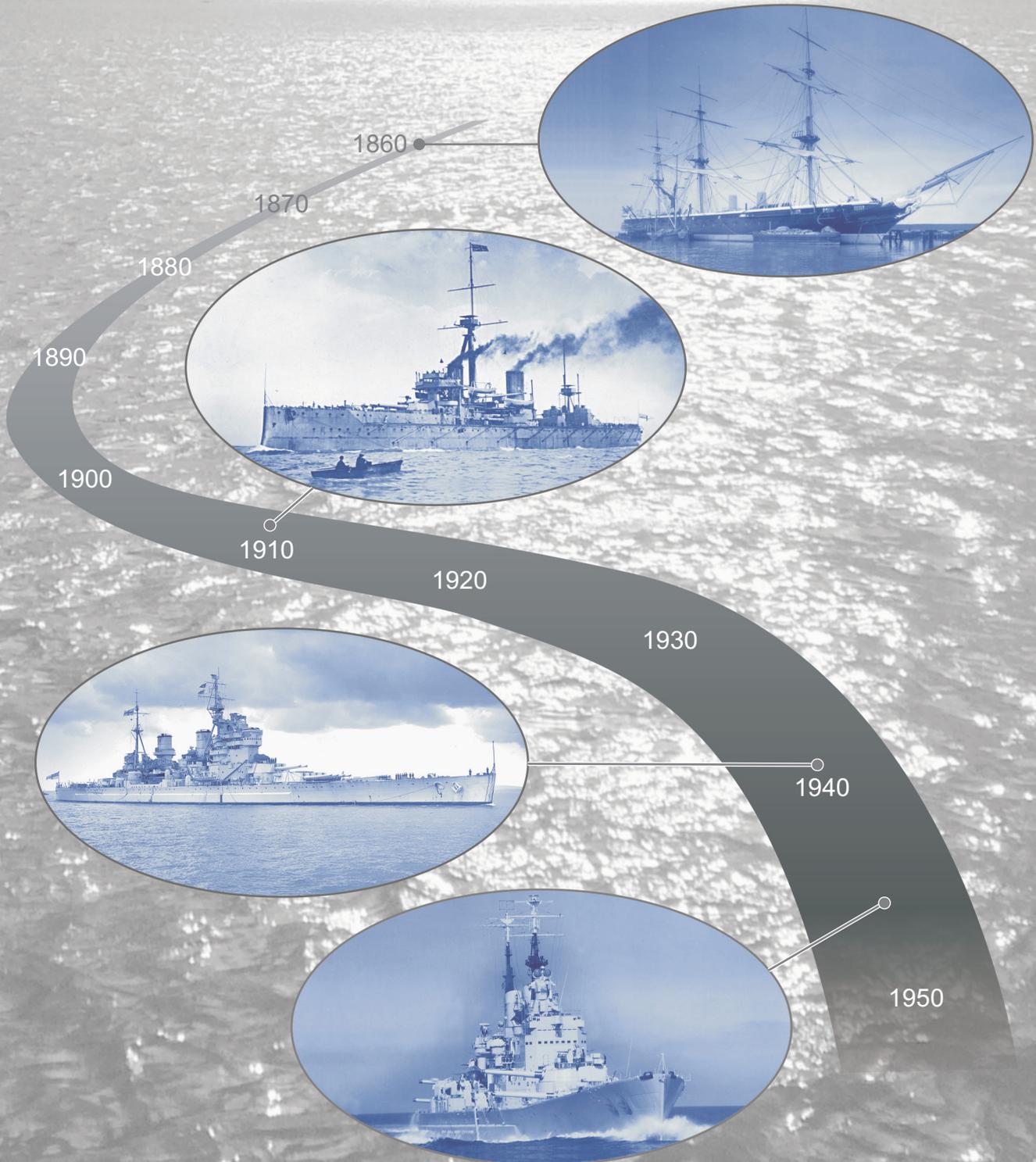




## Assessing Boats and Ships 1860-1950

Methodology Report



**ASSESSING BOATS AND SHIPS  
1860-1950**

**METHODOLOGY REPORT**

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**English Heritage**

**Report ref.: 70861.04**

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# ASSESSING BOATS AND SHIPS 1860-1950

## METHODOLOGY REPORT

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# ASSESSING BOATS AND SHIPS 1860-1950

## METHODOLOGY REPORT

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### Summary

Wessex Archaeology has been funded by English Heritage (EH) through the Aggregates Levy Sustainability Fund to provide a national stock-take of known wrecks in waters off England and review it in light of the framework for assessing special interest prepared in the *Marine Principles of Selection* project (ALSF 5383) and historic thematic studies.

Through undertaking a national stock-take of wrecks dating to the period 1860-1950 within English territorial waters, this project provides supplementary guidance on the key themes and interests represented by such wrecks in order to inform decisions regarding importance and mitigation.

The *Assessing Boats and Ship* project comprises a series of three desk-based studies of the special interest of wrecks from 1860-1950, split into the periods 1860-1913, 1914-1938 and 1939-1950. These reports are accompanied by a separate Methodology Report, outlining the methodology, data acquisition and dataset interrogation adopted during the review. This report represents the Methodology Report.

It describes and discusses the following:

- Project methodology;
- The impact of the way that the NMR holds and sorts its data upon project methodology and results;
- The use and significance of information received in relation to preserved historic ships and boats;
- Issues that have arisen in relation to compatibility between the various sources of data used by the project and the impact that this has had upon the results;
- Issues that have arisen in relation to the design of the project database and the impact that these have had upon the stock-take of wrecks carried out during the project;
- Attempts to determine the usefulness of the undated wreck dataset provided by the NMR;
- Non-NMR data sources used during the project;
- Examples of suggested future recording priorities.

# **ASSESSING BOATS AND SHIPS 1860-1950**

## **METHODOLOGY REPORT**

**Report ref.: 70861.04**

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- George Hogg, Collections development and National Small Boats Register

Diana Donohue carried out the assessment and compiled the report with contributions by Graham Scott. Kitty Brandon prepared the illustrations. Graham Scott edited the report and managed the project for Wessex Archaeology. Dr Antony Firth carried out quality assurance.

### **Data Licences**

A summary of archaeological site data was obtained from the National Monuments Record (NMR), Swindon. Copyright restrictions may apply to any data obtained from the NMR.

Charted wreck and obstruction data were supplied by SeaZone Solutions Limited © British Crown SeaZone Solutions Limited. All rights reserved. Product Licence No. 082008.006

# ASSESSING BOATS AND SHIPS 1860-1950

## METHODOLOGY REPORT

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# ASSESSING BOATS AND SHIPS 1860-1950

## METHODOLOGY REPORT

Report ref.: 70861.04

### 1. INTRODUCTION

- 1.1.1. Wessex Archaeology (WA) has been funded by English Heritage (EH) through the Aggregates Levy Sustainability Fund (ALSF) to provide a national stock-take of known wrecks in the waters off England and to review it in light of the framework for assessing special interest prepared in the *Marine Principles of Selection* project (ALSF 5383) and historical thematic studies.
- 1.1.2. The known maritime resource in waters off England is dominated by wrecks dating between the mid 19<sup>th</sup> to mid 20<sup>th</sup> centuries. Through a consideration of the known wrecks listed by the National Monuments Record (NMR), the *Marine Principles of Selection* project (ALSF 5383) revealed that a total of 96% of known and dated wrecks were lost in the period between 1860 and 1950. It therefore follows that wrecks from these periods are the most commonly encountered by the aggregates industry in the course of the licence application process.
- 1.1.3. Despite this abundance of known and dated wrecks of the period between 1860 and 1950, a consideration of the special interest of any particular wreck from this period is currently assessed in the wider national context of historic shipping activity and a national stock-take of comparable surviving examples. Whilst this approach enables a particular wreck to be considered of special interest in respect of one factor or another, it does not enable the relative or absolute importance of a particular wreck to be ascertained. The difficulties in assessing wrecks dating between 1860 and 1950 thus arise from the absence of any agreed corpus of work upon which the assessment of individual wrecks from this period can be based.
- 1.1.4. Through undertaking a national stock-take of wrecks dating to this period within English territorial waters, this project provides supplementary guidance on the key themes and interests represented by such wrecks, in order to inform decisions regarding importance and mitigation.
- 1.1.5. The *Assessing Boats and Ships* project comprises this Methodology Report alongside a series of three desk-based studies of the special interest of wrecks from 1860 to 1950, split into the periods 1860-1913, 1914-1938 and 1939-1950. This report presents the Methodology Report and outlines the methodology, data acquisition and dataset interrogation adopted during the review.

## **2. ASSESSMENT AIMS AND OBJECTIVES**

### **2.1. PROJECT AIMS**

2.1.1. The aim of the project is to enable better-informed decision-making in respect of wrecks of vessels lost between 1860 and 1950 that are encountered in the course of marine aggregate dredging.

2.1.2. Whilst wrecks of this period are the most commonly encountered during aggregate licence applications, their special interest is far from evident and there is no effective guidance to which to turn. It is thus intended that the results of the *Assessing Boats and Ships* project will provide a reference against which the special interest of a wreck dating to the period 1860-1950 may be assessed within its historical and thematic context, informing decisions about mitigation during aggregate licensing processes. The benefit of the project will thus accrue from the much firmer evidence base for decisions relating to post-1860 wreck sites encountered in the course of aggregate licensing.

### **2.2. PROJECT OBJECTIVES**

2.2.1. The objectives of this project are as follows:

- For each period, to provide a national stock-take of known wrecks in waters off England, drawing on the framework for assessing special interest created as a result of the *Marine Principles of Selection* project (ALSF 5383);
- To review the national stock in light of a) the framework for assessing special interest and b) historic thematic studies, in order to provide guidance on assessing the special interest of any specific wreck;
- To make available the results of the project to staff in EH, the marine aggregate industry, environmental consultancies, archaeological practices, and the wider public.

### **2.3. ADDRESSING OF EXISTING PRIORITIES**

2.3.1. The project has addressed Theme 2.1 of English Heritage's funding priorities for the ALSF in 2008-11 through the identification and characterisation of wreck sites in relation to aggregate dredging. Specifically, the results help to break down the numbers of known wrecks to help identify special interest as it might apply to wrecks impacted by aggregate dredging, within the context of an overall stock-take of the national record of known wrecks. As the project has involved correlating data about known wrecks already held by the NMR with thematic historical information, it has qualified as a project that has derived added value from existing data.

2.3.2. The project has addressed SHAPE sub-programme Strategic Designation Research (31111.110) by researching and synthesising current understanding of the national record of known wrecks from the most commonly encountered periods. The results provide English Heritage and others with a firmer evidence base for decisions relating to special interest.

2.3.3. The project aims and objectives are consistent with the priorities of the MEPF Science and Information Strategy for the Marine ALSF. The project results increase understanding of the significance of effects of aggregate dredging (Strategic Aim 2) by contributing to the understanding of receptor importance (i.e. special interest) of the most commonly encountered archaeological receptors.

- 2.3.4. The project results are consistent with the research priorities set out by English Heritage (Roberts and Trow 2002), insofar as they serve as a national evaluation study to characterise elements of the marine historic environment that are little understood relative to their prevalence.

### **3. METHODOLOGY**

#### **3.1. OVERALL METHODOLOGY**

- 3.1.1. The following scheme of investigation has been adopted, as set out in the project design (Wessex Archaeology 2009):

- Relevant NMR records have been collated in a project database and interrogated to provide a national stock-take of wrecks in English territorial waters for the period 1860-1950;
- Selected additional records of vessels of the period and from other relevant national sources have been collated and compared with the NMR dataset in order to inform the stock-take;
- The collated data has been reviewed in the context of a number of historical themes set out in the project design, to establish the relationship between the archaeological record of known sites and current historical understanding of the period;
- The results of the stock-take and thematic review have been used to produce a series of reports that provide a summary of the evidential basis upon which the special interest of boats and ships of this period can be judged.

#### **3.2. THE DISTINCTION BETWEEN BOATS AND SHIPS**

- 3.2.1. According to the Historic Ships Committee, a vessel below 40 tons and 40ft (c. 12m) is designated as a boat (<http://www.nmm.ac.uk/explore/sea-and-ships/facts/faqs/what-is-the-definition-of-a-boat-versus-a-ship>). There are, however, some exceptions, such as submarines and fishing vessels, which are always referred to as boats regardless of their size.
- 3.2.2. Whilst this project considers the wrecks of both boats and ships in the period 1860-1950, they have not been divided in this way for the purposes of the stock-take. In many cases, information relating to known wrecks is fragmentary or ambiguous, and an attempt to divide them on basis of the definition of a ship may be more misleading than beneficial. Therefore the project considers known wrecks as a single entity, including both boats and ships.

### **4. PRIMARY DATA SOURCES**

#### **4.1. NATIONAL MONUMENTS RECORD**

- 4.1.1. The National Monuments Record (NMR) is the public archive of EH. It manages the national historic environment database of England's territorial waters. It holds records of shipping losses including wrecks.

##### **Known Wrecks**

- 4.1.2. For the purposes of this project, a wreck is an archaeological site which contains the remains of a boat or ship that has sunk. A known wreck is simply one that is

recorded by the NMR. Known wrecks (abbreviated generally to 'wrecks') are the principal source of data used to compile the national stock-take.

- 4.1.3. The NMR has been used as a point-in-time source for the stock-take. As such the project is based on the record as of May 2009. The wrecks for each period are illustrated in **Figure 1**.
- 4.1.4. Discussions relating to individual wreck sites are based on information present within the NMR data (i.e. the NMR wreck database) and the NMR Complete Monuments Record (i.e. the printed paper record). These records incorporate the information available to the original compilers and information that has been added on review prior to May 2009. Record enhancement is an ongoing and gradual process. Therefore information recorded by the NMR since May 2009 has not been considered as part of this review.
- 4.1.5. It does not fall within the scope of this project to undertake any significant enhancement by adding new information to the record for individual wrecks. This would be impractical in any event due to the very large numbers involved. Nevertheless the assessment of special interest of individual wrecks should ideally take into account all available information.

*Known Wreck Data: Other Available Sources*

- 4.1.6. Records relating to known wreck sites off England are held by the NMR and the United Kingdom Hydrographic Office (UKHO). Wreck data from the UKHO has not been integrated into the project, except insofar as it is already included in the NMR records. The NMR generally holds more comprehensive historical records relating to wreck sites than the UKHO and is structured in a way that facilitates the queries required for this project. Furthermore there is a considerable overlap between the two datasets.
- 4.1.7. In order to examine the relationship between the wrecks recorded by the NMR and those by the UKHO, a search was conducted on each of the datasets for a sample area of 100km<sup>2</sup>. The search was confined within each dataset to wrecks lost between 1914 and 1938. Annually updated UKHO data was provided by SeaZone for July 2010 (**Figure 2**).
- 4.1.8. The results of the test revealed a total of 11 wrecks within the sample area listed by the NMR in comparison to 14 by the UKHO. Of these wrecks, ten were found to correlate with one another by name (**Table 1**). Three wrecks recorded by SeaZone were not found to correlate with an NMR equivalent (*Chrysoberyl*, *Princess May* and *Tregantle*). An additional wreck recorded by the NMR (*G and E*) was found to have no SeaZone equivalent.
- 4.1.9. There are a number of possible explanations for these discrepancies. The three wrecks listed by SeaZone but not the NMR may be due to the UKHO adding new data or amending existing data since the NMR records for this area were last updated. It may also be possible that these wrecks have been recorded by the NMR since the dataset for this period was provided to WA in May 2009. It is further possible that these three wrecks are indeed recorded by the NMR but are currently either undated or are recorded with conflicting dates to those present in the UKHO data and which therefore did not form part of the wreck dataset for the period 1914-1938. The NMR records are subject to ongoing and gradual enhancement and it is possible that historical data researched by the NMR Heritage Data Collection Team has informed the date of a particular wreck site which has yet to be amended amongst UKHO data. There are also some cases in which the NMR records wrecks

which have been subject to archaeological investigation but have yet to be charted by the UKHO. This may account for the *G and E*, recorded by the NMR but not represented in the SeaZone data.

- 4.1.10. Despite these discrepancies there is, nonetheless, an informal and *ad-hoc* data flow between the NMR and UKHO which aims to keep differences such as these to a minimum. Given the vast quantity of wrecks held by the NMR and UKHO and the nature of the gradual and ongoing enhancement, it is not always possible to ensure that all wreck sites correlate with one another between the datasets.

Name	NMR UID	UKHO ID
<i>Castle Galleon</i>	912972	10446
<i>Katie Chrysoberyl</i>	-	10447
<i>Corton Light Vessel</i>	912968	10755
<i>David B Summers</i>	912989	10461
<i>DB 8</i>	912956	10785
<i>G and E</i>	912964	-
<i>HMS Kaphreda</i>	912973	10764
<i>Kara</i>	912970	10752
<i>Lady Londonderry</i>	912978	10453
<i>Oscar</i>	912974	10448
<i>Princess May</i>	-	68176
<i>Silksworth Hall</i>	912967	10441
<i>Tregantle</i>	-	10442
<i>White Swan</i>	912984	10455, 10450

**Table 1:** Compatibility of NMR and SeaZone data within sample area

- 4.1.11. Work undertaken by Wessex Archaeology in relation to the environmental impact assessment of schemes in other areas has often involved a direct comparison of NMR and UKHO data. This work has demonstrated that a difference between the two datasets exists in relation to other areas.
- 4.1.12. This apparent inconsistency between the wreck data held by the UKHO and the NMR is a subject which has received increasing attention in recent years, and was first highlighted by English Heritage in 2007 ([http://newsweaver.co.uk/coastmapnews/e\\_article000873215.cfm?x=bdgNFJ9,b6h3RmyL,w](http://newsweaver.co.uk/coastmapnews/e_article000873215.cfm?x=bdgNFJ9,b6h3RmyL,w)). EH has therefore commissioned an ALSF funded project that aims to examine and measure any inconsistency that exists between the NMR and the UKHO datasets (HWTMA 2009/2010:17).
- 4.1.13. Until the results of that project are fully available, it is not possible to measure the impact of any inconsistency on the project, and no particular advantage would have been gained by considering the datasets alongside each other. All that can be reliably said is that the UKHO may record wrecks of the period 1860-1950 that are not currently recorded by the NMR and *vice versa*.

### Shipping Casualties

- 4.1.14. Shipping casualty records describe individual shipping losses. Many of these have no known wreck associated with them. The positions recorded are normally based on available records contemporary with the loss. They are often based on named locations such as 'Thames Estuary' and the position assigned may therefore be generic. Positions for casualty records are therefore often imprecise.

- 4.1.15. Ships rarely disappear without leaving any physical trace. It is therefore likely that a proportion of the casualty records are associated with wreck sites whose locations are not currently known or with known but unidentified wrecks. However, where the loss location is only generally known (for example 'off the Norfolk coast'), the generic position given for the loss could be many miles from the actual location of the loss and therefore from any undiscovered or unidentified wreck.
- 4.1.16. The records of shipping casualties can provide information with regard to the scope for unknown wreck sites to exist. However, a stock-take which informs a consideration of special interest and therefore of mitigation and cultural heritage management needs to be based upon what is known to exist, rather than what might exist. The project design has therefore been formulated on the basis that it is inappropriate to directly draw on casualty records that have no known remains, to assess extant wrecks. The project is therefore based on the archaeological evidence, in other words the sites where the physical remains of boats and ships are known to exist.

#### **Comparisons of Known Wrecks and Shipping Casualties**

- 4.1.17. Although shipping casualty records form no part of the stock-take, they are useful as a control where a significant discrepancy exists between the archaeological evidence and the wider historical evidence. For example, if a particular named location is reputed to have been the scene of many shipping losses but the NMR records few wrecks there, then shipping casualty records can be used to examine the discrepancy.
- 4.1.18. Differences between known wrecks and shipping casualty record totals can be significant, as shown in **Table 2**. These discrepancies exist for the whole of the period 1860-1950 but are particularly notable for 1860-1913. They confirm that there is scope for more archaeological evidence to exist in the form of wreck sites than is currently recorded. They also highlight the potential for wrecks to exist that provide evidence of particular themes that are currently rare or non-existent.

<b>Date of Loss</b>	<b>Known and dated wrecks</b>	<b>Shipping Casualties</b>
1860-1913	518	9,701
1914-1938	1358	2,355
1939-1945	861	1,104

**Table 2:** Total known dated wrecks and shipping casualties 1860-1945

- 4.1.19. Wrecks of vessels lost in the Thames estuary and its near approaches during 1860-1913 are a useful case-study. They are notably few. This does not reflect what we know about the area historically. Between 1860 and 1913 it was the busy gateway to the most important port in the world and correspondingly numerous losses are recorded by reliable historical sources. Whilst the number of wrecks present does not reflect the scale of the losses, the 680 records of shipping casualties do. Shipping casualty records have also been observed to be a more accurate guide to the scale of losses in other areas, for example in the Wash and off the north Norfolk coast. Whilst they may provide a more accurate picture in terms of overall scale and in relation to certain areas, it is not clear that they are a more reliable guide to distribution generally.
- 4.1.20. Shipping casualties also provide useful comparative material in relation to types of vessels. For example, the 1939-50 stock-take found that the remains of just 17

wooden vessels are recorded, whereas 102 wooden-hulled casualties are recorded for the same period.

- 4.1.21. The interpretation of such differences is not necessarily straightforward. They probably reflect to some extent the different preservation characteristics of wood and metal hulls. This in turn can have an impact upon how likely a wreck is to be searched for (also related to how much of a hazard it poses to navigation) and located. Wrecks are located by a variety of different individuals and organisations, including divers, survey companies and occasionally archaeologists. What they are looking for and therefore locating is influenced by their motives for undertaking the work. This can in turn mean that certain types of vessel are less actively searched for.

#### **Broad and Narrow Terminology**

- 4.1.22. The NMR uses both broad and narrow terminology. Wrecks are first gathered into conceptual groups before being subdivided from broad through to narrow terms. This can continue until they have been assigned a term that is as narrow as the available information allows. All of the relevant broad and narrow terms are included in the record.
- 4.1.23. For example a wreck is normally assigned to the 'maritime class'. If it is known to have been a fishing vessel it is recorded under the class listing 'fishing vessel'. If further information is available about what type of fishing vessel it is then it can then 'banker', 'drifter', 'five man boat', 'oyster dredger', 'terre neuva', 'trawler' or 'whaler' can be selected and so on.
- 4.1.24. The recording of all of the applicable broad and narrow terms helps to ensure maximum data retrievability. However, it does have inevitable implications in that there are large numbers of wrecks to which only broad terms can be applied. In addition, through enabling vessels to be described in multiple terms, this system can unavoidably serve to complicate the results of the holistic studies such as the Assessing Boats and Ships project, which are based on simple queries. Nonetheless it is regarded as advantageous in wreck-specific studies, or those based on the assessment of a smaller wreck dataset.
- 4.1.25. These hierarchical relationships, where applicable, are easily accessible in the NMR Craft Type Thesaurus. However, the hierarchical divisions and relationships are not shown in the individual NMR Complete Monument Records or GIS data. In order to ascertain these relationships the user must access the online NMR Craft Type Thesaurus on a wreck-by-wreck basis. The scale of the project meant that it was not possible to do this.

#### **Terminology**

- 4.1.26. Experience during the project has demonstrated a number of issues relating to the use of key terminology relevant to the period in question.
- 4.1.27. Discussions relating to the tramp shipping industry provide one such example where holistic wreck assessment is limited by the use of appropriate terminology. Tramping was a type of sea trade based on 'cargoes of opportunity' rather than fixed schedules. In its narrowest and most technical sense it is in fact a type of contract for the carriage of goods by sea. It indisputably existed but a review of numerous secondary sources on the sea trade of this period suggests that there has never been a fixed definition of what tramping was. As such, while the term 'tramping' was a term in contemporary use, vessels are seldom referred to as such in historical literature.

- 4.1.28. Alongside difficulties in defining tramp ships is the lack of standardisation amongst tramp ships. A variety of vessels were regarded as tramp ships and they tended to be dry bulk carriers. However, whilst tramp ships often looked very similar, there was no standard design. In fact many vessels that worked as tramp ships only did this for part of their working lives and frequently alternated between the liner and tramping trades, depending upon the opportunities available to their owners. Therefore, whilst the tramp ship was a widely recognised and ubiquitous type of vessel during the late 19<sup>th</sup> and 20<sup>th</sup> centuries, it is hard to define in a way that makes it identifiable archaeologically.
- 4.1.29. On basis of the factors described above, the NMR does not use the term 'tramp' or 'tramp ships' as a defined or searchable vessel type. To index a vessel as a tramp ship would require a considerable diversion of time and resource and, as experience of the NMR Heritage Data Collection Team shows, the term 'tramp ship' is unlikely to be present in contemporary source material (Cant pers. Comm.). As such any endeavour to index vessels in this way is likely to yield limited results. It is notable that the term 'tramp' does not appear once in the NMR Complete Monument Reports for the three distinct periods assessed as part of this review, illustrating well the extremely limited use of the term in contemporary source material. These factors combined, whilst unavoidable, limit an assessment of a period in which the tramp shipping industry was key.
- 4.1.30. Another of the most important ship types of the 20<sup>th</sup> century was the cargo liner. Like tramps, the NMR does not define the cargo liner as a distinct vessel type. While the term 'liner' is available as a craft type, this is defined in the NMR Craft Type Thesaurus as 'a ship belonging to a shipping company which carries passengers on a scheduled route' and is categorised under the broad term 'passenger vessel'. However, as with the tramp shipping industry, to define a vessel as a cargo liner is not without complications. Cargo liners looked similar but there was no standard type and there are a number of definitions. It was also often the case that a liner would transport cargo and passengers, making a distinction between the two difficult. Ships could also work as cargo liners for only part of their working lives. As a result of a combination of these factors, cargo liners are in many cases as hard to define archaeologically as tramp ships. A consideration of cargo liners amongst known wrecks listed by the NMR is aided by the inclusion of the broad term 'cargo vessel' which denotes those carrying cargoes at their time of loss.
- 4.1.31. As tramps and cargo liners are likely to be present amongst the wrecks of 1860-1950 in large numbers, there is an arguable case that more needs to be done to identify wrecks as such in the NMR dataset where possible.

#### **Use of Multiple Terms in Fields**

- 4.1.32. In order to provide a comprehensive account of the 'life cycle' of each wreck, there are a number of fields of enquiry in which the NMR records multiple terms. This is the case for the following data fields assessed as part of this review:
- Building Material;
  - Propulsion;
  - Craft Type;
  - Cargo;
  - Nationality;
  - Registration;
  - Departure;
  - Destination;
  - Manner of Loss.

- 4.1.33. The use of multiple terms for the same data field is a characteristic of the NMR. For example, it was not unusual for a vessel of the mid- to late-nineteenth century to use both sail and steam propulsion. Sail was normally used in an auxiliary capacity to save fuel or to extend range. Mid-19<sup>th</sup> century transatlantic passenger ships were often sail-assisted because their engines were not efficient and either not enough coal could be carried to last for the whole passage or the use of sail made them more economic. The NMR will record this type of vessel as being both steam- and sail-powered. This ensures that ships with more than one means of propulsion are fully recorded. The use of multiple fields also enables refitting or conversions to be recorded. For example, the requisitioning of a trawler as an auxiliary warship can be recorded in this way. Similarly if, as commonly occurred, ownership or registration is transferred from one country to another, then this can be recorded by listing both countries.
- 4.1.34. Whilst this provides a very flexible means of recording data, it is not without its problems, particularly for projects such as this that rely upon simple queries run on large datasets. An issue encountered during this project has been the non-hierarchical nature of some of the data recording. Issues related to non-hierarchical data recording are unlikely to arise in relation to projects using only small numbers of records. However, in projects such as this that use simple queries for very large datasets it can be an issue.
- 4.1.35. Propulsion is one such example in which the current use of multiple terms can lead to some issues for large-scale wreck assessments. For example, in the case of a steam ship with auxiliary sail, it will be recorded as sail and steam. This will not tell the user what the main or otherwise most significant means of propulsion was. For that the user will have to seek other data about the vessel (e.g. auxiliary sail is sometimes mentioned in free text).
- 4.1.36. It was at first thought by WA that the incorporation of a hierarchical structure would be beneficial in this respect. However, the inclusion of a hierarchical structure within the field of propulsion is not without its complications, as it is often the case that the relationship between two forms of propulsion is such that one cannot be regarded as dominant. In response to these issues, it has been suggested by the NMR Heritage Data Collection Team that additional stand-alone propulsion terms are included to clarify, where possible, which propulsion method is the principal form (Cant, pers. Comm.). This would enable vessels which utilise steam as their principal form of propulsion and sail as an auxiliary to be clearly documented as such in the NMR. In the same way, vessels which were fitted with auxiliary steam or diesel engines but retained sail as their primary propulsion would also be appropriately recorded. This approach would result in a significant enhancement of the NMR and would undoubtedly aid large-scale holistic studies such as this in their assessment of wreck data.
- 4.1.37. In the case of manner of loss, the use of multiple terms can also lead to potential confusion, making it difficult to analyse what the major causes of loss may have been. A case in point here is the *War Knight* (NMR **UID 805357**) which has nine entries for manner of loss, comprising collision, mined, beached, explosion, burnt, scuttled, torpedoed, foundered and gun action. Based on information in the NMR Complete Monument Record, the *War Knight* was in a collision with an American tanker loaded with naphtha, which ignited, enveloping the *War Knight* in flames. Having been caught in the explosion, the vessel was being towed from the scene when it hit a mine laid by a German submarine. The vessel was then dumped off Freshwater Bay and sunk by Allied gunfire so that it might be raised at a later date.

- 4.1.38. The inclusion of a hierarchical structure with respect to manner of loss would not necessarily eradicate such confusion. Ascertaining the principal event leading to the loss of a vessel such as the *War Knight* from NMR records is not an entirely straightforward task. Whilst it was the Allied gunfire that led to the final sinking of the vessel, this would not have been necessary had it not been for the series of events which led to the ultimate loss of the vessel. It may be contended that none of these events would have unfolded had the *War Knight* not been in collision with the *O B Jennings*, but as it will never be known if the *War Knight* would have been lost as a result of the collision alone, this could not be seen as the principal manner of loss. To say that the vessel would have survived had it not been for a particular event is retrospective analysis and cannot be verified. As such, it is not possible to ascertain the principal cause of loss.
- 4.1.39. While the *War Knight* presents an extreme example, there are a number of cases in which fewer causes of loss are recorded which also serve to distort the simple query results produced as part of the work of this review. For example, a large proportion of vessels are recorded to have been lost having been both mined and foundered, with the result that foundering is the most represented manner of loss in times of war. Definitions for foundering, while generally referring to the ingress of water in a hull, can differ in detail between dictionaries, nautical or otherwise. Some define foundering as the flooding of a boat or ship's hull either through springing a leak or through striking a rock, with other causes of ship sinking such as explosion not usually associated with the word (Cutler and Cutler 2005:97; Dear and Kemp 2006:224-225). Other dictionaries do not specify in this manner and define foundering more generally, as the filling of a hull with water (e.g. Smyth 2007:310).
- 4.1.40. Foundering is defined by the NMR as 'a vessel lost due to filling with water at sea'. In this respect, to use the term foundering alongside that of mined and torpedoed enables the cause (e.g. the mining) and effect (e.g. the foundering) of the wrecking incident to be documented. This method of recording is particularly pertinent, given that a number of vessels survive mine explosions, so that the term mining alone is not enough to illustrate that the vessel was lost, with other terms often necessary in order to document the effect of the mining incident (Cant pers. Comm.). This process of recording, while ensuring detailed documentation of the wrecking incident and maximum data retrievability, can mean that comparisons between simple query results as part of large-scale holistic studies such as this are misleading, without consideration of the relationship between the multiple terms used in this field.
- 4.1.41. It has been suggested by the NMR that a further field, entitled 'subsequent fate' be incorporated into the record for known wrecks (Cant, pers. Comm.). This field would enable terms such as 'dispersed' or 'broken up', currently considered as manners of loss, to be dealt with as distinct post-sinking events. The adoption of a 'subsequent fate' field would therefore be very helpful.
- 4.1.42. A field in which the adoption of a hierarchical structure might benefit query-based analysis such as this is 'building material'. This would enable the principal material of a vessel to be identified and queried. For example, under the current system, the *Caduceus* (NMR UID 767431) is recorded as a vessel with three building materials: copper, iron and wood. The *Caduceus* was a wooden sailing vessel with copper and iron fastenings built in 1857. A maritime historian or archaeologist would undoubtedly describe it as a wooden ship rather than a ship made of copper, iron and wood. The incorporation of a hierarchical structure, where possible, would therefore enable the vessel to be described in a more readily understandable way.

## Data within Free Text

4.1.43. In most cases, the NMR Complete Monument Records contain a wealth of information relating to the wrecks they record. A significant proportion of this information is arranged by subject field, such as Propulsion, Craft Type and Manner of Loss. However, this project has demonstrated that some of the information relevant to an assessment of special interest is currently recorded within the General Descriptive Text of the NMR Complete Monuments Record. The type of data commonly recorded includes:

- Date Built;
- Where Built;
- Builder;
- Crew;
- Propulsion (additional information);
- Lives Lost.

4.1.44. The problem with this is that data held as general text is not easily queryable. For the purposes of this project it has had to be manually extracted from the NMR Complete Monument Records and sorted, a process that has taken a significant amount of project time. Whilst this would probably not be a significant issue for projects relying on small datasets or for the consideration of the special interest of an individual wreck site, it is an issue where the dataset to be analysed is large. The experience of this project therefore suggests that the NMR and similar future studies would benefit if more of the data currently recorded as free text was incorporated in structured subject fields.

4.1.45. Arguably, the data which would benefit most from being incorporated into the structured subject fields is that relating to engine type and propulsion. Where source information is sufficient, a wreck listed by the NMR is recorded to have been propelled by engine, motor, oar, paddle, sail, steam or towed. However, where it is present, information relating to propulsion within the General Descriptive Text tends to provide far more detail than the above structured terms provide. This is particularly the case for vessels using steam, motor or engine. These are defined by the English Heritage Knowledge Organisation System (EHKOS) as follows:

- **Steam:** A watercraft powered by a marine steam engine;
- **Engine:** A craft powered by an internal combustion engine. Use also for cases where the precise engine type is not known;
- **Motor:** Use for smaller forms of mechanical propulsion, such as diesel, electric and outboard motors.

4.1.46. Engine configurations amongst vessels which fall under the broad terms defined above have the potential to differ dramatically. For example, a steam-propelled vessel using paddle-driven technology and a simple engine represents a very different proposition to that of a screw-driven steam-propelled vessel using a geared steam turbine engine, yet under the current system both are recorded under the broad term 'steam', leaving the user to extract the more detailed information from descriptive text within the NMR Complete Monument Record. Whilst paddle-driven vessels are currently indexed in the NMR by the craft type 'paddle steamer', screw-driven vessels are not. Experience during this project has shown that known wrecks for which additional details relating to the specific engine type are known are numerous. It would therefore be beneficial if these important distinctions were represented within the NMR within the separate subject category 'engine'. This

would not diminish the relevance of broad terms such as 'steam', but would provide an important further narrow field relating to the engine of a given wreck.

- 4.1.47. The incorporation of a further category which describes the fuel used by a vessel's engine would be helpful, as this would enable the important distinction between coal- and oil-powered vessels to be clearly recognised. In cases in which a vessel was equipped with an internal combustion engine, the type of engine may be specified such as diesel engine. Where available, this information is currently within the free text in the NMR Complete Monument Records.

#### **Other Useful Fields**

- 4.1.48. One theme assessed as part of the project was that of coastal and overseas traffic. Whilst this information would be clearly apparent in a review of a single wreck record, it is not currently possible to ascertain the number of vessels which were operating coastally or overseas at their time of loss in a holistic manner. To do so would aid an assessment of shipping patterns by providing an indication of the proportion of coastal and overseas passages which took place within a given period. Initially it was felt by WA that the inclusion of a field enabling a vessel to be recorded as being on a coastal or overseas route at its time of loss would be of use in marking a distinction between the two.

- 4.1.49. However, a number of issues raised by the NMR Heritage Data Collection Team reveal that the inclusion of this field may be more problematic than was at first thought (Cant, Pers. Comm.). Notwithstanding the fact that origination/destination data relating to numerous wrecks may be missing, it is also the case that a vessel may have been lost while travelling between two UK ports, before sailing to a destination overseas. In order to describe a vessel such as this as 'coaster' would be inappropriate. Similarly, inbound vessels often called at Falmouth for orders before proceeding within the UK, and as such may also be wrongly documented under this system. As such, while the inclusion of this field would be useful insofar as it could indicate the proportion of overseas and coastal shipping movements, it is not practicable on a working level and could yield potentially misleading results.

## **4.2. VESSELS IN PRESERVATION**

- 4.2.1. In order to properly assess the special interest of boats and ships that survive as wrecks, it is necessary to consider them alongside similar boats and ships that have not been lost and that survive in preservation. For example, if a wreck is the only known example of a particular vessel type then it is likely to be of special interest. However, if there are a number of good examples in preservation then it may not be.

#### **National Historic Ships Register**

- 4.2.2. A dataset of relevant vessels in the National Register of Historic Vessels, the National Archive of Historic Vessels and the Overseas Watch List (OWL) was therefore obtained from the National Historic Ships Register (NHSR).
- 4.2.3. National Historic Ships was established in 2006 as the successor to the National Historic Ships Committee. National Historic Ships was until recently a non-departmental public body reporting to the Department of Culture, Media and Sport with a specific remit to advise the Secretary of State and other public bodies on ship preservation and funding priorities. It looks not only at the immediate issues concerning historic vessels in the UK, but also addresses questions relating to the support infrastructure for historic ships, their potential for contributing in the wider economic, social and community context, and by maintaining a watch list of vessels

abroad with potential UK significance (<http://www.nationalhistoricships.org.uk/pages/about-us.html>).

4.2.4. Vessels within the dataset qualify for the NHSR on basis of the following criteria:

- They must be at least 50 years old;
- They must have demonstrable and significant associations with the UK;
- They must be based in UK waters;
- They must be more than 33ft (10.07m) in length overall;
- They must be substantially intact.

4.2.5. Information relating to preserved vessels of the period 1860 to 1950 was provided to WA in spreadsheet format. It was arranged in such a way as to provide information on the factors relating to the 'life cycle' of a boat or ship addressed by the project. Through providing information in this way, it was hoped that it would be directly comparable to data held in the project database.

4.2.6. It is important to note that as these vessels have not been lost, they could not be sorted into period by date of loss. Instead they were selected by date of build. Whereas the NMR dataset for each period inevitably included vessels built in preceding periods, the NHSR dataset did not. The datasets are not therefore entirely compatible (see **Section 4.3**).

4.2.7. The data fields provided were as follows:

- Vessel Reference;
- Vessel Name;
- Function Area;
- Type;
- Start Year, i.e. year of build;
- Build Area;
- Builder's Name;
- Propulsion;
- Engine;
- Material;
- Hull Style.

4.2.8. The dataset provided to WA included both vessels currently registered under the NHSR and those which have been archived. The latter includes vessels which have been disposed of or are now based outside of the UK.

4.2.9. Further information relating to individual vessels is available online ([http://www.nationalhistoricships.org.uk/ships\\_register.php](http://www.nationalhistoricships.org.uk/ships_register.php)). Vessels can be searched online by Name, Type/Sub-function or through the use of keywords. The dataset can also be browsed by type of function.

#### **National Small Boats Register**

4.2.10. The National Small Boat Register (NSBR) was established in 2006 as a counterpoint to the National Historic Ships and is maintained by the National Maritime Museum Cornwall.

4.2.11. Vessels within the dataset may qualify for the NHSR on basis of the following criteria:

- They must be at least 50 years old;
- They might be a local boat or a famous example of a well-known class;
- They may be regarded as a representative sample of a class of boat or may represent a one-design class;
- They must be less than 33ft (10.07m) in length overall.

4.2.12. Information relating to vessels for the period 1860 to 1950 was provided to WA in spreadsheet format similar to that provided by the NHR. As with the NHR, vessels were selected by date of build, and similar issues of compatibility arise (see **Section 4.3**).

4.2.13. The data fields provided were as follows:

- Name;
- Build date;
- Builder;
- Class;
- Function;
- Material;
- Propulsion;
- Engine.

4.2.14. Further information relating to individual vessels listed by the NSBR is available online (<http://www.nmmc.co.uk/index.php?/collections/nsbr/>). The online database enables users to conduct a quick search by using the boat name or registration number, or by conducting an advanced search by function, class, location, usage and length.

### **4.3. COMPATIBILITY BETWEEN THE PRIMARY DATA SOURCES**

4.3.1. For the most part, the comparison between wrecks and records relating to vessels in preservation was straightforward and efficient. The fields of information provided by these primary data sources were such that they were readily comparable. The data proved to be extremely useful in the consideration of special interest for boats and ships of this period.

#### **Representation of Smaller Vessels**

4.3.2. There are very few boats or very small ships amongst the wrecks of 1860-1950. Although large numbers of small vessels are believed to have been lost, the recording of these losses tends to be much less complete than for larger vessels. In addition, loss positions are rarely defined very accurately. Small vessel wrecks are also less likely to cause concern as potential navigational hazards and are often difficult to identify during geophysical and hydrographic surveys. As a result most of the small vessel wrecks will probably remain unidentified.

4.3.3. The NHR and the NSBR therefore provide almost all of the physical evidence that we have relating to smaller vessels. As a result they form the chief resource against which the special interest of this type of wreck will be assessed.

#### **Date of Build versus Date of Loss**

4.3.4. As noted above, the NHR and NSBR datasets have been classified by date of build because, as preserved vessels, they have no date of loss. In comparison, the NMR datasets for each period included many vessels built before the beginning of the period concerned because the records for each period were classified on the

basis of date of loss rather than date of build. As a result the datasets for wrecks and preserved vessels are not entirely compatible.

- 4.3.5. This issue is particularly significant when considering the build of a vessel. The wrecks of each period represent a much longer period in terms of construction. For example, most of the wrecks with known dates of build in the 1914-38 and 1939-50 datasets were built in the preceding period (**Table 3**).

Date of Loss	Date of Build				
	Pre-1860	1860-1913	1914-1938	1939-1945	1946-1950
1860-1913	40	218			
1914-1938	3	388	100		
1939-1945	3	61	300	53	
1946-1950	1	10	12	13	1

**Table 3:** Wrecks categorised by date of loss and build

- 4.3.6. The exception is the 1860-1913 dataset, which mainly comprises wrecks of vessels constructed in that period. The reason for this is unknown. One possible explanation is that a large number of vessels constructed prior to 1860 were of wooden construction and are less likely to be visible than their iron or steel counterparts to a database such as the NMR, which is principally based on hydrographic survey. It may be that the recording of loss locations was not as accurate as it was later on. Alternatively manner of loss did not include enemy action. Therefore a greater proportion of losses went ashore on the coast. Subsequently these wrecks have dispersed or been removed and therefore do not survive as wrecks.
- 4.3.7. The selection of wrecks by date of loss is arguably most appropriate in relation to themes which address the use and loss of vessels. This enables them to be linked with historical themes and events relevant to the period in question. For example, if vessels were sorted by date of build, then the impact would be clearer in the 1860-1913 rather than the 1914-38 dataset. However, it is reasonable to argue that developments in technology and design are most easily approached from the point of view of date of build. Therefore the option to sort the wrecks more comprehensively by date of build would be highly advantageous.

#### **Vessel Type and Function**

- 4.3.8. Comparison of the wreck and preserved vessel datasets has revealed differences in the approach to both the terminology and recording structure adopted for the function, class and type of a vessel. For example, a collier is a vessel used for carrying a cargo of coal in bulk and is normally therefore a cargo vessel. The NMR record for the wreck of a collier is likely to comprise the broad term 'cargo vessel' and the narrow term 'collier'. In contrast, the same vessel would be recorded in the NSBR or NHSR with the function area 'cargo vessel' and the vessel type or sub-function 'collier'. The information is essentially the same, but the way in which it is structured differs.
- 4.3.9. This is not to say that the broad terms listed by the NMR and the function area listed by the NSBR and NHSR are equivalent to one another. The broad terms listed by the NMR represent terms relating to vessel type. For example, the term 'dredger' is regarded as a broad term. In comparison, a dredger held by the NSBR and NHSR would be regarded to fall under the function category 'service vessel'. There are eight functional areas listed by the NHSR and NSBR, as follows:

- Cargo Vessel;
- Experimental Craft;
- Fighting Vessel;
- Fishing Vessel;
- Leisure Craft;
- Passenger Vessel;
- Research Vessel;
- Service Vessel.

4.3.10. The issue relating to vessel type and function is a complex one. For example, alongside purpose-built colliers are bulk cargo ships which were not purpose-built as colliers but still served this same function throughout their service life. In this respect, the term 'collier' can refer to both a vessel type and a function. All vessels, where described as such in primary sources, are attributed the craft type 'collier' in the NMR and thus include both those purpose-built and those operating as such in a manner which ensures that they can be easily retrieved by the user in the known wreck data. Vessels recorded to have carried coal but not referred to as colliers in source material are not automatically designated as colliers in the NMR. This is particularly useful given that a number of individually chartered vessels also operated in the coal industry, particularly in the carriage of coal from the Welsh coal ports, which was largely carried out by tramp ships.

4.3.11. The incorporation of a new function 'category' in addition to 'craft type' (thereby maintaining the advantage of having broad and narrow terms) within the NMR dataset would nonetheless make it easier to undertake thematic reviews on different classes of shipping use, similar to those undertaken as part of this project. It would also assist in making thematic comparisons with the preserved record. The adoption of the following thematic categories used by the project might represent a workable approach to this:

- Transport (Cargo/Passenger)
- Military
- Industrial
- Fishing
- Law and Government
- Health and Welfare
- Commercial
- Agriculture and Subsistence
- Domestic
- Recreation

#### **Hull Design and Construction**

4.3.12. A recurring theme noted throughout the project was the limited nature of information available relating to detailed features of wreck hull construction. For example, during the 1860-1913 review no reference was found to vessels of composite construction. Similarly, very few wrecks of the period 1914-1950 were recorded to have been of riveted or welded construction. The lack of such information means that some key transitional developments in relation to hull construction appear to be poorly represented in the archaeological record.

4.3.13. The amount of detailed information in the NMR depends upon what the source material contains. The fact that the occasional reference to welding and riveting is included in NMR records suggests that all information available in the source material has been incorporated. This in turn suggests that wrecks do not currently

represent these key changes very well. This increases the potential importance of the preserved vessels in providing information relevant to the assessment of special interest.

- 4.3.14. In order to ensure that the wealth of information held by the NMR in respect of hull design and construction is easily retrievable, it has been suggested by the NMR Heritage Data Collection Team that the term ‘composite’ is included as a construction term, to be used in conjunction with the building materials wood and iron, in order to clarify the indexation of these terms (Cant Pers. Comm.). Similarly the inclusion of riveting and/or welding as construction terms is also suggested, although it is noted that this will rely on the availability of the data currently present in the NMR Complete Monument Record, which in turn remains reliant on contemporary descriptions or confirmation from archaeological remains.

#### **A Changing Resource**

- 4.3.15. One area in which comparisons between the record for known wrecks and the preserved record may be misleading relates to changes which occurred in preserved vessels after the period in question. This most commonly occurs in relation to the engine type utilised by a vessel. For example, the *City of Edinboro*’ (NHSR ID 503) is a trawler built in 1884. It is recorded as having been equipped with a diesel engine. However, more detailed enquiries revealed that this was only installed in 1957. Long service lives and frequent refits means that comparison between the preserved record and wrecks in this respect must be approached with caution.
- 4.3.16. It has not proved possible to review the history of each wreck and to make a clear distinction between as-built engines and later refits. Therefore the relationship between vessels in preservation and wrecks in terms of representing the renewal of vessels during their service life is uncertain.

## **5. DATA COLLATION**

### **5.1. THE BOATS AND SHIPS DATABASE**

- 5.1.1. In order to query the NMR dataset in both simple and complex ways, a Microsoft Access database has been created for the project. It is linked to a GIS workspace to provide a means for analysing and presenting the data spatially.
- 5.1.2. The database design is based on WA’s ‘BULSI’ system of wreck assessment. This system uses five core stages in the ‘life cycle’ of a boat or ship (build; use; loss; survival; investigation) to record the history of an individual wreck. The ‘BULSI’ system is explained in greater detail in **Appendix I**.
- 5.1.3. The design has also been informed by integral and relative factors for assessing the special interest of boats and ships in archaeological contexts identified by WA’s 2008 ALSF project on *Marine Principles of Selection* (ALSF 5383):

<b>Integral factors</b>	
Narrative	The asset is directly related to important trends or key turning points in the historical story of England.
Association	The asset provides a tangible link to (known) people or events.
Respect	The asset is the site of major loss of life and/or human remains
Aesthetic	The asset has high sensory (usually visual) quality.

Current relevance	The asset has direct relevance to current activities.
<b>Relative factors</b>	
Rarity	There are few other known examples.
Representative	The asset typifies the attribute(s) of special interest, or the range of those attributes.
Diversity	The asset embodies multiple facets of such assets' special interest.
Potential	The asset is capable of revealing more.
Extent of Survival	The asset is intact.
Documentation	The asset is augmented by other sources.
Grouping	The asset is augmented by spatial relationships to other assets.
Objects and Collections	The asset is augmented by moveable physical evidence.
Setting and Context	The asset is augmented by relationships to its physical and/or intellectual surroundings.
Exceptional	The asset is beyond comparison.

**Table 4:** Integral and relative factors

- 5.1.4. The database field structure is described graphically in **Figure 3** and is based upon the attribute framework set out in the project design and as follows (Wessex Archaeology 2009:15):

Narrative	Build	Construction	Date Built
		Dimensions	Length/Breadth/Depth; Tonnage; Object Material
		Propulsion	Propulsion
		Fitting	
		Distribution	Where Built
	Use	Themes	Maritime Craft Type; Cargo
		Distribution	Registration Place; Nationality; Departure; Destination
	Loss	Cause	Manner of Loss
Distribution		Location; Lat Long; Associated Named Location	
Association	Build	Associated People	Builder
	Use	Associated People	Crew
	Loss		Associated Monuments
Respect	Loss		Crew Lost
Extent of Survival	Survival		Evidence; General Descriptive Text
Documentation	Survival		Related Archives
	Investigation		Related Event Records

**Table 5:** Attribute framework

### Data Entry

- 5.1.5. Some data contained within the NMR Complete Monument Records could enter automatically into queryable fields in the project database. Database fields for which this was the case were:

- Summary;
- Object Material;
- Propulsion;
- Maritime Craft Type;
- Cargo;
- Registration Place;
- Nationality;
- Departure;
- Destination;
- Location/Lat Long;
- Evidence.

5.1.6. The remaining fields were completed manually, as follows:

- Date Built;
- Length/Breadth/Depth;
- Tonnage;
- Where Built;
- Manner of Loss;
- Date of Loss;
- Associated Monuments;
- Builder;
- Crew;
- Lives Lost;
- Related Archives/Event Records.

5.1.7. In some cases information relating to these fields was easily retrievable. For example, information relating to date and manner of loss, associated monuments and related archives and records are clearly recorded in the NMR Complete Monument Records under relevant headings. The dimensions of the vessel are also easily extracted, although they can be presented in either metric or imperial units, depending on the way in which they are recorded in the source material used by the NMR. All measurements relating to length, depth and breadth were converted into metres to ensure compatibility.

5.1.8. The remaining data required by the project was generally found to be contained within free text in the records, often in the General Descriptive Text. This included data such as the build location of the vessel, the boat or ship builder, the number of crew and lives lost. Manual data entry required a substantial amount of project time. Whilst manual data entry became considerably quicker as the project progressed, the additional time required was considerably more than had been anticipated in the project design.

5.1.9. Technically speaking the Complete Monument Records have not been enhanced in the sense that data that is not contained within them has not been added to the project database. However, wrecks that have required manual data entry in order to make them more queryable have been marked as 'enhanced' in order to distinguish them from those that have not. All of the wrecks have been 'enhanced' in this way, although the data contained in the Complete Monument Records has been transposed rather than altered.

5.1.10. The amount of information available in free text in the NMR Complete Monument Records made it possible for additional fields not specified in **Table 5** to be created. One example is the field entitled 'Propulsion Specifics' which enabled vessels to be

queried on the basis of the engine type they were equipped with. This additional field was justified because it made it easier for the project to take into account in assessing special interest the dramatic technological changes of 1860-1950. In addition to engine type, data input under this field included the number of boilers and cylinders, alongside any additional information which was considered to relate to propulsion.

5.1.11. A similar 'Construction' field enabled information to be added relating to particular features of construction or fittings which had not already been entered in other fields such as 'Building Material'. Information relating to the armament of a vessel was also added to this field, although with hindsight a dedicated field for this might have been better.

5.1.12. Another field entitled 'Seabed Survival' was also created. 'Seabed Survival' enabled information concerning the condition of a wreck to be entered, based on the most recent information in the Complete Monument Records. It should be noted that this field is based on the most recent information available in the records, which will not necessarily represent the current condition of the wreck. In order to make queries related to the condition of large numbers of wrecks more understandable, standard descriptive terms were selected by the database compiler from the following list. 'Unknown' was selected where there was insufficient information currently available in the NMR records about condition to use any of the other terms:

- Broken Up;
- Buried;
- Dispersed;
- Flattened;
- Mainly Intact;
- Partially Buried;
- Partially Intact;
- Poor;
- Unknown.

5.1.13. The use of the term 'dispersed' refers to the remains of vessels which have been intentionally dispersed by use of explosives. Vessels for which the remains are dispersed over a wide area due to natural agencies are described as 'broken up'.

5.1.14. The datasets received from the NHR and the NSBR have not been collated within the project database. It was decided that this would over-complicate database construction and querying and would be an extremely time-consuming process. As data from both of these sources was provided in spreadsheet format, it was possible to both sort and filter data in attribute fields that were compatible with the project database.

#### **Queryable Fields**

5.1.15. Not all of the project database fields are immediately queryable. The fields which are in a queryable format are those illustrated with a red border in **Figure 3**. The national stock-take undertaken by this project is based upon simple (single attribute) and complex (multiple attribute) queries of these fields.

#### *Single Attributes*

5.1.16. There are a number of attributes for which only single attribute queries can be conducted. For example, it was only possible to query the stock-take for sites with a single vessel type such as 'cargo vessel'. It would not have been possible to query

the records for those with the vessel type 'cargo vessel' and those with the vessel type 'armed cargo vessel'. The fields to which this applied are as follows:

- Vessel Name;
- Nationality;
- Vessel Type;
- Cargo;
- Construction;
- Registration;
- Departure;
- Destination;
- Place of Build;
- Manner of Loss;
- Casualties;
- Evidence (inc. Seabed Survival).

5.1.17. However, it was possible to conduct complex queries across these fields. For example, it was possible to conduct a query to identify all cargo vessels which are recorded as having carried coal as cargo.

#### *Multiple Attributes*

5.1.18. There were also a number of fields which could be subjected to complex attribute queries. For example, it was possible to run a query for all vessels which used both wood and iron within the Building Material field. In these cases, there were restrictions on the number of attributes which could be queried. The fields in which complex queries were possible are as follows:

- Building Material (two attributes could be queried);
- Propulsion (two attributes);
- Propulsion Specifics (three attributes).

#### *Range Queries*

5.1.19. In some cases it was possible to conduct range queries. Range queries are those which enable fields of numeric value to be queried in a 'from' and 'to' basis. The following fields could be queried in this way:

- Date of build;
- Date of loss;
- Length.

5.1.20. Initially the database was designed to query wrecks on basis of vessel tonnage rather than length. However, the records were found to contain a mixture of tonnage qualifiers such as gross, net or displacement. Therefore it was decided that length would provide a more suitable indication of vessel size.

#### **Boats and Ships Database Limitations**

5.1.21. The design of the database is such that not all fields of information can be meaningfully assessed through simple and/or complex queries. In some cases, particular data fields have been found to contain information of such great variety that little can be achieved in the way of queries. Experience during the project has thus demonstrated that fields that contain large numbers of attributes are less easy to query effectively than those that contain fewer attributes. They have also proved to be less valuable in terms of the overall stock-take.

5.1.22. An example of this is the ‘Construction’ field. This includes information about armament. A very large number of different guns and other weapons were used between 1860 and 1950. Weapons fit was seldom standardised other than by class of warship (for example County-class cruisers) and could even vary within class. Whilst the detailed information available in the NMR records is certainly very useful on a wreck-by-wreck basis, the great variability means that its inclusion within the Boats and Ships database was not without complications, and in turn was found to be less useful in terms of a broad holistic review such as this. With hindsight, information that is subject to great variability such as this would be more useful if it was structured, with standard broad and narrow terminology.

## 6. UNDATED WRECKS

6.1.1. As part of the Boats and Ships assessment, WA also received data relating to wrecks of unknown date. There are a total of 2242 known wrecks of unknown date.

6.1.2. In order to assess whether these wrecks could be sorted into the period divisions used by the project using any dating evidence contained in the records, a number of simple queries and key word searches were conducted on the NMR data and Complete Monument Records respectively.

6.1.3. An initial review of the undated wrecks demonstrated that only five contained information relating to their date of build (*Alan* NMR **UID 1025295**, *Pimlico* NMR **UID 1025296**, *Violet* NMR **UID 1025297**, *Gladys* NMR **UID 1025310** and *New World* NMR **UID 1025294**).

6.1.4. **Table 6** sets out the simple queries conducted on the undated wrecks. These wrecks were not subject to manual data entry and therefore the queries could only be conducted on data automatically extracted from the NMR data into the Boats and Ships (see **Section 5.1.5**).

6.1.5. The table provides examples of the type of query that may produce date range evidence. A number of other queries, particularly in relation to vessel type, could potentially provide dating information. The presence of six submarines, which are almost certainly of 20<sup>th</sup> century date, illustrates this.

6.1.6. Simple attributes which cannot be relied upon to reliably indicate a limited date range, for example wooden hulls or the use of sail, were not queried. The results reveal that little dateable information in relation to the propulsion or building material is available within the NMR data for the undated known wrecks. Details relating to the individual wrecks in question can be found in **Appendix II**.

Query	Indicator	Date range indicated	No. of wrecks
Propulsion	Steam	>late 18 <sup>th</sup> century	33
	Engine	>early 20 <sup>th</sup> century	20
Building Material	Iron	>late 18 <sup>th</sup> century	14
	Steel	>mid 19 <sup>th</sup> century	20
Vessel Type	Cable Layer	>mid 19 <sup>th</sup> century	0
	Clipper	>mid 19 <sup>th</sup> century	0
	Submarine	>early 20 <sup>th</sup> century	6
	Aircraft Carrier	>early 20 <sup>th</sup> century	0

**Table 6:** Sample searches for date range evidence (undated wrecks)

6.1.7. **Table 7** displays the results of the word searches conducted on Complete Monument Records. Terms which may imply or be associated with a date range were considered. The results reveal that very few records contain information which may be regarded as dateable (for individual wreck details see **Appendix II**).

Key Word	Date Indication	Number of Wrecks
'Bombed'	WWI or WWII	0
'Clipper'	>Mid 19 <sup>th</sup> century	0
'Composite'	>Mid 19 <sup>th</sup> century	0
'Compound'	>1850s	1
'Depth Charge'	WWI or WWII	3
'Diesel'	>early 20 <sup>th</sup> century	1
'Mined'	WWI or WWII	1
'Oil'	>early 20 <sup>th</sup> century	7
'Requisitioned'	Possibly WWI and/or WWII	1
'Torpedoed'	WWI or WWII	1
'Triple'	>1870s	1
'Turbine'	>1880s	0
'War'	Possibly WWI and/or WWII	3
'Weld'	>early 20 <sup>th</sup> century	0

**Table 7:** Word searches for dateable terms (undated wrecks)

6.1.8. The results shown above are for sample searches and are not therefore conclusive. However, they do suggest that there is little potential to date undated wrecks from information contained in the NMR data and Complete Monument Records. This is not surprising because lack of dating evidence is presumably the reason why they were created as undated records in the first place. Whilst a proportion of the undated wrecks could be assigned a date range, it appears that dating the great majority will require new data to become available.

6.1.9. It is of course possible that the undated wrecks could have an impact upon the special interest of individual dated wrecks. For example, there could be other examples of a type of vessel that is currently only represented by one dated wreck. There could also be examples of vessel types for which there are no current dated wrecks or preserved vessels. However, the analysis conducted for this project implies that the information contained in the undated records is unlikely to alter the broad patterns established through analysis of the dated wrecks.

6.1.10. As dateable information relating to known but undated wrecks is limited, it can only be assumed at present that known and as yet undated wrecks will follow the same temporal distribution as dated wrecks. On that basis, most of the undated wrecks probably date to the period 1860-1950.

## 7. OTHER DATA SOURCES USED

### 7.1. THE NAUTICAL ARCHAEOLOGICAL SOCIETY

7.1.1. The Nautical Archaeological Society (NAS) is a non-government organisation formed to further the interest in underwater cultural heritage. The NAS is a registered charity and is based in the UK.

7.1.2. The NAS runs or co-ordinates a number of projects which promote the archaeological investigation of wreck sites in marine contexts. Amongst other

projects, the NAS runs the 'Adopt-a-wreck' scheme as part of the wider 'Dive with a Purpose' initiative introduced in 2000. The Adopt-a-wreck scheme received funding from the Heritage Lottery Fund through the Diving into History Project and encourages individuals, groups and clubs to adopt maritime sites in order to promote a sense of ownership and stewardship for the coastal and underwater cultural heritage.

- 7.1.3. A number of the wreck sites which have been adopted as part of the Adopt-a-Wreck scheme are of the period 1860-1950. Wreck sites of this period may also have been subject to investigation as part of other projects coordinated by the NAS, such as the Portland Mapping project. NAS co-ordinated investigations therefore have the potential to inform the national stock take.

## **7.2. THE COMMONWEALTH WAR GRAVES COMMISSION**

- 7.2.1. The Commonwealth War Graves Commission was established by Royal Charter in 1917 to pay tribute to the men and women of the Commonwealth forces who died in WWI. Its role has subsequently been extended and, for example, now incorporates a similar responsibility for WWII.
- 7.2.2. Information held by the Commonwealth War Graves Commission is available in the 'Debt of Honour Register', listing the 1.7 million men and women of the Commonwealth forces who died during the two World Wars and the 23,000 cemeteries, memorials and other locations worldwide where they are commemorated. Records are also held of the 67,000 Commonwealth civilians who died as a result of enemy action in WWII.
- 7.2.3. The 'Debt of Honour Register' is available online ([http://www.cwgc.org/debt\\_of\\_honour.asp?menuid=14](http://www.cwgc.org/debt_of_honour.asp?menuid=14)) and the records can be search by Surname, Initials, War, Year of Death, Force and Nationality. Records held by the Commonwealth War Graves Commission were made available to WA in spreadsheet format and were used in relation to the issues of respect and loss of life.

## **7.3. BOARD OF TRADE CASUALTY RETURNS**

- 7.3.1. The Board of Trade Casualty Returns are contemporary records which listed all British ships lost or partially lost in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. The records include statistical data on where and how ships were lost. They were used in certain instances to help assess the reliability of conclusions drawn from analysis of the wrecks, particularly in respect of place and manner of loss.
- 7.3.2. These records do not distinguish between insurance losses (where the vessel may have been recovered) and actual vessel losses. Therefore they are always likely to record a higher number of shipping casualties than there are wrecks. Additionally, inaccuracies in the records can and do occur. For example, the *Wendla* (1896) is recorded by the Board of Trade Casualty Returns to have sunk following a collision but research by the NMR Heritage Data Collection Team reveals this not to be the case, documenting the vessel to have been taken in tow to Dover and therefore recovered (Cant, pers. Comm.). These discrepancies must be borne in mind when assessing this dataset. However, it cannot be ignored that sample assessments of the numbers of total and partial losses at particular locations suggested that total losses recorded by the Board of Trade nevertheless tend to exceed the number of currently charted wrecks, sometimes by a considerable margin.

- 7.3.3. The Board of Trade Casualty Returns were accessed by WA through the important maritime reference collection held at Southampton Central Library.

#### **7.4. THE DEPARTMENT FOR TRANSPORT**

##### **Record Parameters**

- 7.4.1. The Department for Transport (DfT) was consulted at the onset of the project. The DfT records relate to vessels operating as commercial merchant ships which sank due to enemy action. The records relate to the War Risk Insurance Scheme. This compensated the owners of merchant vessels and cargoes lost during both World Wars.
- 7.4.2. The records held by the DfT are relevant to the periods 1914-1918 and 1939-1945. They contain a limited number of records from the period prior to WWI and the interwar years (six and 25 records respectively). These particular losses were not recorded in connection with the War Risk Insurance Scheme.
- 7.4.3. Approximately 2,500 vessels lost during WWI and a further 2,000 lost in WWII were recorded by the DfT under the scheme. The records relating to these losses are incomplete. A large proportion is currently held at the Admiralty Library or in The National Archives. The DfT itself is currently in the possession of nearly 3,000 records.

##### **The Records**

- 7.4.4. As of November 2009, 2,098 loss records were available in digitised format at the DfT in a database entitled 'the WWI and II Merchant Ship Wrecks Database'. The remaining records held by the DfT are in paper format.
- 7.4.5. The database enables records to be queried by 'Vessel Name', 'Wreck Location' or 'Cargo Type'. The records can also be sorted alphabetically or chronologically by 'Name' and 'Date' respectively. It is not, however, possible to use 'Date' as a search criteria in the first instance. Information relating to each vessel comprises the following:
- Vessel Name;
  - File Reference;
  - Nationality;
  - Voyage;
  - When Sunk;
  - How Sunk;
  - Where Sunk;
  - Lat/Long;
  - Notes;
  - Tonnage;
  - Insurance Club;
  - Cargo Items.
- 7.4.6. The records held within the DfT database would provide a valuable comparative resource to the wrecks. However, due to software restrictions the database can only be accessed on a 'read only' basis and it is not currently possible to export any data.
- 7.4.7. Other records held by the DfT include those relating to 'British Ships WWI Casualties'. These records are available in paper format and are listed in date order. Information within the records is available for the following fields of enquiry:

- Date of Casualty;
- Name of Vessel;
- Port of Registry;
- Official Number;
- Age of Vessel;
- Description of Vessel;
- Tons in Gross and Net;
- Number of Crew;
- Voyage (To and From)
- Cargo;
- Number of Passengers;
- Lives Lost;
- Approximate Place of Casualty.

7.4.8. In its current paper format, an assessment of these records would be an extremely time-consuming process. It was not therefore possible to review this resource within the scope of the project.

## **7.5. WRITTEN AND WEB SOURCES**

7.5.1. WA consulted a wide variety of secondary sources relevant to the archaeology and history of boats and ships of the period 1860-1950. These included journals, monographs and other written material. The main sources are listed in the bibliographies of the individual period reports.

7.5.2. A number of web sources were also consulted during the review. A summary of the primary web sources considered are outlined below.

### **The Nautical Archaeological Society website**

7.5.3. The Nautical Archaeology Society website ([www.nauticalarchaeologysociety.org](http://www.nauticalarchaeologysociety.org)) was consulted for the information it holds in relation to NAS projects .

### **National Historic Ships website**

7.5.4. This website ([www.nationalhistoricships.org.uk](http://www.nationalhistoricships.org.uk)) was consulted for its glossary and for details relating to individual preserved vessels that were not included in the spreadsheet information provided by NHSR.

### **Naval-History.Net website**

7.5.5. The website Naval-History.net (<http://www.naval-history.net/index.htm>) is archived by the British Library and the United States Library of Congress working in association with the National Maritime Museum and the Citizen Science Alliance/University of Oxford. The website has been active since 1998 and provides an extensive source of information relating to Royal Navy and U.S. Navy casualties, ships and military campaigns spanning the period from WWI to the post-War period.

### **The National Maritime Museum website**

7.5.6. This was consulted primarily for information held within its art collections ([www.nmm.ac.uk](http://www.nmm.ac.uk)).

### **The National Small Boats Register website**

7.5.7. This website (<http://www.nmmc.co.uk/index.php?/collections/nsbr/>) was consulted to provide information relating to individual vessels not included in the spreadsheet information provided by NSBR.

### **PortCities website**

- 7.5.8. PortCities (<http://www.portcities.org.uk>) was launched in 2003 and is a partnership of museum and other organisations supported by the National Lottery. PortCities UK explores the history of and gives access to the collections contributed by heritage organisation of five key maritime cities around the UK: Bristol, Hartlepool, Liverpool, London and Southampton. PortCities is an interactive website which explores the growth of these key port cities and provides selected accounts of events, people and industry enabling public access to images from the historic archives, museums and libraries of the five partners.

### **The Royal National Lifeboat Institution website**

- 7.5.9. This website ([www.rnli.org.uk](http://www.rnli.org.uk)) was consulted for information relevant to discussions relating to life-saving and welfare at sea.

### **The Royal Air Force website**

- 7.5.10. This website ([www.raf.mob.uk](http://www.raf.mob.uk)) was also consulted for information relevant to discussions relating to aircrew life saving at sea.

## **8. RECORDING AND RESEARCH PRIORITIES**

### **8.1. INTRODUCTION**

- 8.1.1. The project has identified a number of areas where additional information would be beneficial to the assessment of special interest. These suggested recording priorities have arisen through use of the NMR wreck data as part of a broad holistic assessment and are discussed variously in the period-specific reports. Examples include both recommendations in structure and recording practice and areas of interest which are currently under-represented by known wrecks of this period.
- 8.1.2. The points raised below warrant further discussion with the NMR Heritage Data Collection Team. With their experience they will be well placed to consider the practicalities of applying them to the known wreck resource.

### **8.2. STRUCTURE AND RECORDING PRACTICE**

- 8.2.1. The NMR contains a wealth of information relating to known wreck sites of the period 1860-1950, much of which is contained within structured queryable fields. However, this project has established that not all of the information relevant to special interest is recorded in this way. Restructuring some information contained in free text would not only aid an assessment of special interest but would also maintain the advantage the NMR has of providing a system which ensures maximum data retrievability. The following suggestions for improving structure and recording practice may merit further consideration:

- Inclusion of an additional field for 'Date of Build' to enable wrecks to be sorted variously by either date of build or date of loss (as an alternative, the existing fields for Min Date and Max Date could be used to represent the lifetime of the vessel rather than the wrecking event, with the build as the Min Date and the loss as the Max Date);
- Incorporation of an additional field entitled 'Country of Build', to be viewed in conjunction with place of build listed (where known) in the free text;
- Inclusion of an additional field 'Function' to aid thematic reviews and comparison with the NSBR and NHSR (N.B. This field would be additional to

the existing 'Craft Type' field, thus maintaining the advantage of the broad and narrow terminology within the 'Craft Type' field);

- Inclusion of the term 'Composite' in the thesaurus terms for the Construction field;
- Inclusion of additional stand-alone propulsion terms to clearly document the relationship between different forms of propulsion where present (e.g. Auxiliary Sail, Auxiliary Diesel etc);
- Incorporation of an additional field 'Subsequent Fate' to enable terms such as 'Broken Up' and 'Dispersed' to be appropriately recorded;
- Incorporation of an additional field entitled 'Engine' to record information about engine type;
- Incorporation of an additional field to record 'Loss of Life'. The field could have the controlled terms 'yes', 'no' or 'unknown' so as to avoid numerical values in respect to lives lost. Where further information about loss of life or survivors is known (from sources such as Commonwealth War Graves) it is important that this is included in the General Descriptive Text, as is currently the case amongst a large number of NMR wreck records.

### 8.3. ENHANCEMENT PRIORITIES

8.3.1. This section outlines areas of interest which are currently difficult to assess through a review of known wrecks of this period. This is primarily due to the nature of contemporary source material and the archaeological remains.

8.3.2. In many cases, the limitations associated with these topics are such that the representation of sites encapsulating key historical themes amongst known wrecks is challenging (see for example discussions relating to tramp ships Section **4.1.27-4.1.29**). Whilst these challenges are recognised by WA, they are nonetheless topics where enhancement would serve to aid an assessment of special interest and are thus highlighted as areas for possible future work. These topics are as follows:

- Seabed survival of known wrecks in all of the periods assessed. The majority of wrecks were found to be of unknown condition on the seabed, so it would be highly advantageous to achieve better characterisation on the basis of information held in UKHO records and from available seabed survey data;
- Dating of currently undated known wrecks in all the periods assessed, especially in the period 1860-1913 and for named wrecks. Efforts to narrow the date range of currently undated wrecks would be worthwhile even if absolute dates are unlikely to be established;
- Other enhancements of named wrecks, especially with date and place of build, where the name provides access to other documentary sources;
- Other enhancement of known unnamed wrecks with, for example, dimensions where seabed survey data is available. Dimensions can help to narrow down the possible correlations with recorded losses (casualties);
- Enhancement targeting smaller vessels which, due to their size, have not been so readily identified in hydrographic surveys (either because of their visibility or because they did not represent a danger to navigation);
- The relationship between fishing vessels lost whilst engaged in the fishing industry and losses of fishing vessels lost whilst requisitioned for military service.

## 9. REFERENCES

### 9.1. WRITTEN SOURCES

Cutler, D., and Cutler, T.J., 2005, *Dictionary of Naval Terms*, Naval Institute Press.

Dear, I.C.B., and Kemp, P., (eds.), 2006, *Oxford Companion to Ships and the Sea: Second Edition*, Oxford University Press.

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Roberts, P. and Trow, S., 2002, *Taking to the Water: English Heritage's Initial Policy for The Management of Maritime Archaeology in England*, English Heritage.

Smyth, W.H., 2007, *The Sailor's Word: A Complete Dictionary of Nautical Terms from the Napoleonic and Victorian Navies*, Fireship Press.

Wessex Archaeology, 2009, 'Assessing Boats and Ships: Project Design', Unpublished report.

### 9.2. WEB SOURCES

#### **The Commonwealth War Graves Commission**

[http://www.cwgc.org/debt\\_of\\_honour.asp?menuid=14](http://www.cwgc.org/debt_of_honour.asp?menuid=14)

#### **Marine Data News**

[http://newsweaver.co.uk/coastmapnews/e\\_article000873215.cfm?x=bdgNFJ9,b6h3RmyL,w](http://newsweaver.co.uk/coastmapnews/e_article000873215.cfm?x=bdgNFJ9,b6h3RmyL,w)

#### **Naval-History.Net**

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

#### **The National Historic Ships**

<http://www.nationalhistoricships.org.uk/pages/about-us.html>

#### **The National Maritime Museum**

<http://www.nmm.ac.uk/explore/sea-and-ships/facts/faqs/what-is-the-definition-of-a-boat-versus-a-ship>

#### **The National Small Boats Register**

<http://www.nmmc.co.uk/index.php?/collections/nsbr/>

#### **PortCities**

<http://www.portcities.org.uk>

## **APPENDIX I: 'BULSI' SYSTEM**

The 'BULSI' system is used by Wessex Archaeology to assess the 'career' or 'life cycle' of a wrecked vessel, from its building through its use and loss and then through its subsequent history as a wreck. The system has been proved on a wide variety of projects, including regional environmental characterisations and the assessment of individual wrecks.

The system breaks the description of any wreck down into the following consistent categories:

### **B – Build**

This category provides information concerning the building of the vessel, including the date of construction, the place of construction and the companies and individuals involved. It also includes information concerning the design of the vessel, including the dimensions and tonnage, the materials used, and propulsion and other engineering details.

### **U – Use**

This category provides information on what the vessel was used for, including changes of use during its career. Registration and nationality information is recorded here, together with details of companies and individuals associated with the vessel, such as owners, managers and the crew. For merchant ships, details of the type of cargo can be recorded, together with information about ports of call and therefore routes.

### **L – Loss**

This category records information about how the vessel came to be lost, including date and circumstances of loss, location and associated vessels and people. Fatalities can be recorded as well as commemorative monuments subsequently erected.

### **S – Survival**

This category describes the evidence for the history and survival of the vessel as a wreck and can include information from a wide variety of source including diver descriptions and geophysical and hydrographical surveys.

### **I – Investigation**

This category describes the history of investigation of the wreck and can include interventions by archaeologists, salvors and others.

**APPENDIX II: UNDATED WRECKS WITH DATE RANGE INDICATORS**

<b>NMR UID</b>	<b>Name</b>	<b>Search Method</b>	<b>Date Range Indicator</b>
405589		Simple Query	BUILDING MATERIAL: IRON
767278		Simple Query	PROPULSION: ENGINE
767303		Simple Query	PROPULSION: ENGINE
767305		Simple Query	PROPULSION: ENGINE
767308		Simple Query	PROPULSION: ENGINE
767326		Simple Query	PROPULSION: ENGINE
767327		Simple Query	BUILDING MATERIAL: STEEL
767337		Simple Query	PROPULSION: ENGINE
767389	HMS 460 A	Simple Query	PROPULSION: ENGINE
767413		Simple Query	BUILDING MATERIAL: STEEL
767419		Simple Query	PROPULSION: ENGINE BUILDING MATERIAL: STEEL
767430		Simple Query	BUILDING MATERIAL: STEEL
767438		Simple Query	PROPULSION: ENGINE BUILDING MATERIAL: STEEL
767441		Simple Query	PROPULSION: ENGINE BUILDING MATERIAL: STEEL
767450		Simple Query	BUILDING MATERIAL: STEEL
802312		Simple Query	CRAFT TYPE: SUBMARINE
805522		Simple Query	PROPULSION: STEAM
805680	Weston Maid	Simple Query	BUILDING MATERIAL: STEEL
812827		Simple Query	PROPULSION: STEAM
812977		Simple Query	BUILDING MATERIAL: STEEL
813284		Simple Query	PROPULSION: STEAM
813352		Simple Query	PROPULSION: STEAM
813392		Simple Query	PROPULSION: STEAM
813423		Simple Query	PROPULSION: ENGINE
813451		Simple Query	PROPULSION: STEAM
813466		Simple Query	PROPULSION: STEAM
813479		Simple Query	PROPULSION: STEAM
813504		Simple Query	PROPULSION: STEAM
813589		Simple Query	PROPULSION: STEAM
831877		Simple Query	PROPULSION: STEAM
832240		Text Search	'mined'
832241		Simple Query Text Search	PROPULSION: STEAM 'torpedoed'
832246		Simple Query	CRAFT TYPE: SUBMARINE
832263		Text Search	'requisitioned'
832267		Simple Query Text Search	PROPULSION: STEAM 'compound'
832294		Simple Query	BUILDING MATERIAL: STEEL
832297		Simple Query	PROPULSION: STEAM
832306		Simple Query	PROPULSION: STEAM CRAFT TYPE: SUBMARINE
832320		Simple Query	PROPULSION: ENGINE
832321		Simple Query	BUILDING MATERIAL: IRON
832335		Simple Query	BUILDING MATERIAL: STEEL
832375		Simple Query	PROPULSION: STEAM
832385	George Lamb	Simple Query	PROPULSION: STEAM
832393	George Lockett	Simple Query	PROPULSION: STEAM

<b>NMR UID</b>	<b>Name</b>	<b>Search Method</b>	<b>Date Range Indicator</b>
832424		Simple Query	BUILDING MATERIAL: IRON
832477		Simple Query	PROPULSION: STEAM
832482		Simple Query	PROPULSION: STEAM
832484	<i>Anworth</i>	Simple Query	PROPULSION: STEAM
832485		Simple Query	PROPULSION: STEAM
832488		Simple Query	PROPULSION: STEAM
879945		Simple Query Text Search	PROPULSION: STEAM 'triple'
879975		Simple Query	CRAFT TYPE: SUBMARINE
879984		Text Search	'diesel'
879990		Simple Query	BUILDING MATERIAL: STEEL
880002		Text Search	'depth charge'
880993		Simple Query	CRAFT TYPE: SUBMARINE
892224		Simple Query	PROPULSION: ENGINE BUILDING MATERIAL: STEEL
892239		Simple Query	BUILDING MATERIAL: STEEL
892249		Simple Query	PROPULSION: STEAM
892256		Simple Query	BUILDING MATERIAL: STEEL
892262		Simple Query	BUILDING MATERIAL: STEEL
892268		Simple Query	PROPULSION: ENGINE
892336		Text Search	'depth charge'
892769		Simple Query	BUILDING MATERIAL: IRON
892779		Simple Query	BUILDING MATERIAL: IRON
892782		Simple Query	BUILDING MATERIAL: IRON
892783		Simple Query	BUILDING MATERIAL: IRON
892785		Simple Query	BUILDING MATERIAL: IRON
892821		Simple Query	BUILDING MATERIAL: IRON
892836		Simple Query	BUILDING MATERIAL: IRON
892838		Simple Query	BUILDING MATERIAL: IRON
892844		Simple Query	BUILDING MATERIAL: IRON
892851	<i>Linda Blanche</i>	Simple Query	PROPULSION: STEAM
900604		Simple Query	BUILDING MATERIAL: IRON
900624		Simple Query	BUILDING MATERIAL: STEEL
900732		Simple Query	BUILDING MATERIAL: STEEL
904126		Simple Query	CRAFT TYPE: SUBMARINE
907823	<i>Meror</i>	Simple Query	PROPULSION: STEAM
908364		Simple Query	PROPULSION: STEAM
908386		Simple Query	PROPULSION: STEAM
911181		Text Search	'depth charge'
911187		Simple Query	BUILDING MATERIAL: STEEL
911189		Simple Query	BUILDING MATERIAL: STEEL
911248		Simple Query	BUILDING MATERIAL: IRON
911779	<i>Maaslust</i>	Simple Query	PROPULSION: ENGINE
911784	<i>Armenier</i>	Simple Query	PROPULSION: STEAM PROPULSION: ENGINE
913212		Simple Query	PROPULSION: ENGINE
913216		Simple Query	PROPULSION: STEAM
1025294	<i>New World</i>	Text Search	'war'
1025310	<i>Gladys</i>	Text Search	'war'
1025315	<i>Emily</i>	Text Search	'war'
1397657		Simple Query	PROPULSION: ENGINE
1397683		Simple Query	PROPULSION: ENGINE

<b>NMR UID</b>	<b>Name</b>	<b>Search Method</b>	<b>Date Range Indicator</b>
1398532		Simple Query	PROPULSION: STEAM
1398925	<i>MTB</i>	Simple Query	PROPULSION: ENGINE
1399511		Simple Query	PROPULSION: STEAM

### APPENDIX III: PROJECT LEARNING AND ACCESS ACTIVITIES

Workshops have been produced based on the 1860-1913 and the 1939-1950 period reports. Both workshops are designed to support aspects of National Curriculum KS2 and KS3 History. There are two activities illustrating boats and ships during the Victorian period:

- *A different class*: matching artefacts to the vessel class;
- *Changing through time*: spot the difference between a military vessel at the beginning of the century and at the end of the 19<sup>th</sup> century.

A further bolt-on activity was also included where children used worksheets to teach themselves how to tie different knots commonly used on boats. This workshop was tested at Chilmark and Fonthill Bishop Primary School with years 4-6 in December 2010 and January 2011. Feedback has been positive.

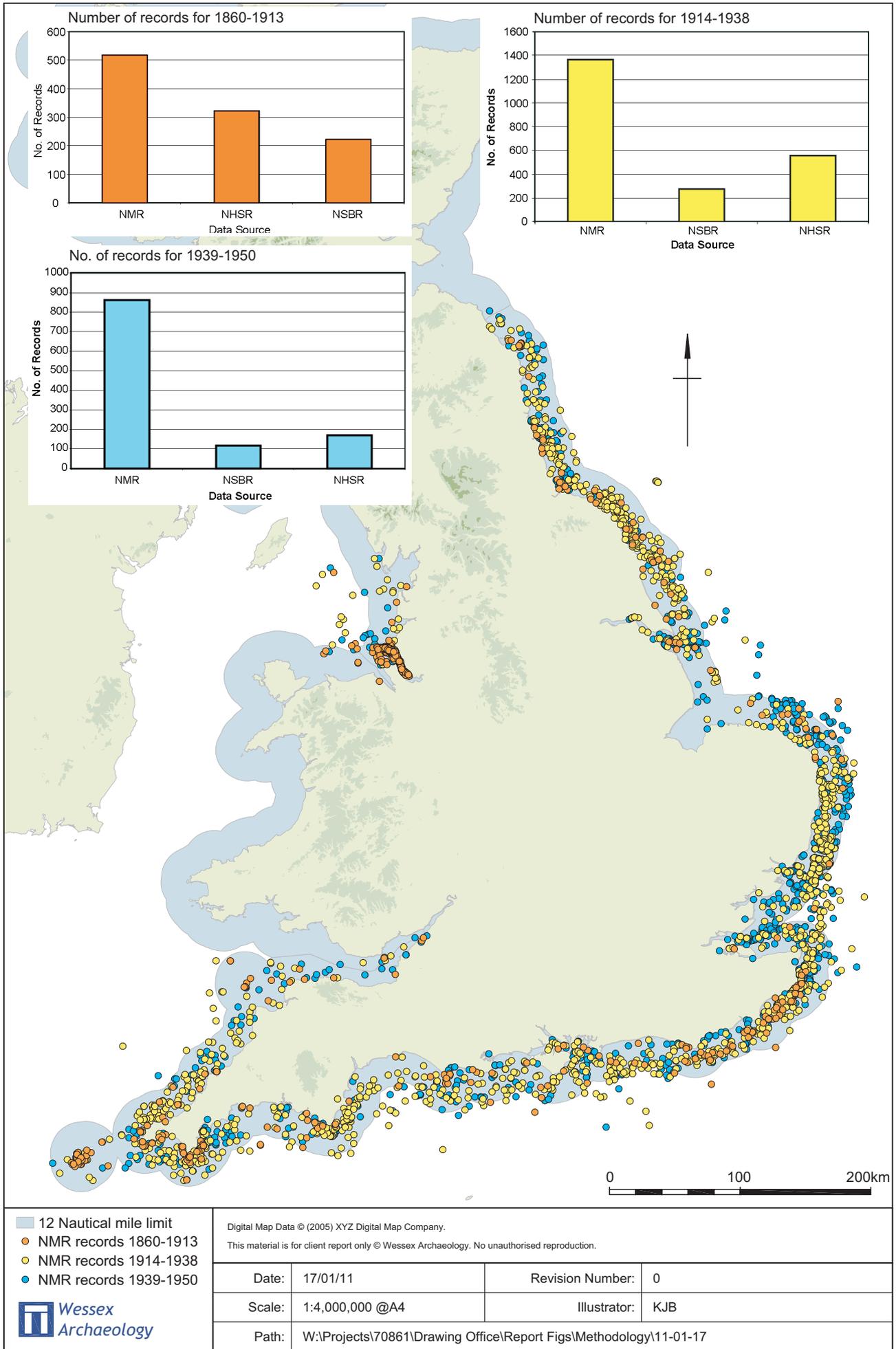
The second workshop contains the following two activities:

- *Battleships*: children crack enigma codes to work out where the German and British ships are hidden;
- *Ready for Requisition*: introduction to the requisitioning of vessels during WW2 and how the use of vessels changed for military purposes to help the war effort.

A further bolt-on activity is available during the workshop where children try to work out the purpose or use of various WW2 artefacts found on the seafloor.

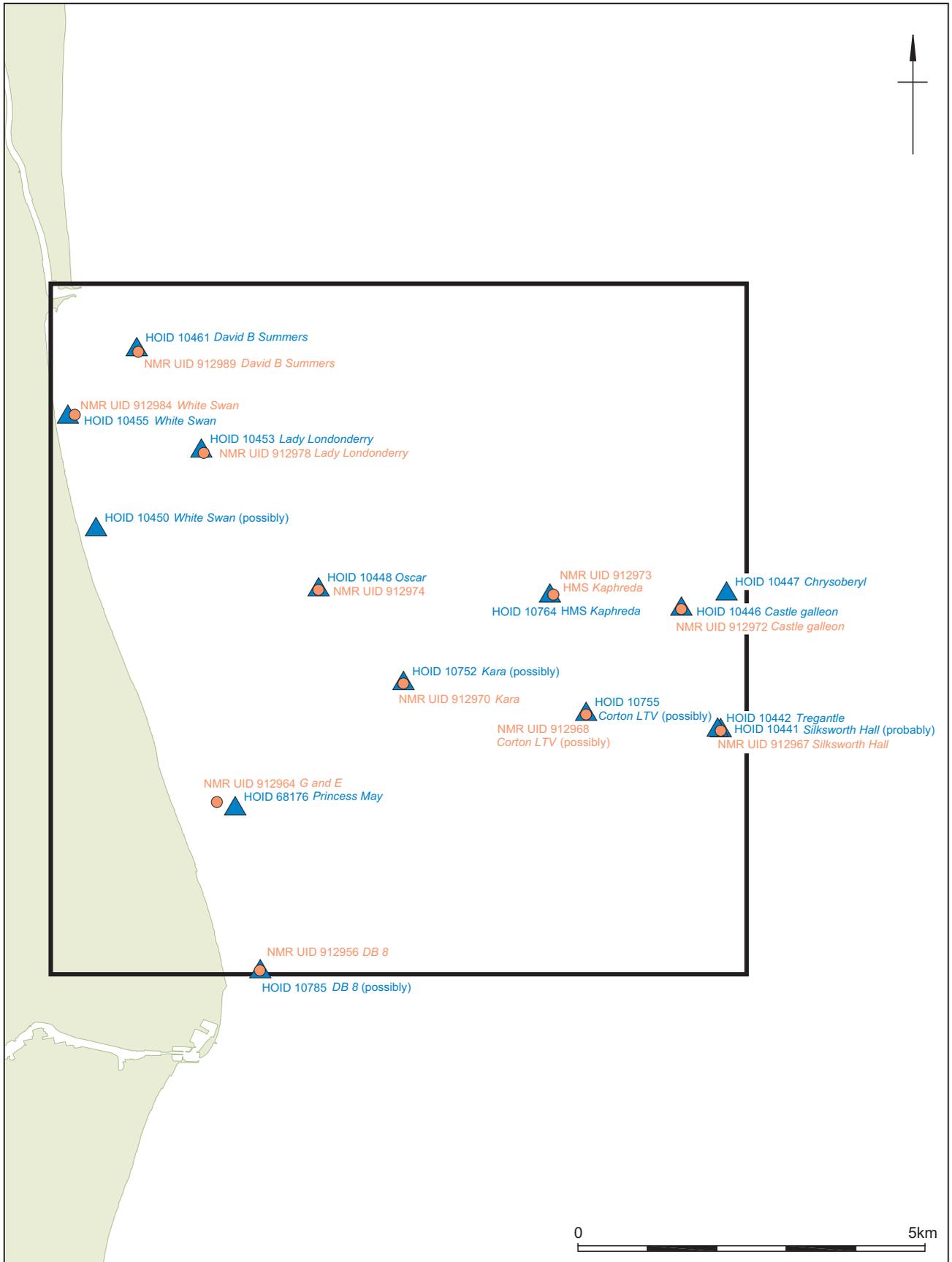
Legacy:

Web pages will shortly be published on Wessex Archaeology's website containing information about the project and associated outreach material. A teacher's pack will also be available to download for each of the workshops with additional resources and extension/homework activities as well as an Introduction to Marine Archaeology PowerPoint presentation.



All known wrecks 1860-1950

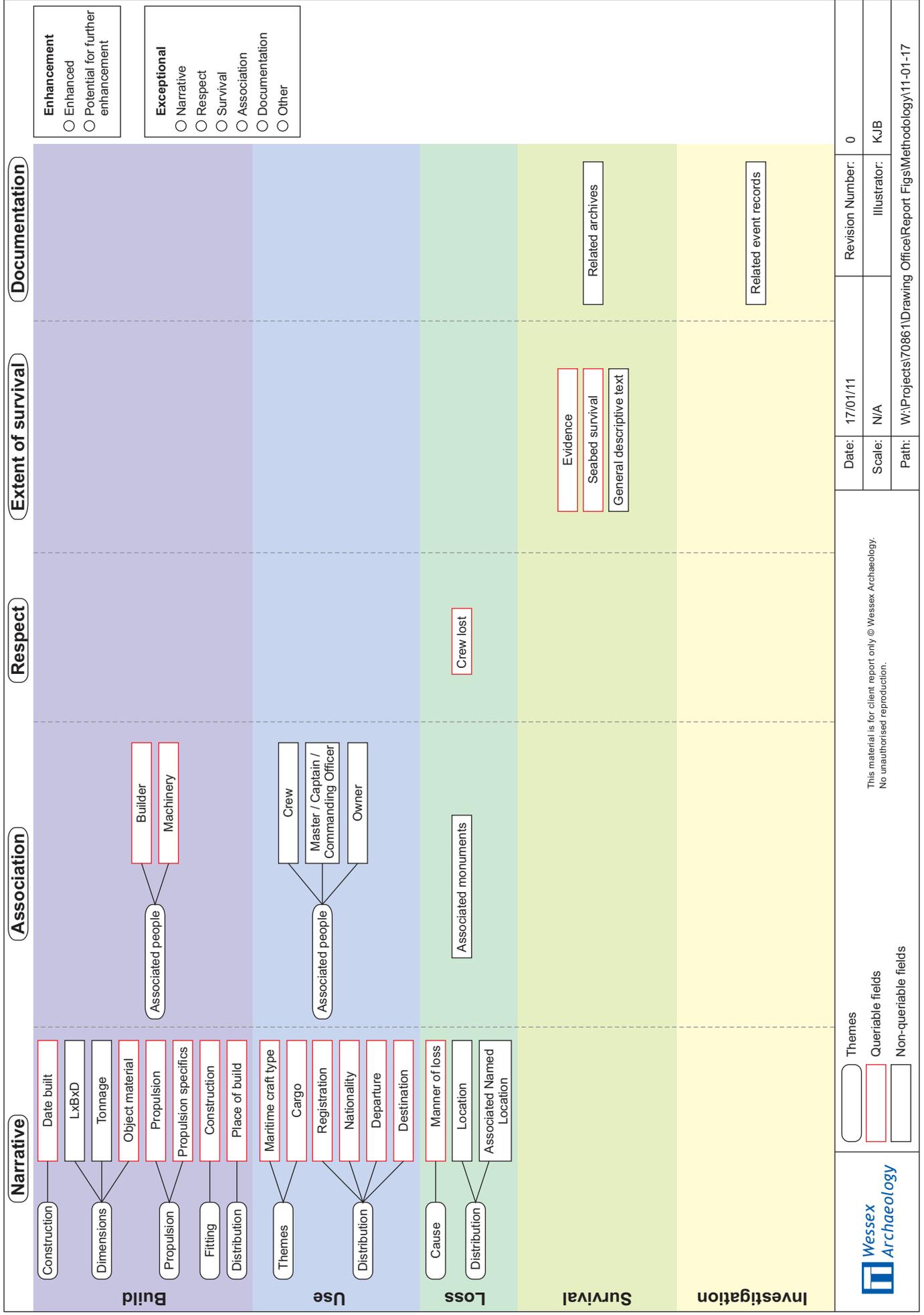
Figure 1



 	SeaZone data licence 082008.006.	
	Digital data reproduced from Ordnance Survey data © Crown Copyright (2011) All rights reserved. Reference Number: 100020449.	
	This material is for client report only © Wessex Archaeology. No unauthorised reproduction.	
	Date: 17/01/11	Revision Number: 0
Scale: 1:80,000 @A4	Illustrator: KJB	
Path: W:\Projects\70861\Drawing Office\Report Figs\Methodology\11-01-17		

Comparison of UKHO and NMR known wrecks in Sample Area

Figure 2



Schematic diagram of the Boats and Ships database

Figure 3



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