.



Merchant Vessel Tracks, North Sea, First World War

X 3 to 1<sup>st</sup> April 1915 (Extract)

Photograph by AJ Firth /  
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Figure 19



Photographs by AJ Firth / Fjordr.

Surface Watching Radar Station, Near Ravenscar

Figure 20

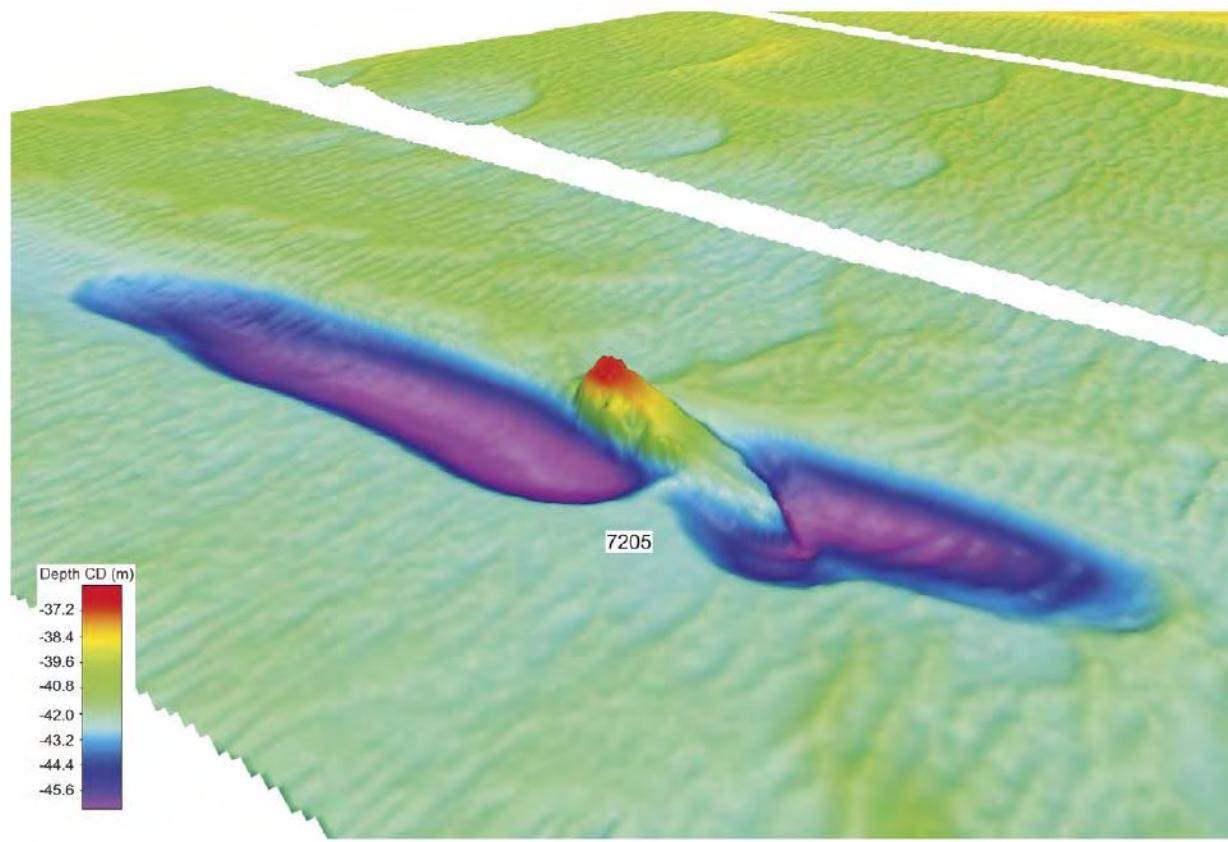


Fragment of Seaplane wrecked at Scarborough, First World War

'Part of a Seaplane wrecked at Scarborough, England, after chasing a zeppelin, July 18, 1916. Belonging to Dorothy ?Cass Smith'

Photograph by AJ Firth / Fjordr.  
Courtesy of Scarborough Maritime Heritage Centre

Figure 21

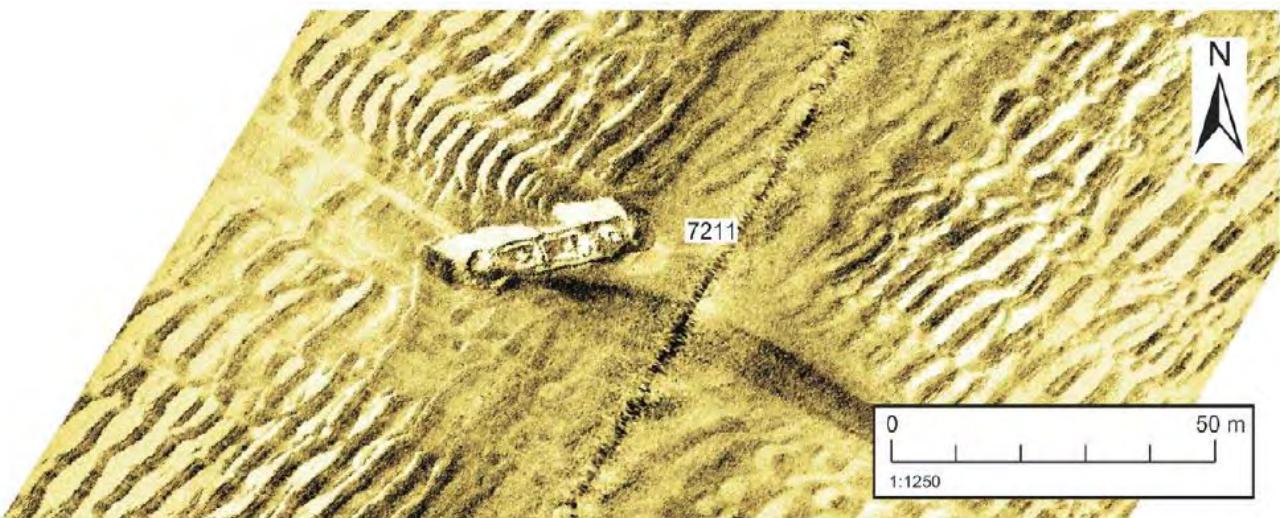


Multibeam echosounder image (looking northeast) shows intact, upright wreck and seabed scour.

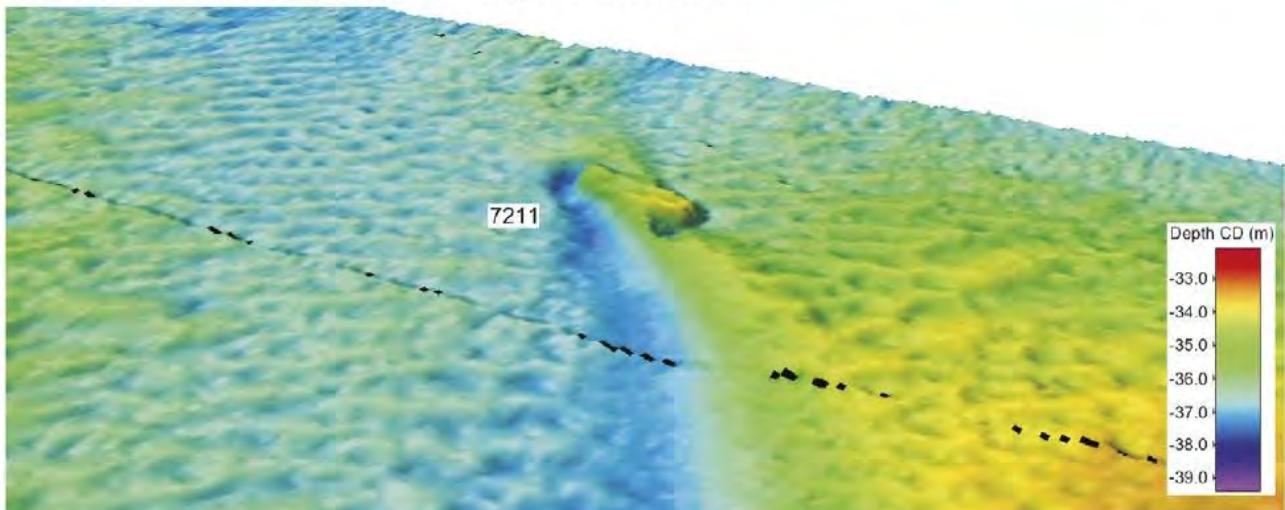
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Mosaiced sidescan sonar image shows upstanding intact wreck, with scour.



Multibeam echosounder image (looking northwest) shows intact wreck and seabed scour.

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South Gare, Teesside, looking to the south



Kettleness, North Yorkshire, looking to the south east

Photographs AJ Firth / Fjordr.

The ECWCs as seen from the Coast

Figure 24



From the Coastal Path, Ravenscar War Watch Station



From Scarborough Castle, towards Filey Brigg and Flamborough

Photographs AJ Firth / Fjordr.

The ECWCs as seen from the Coast (cont.)

Figure 25

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