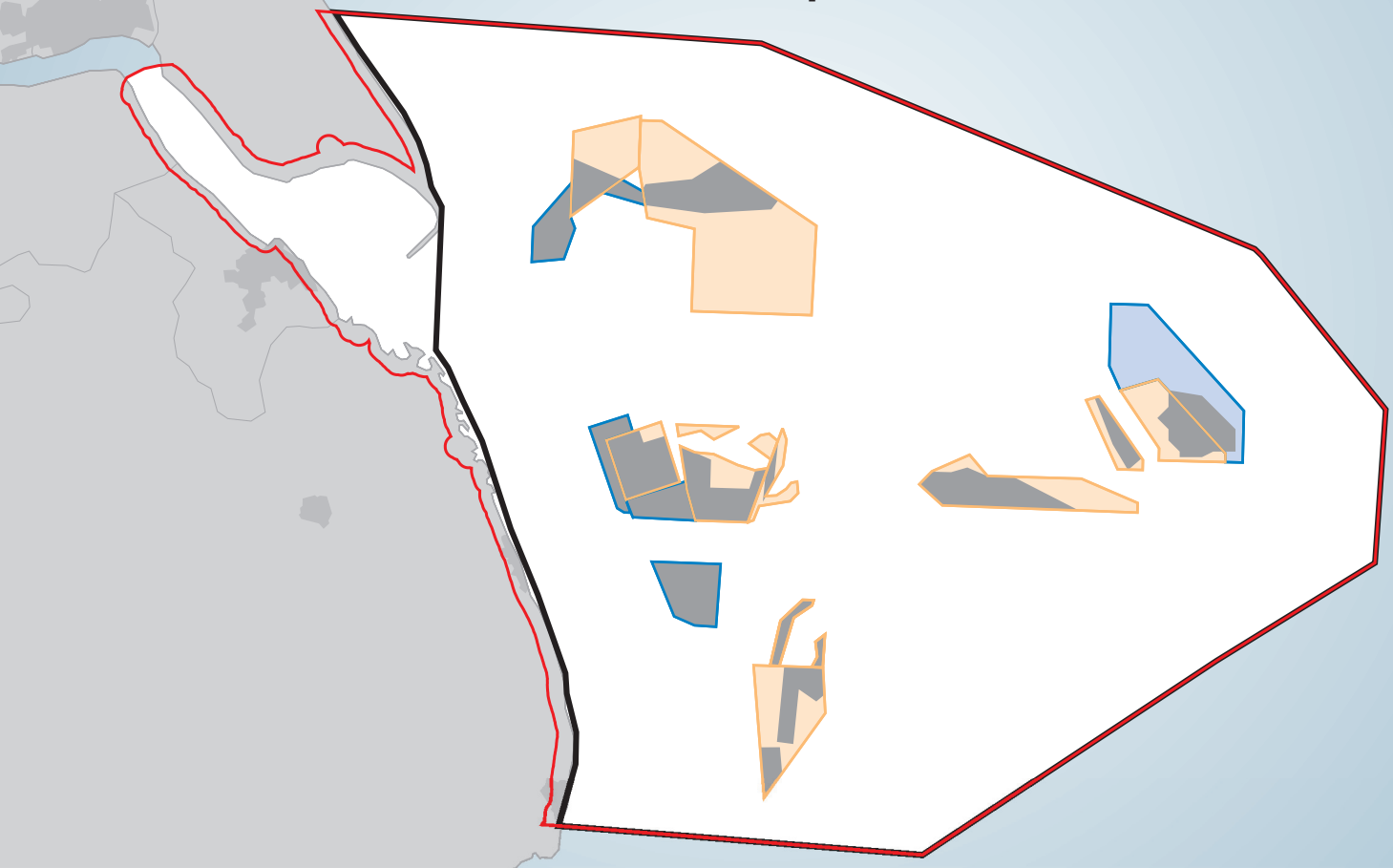
Wessex Archaeology

Humber and Outer Wash Marine Aggregate Regional Environmental Assessment

Archaeological Desk-based Assessment

Final Report



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HUMBER AND OUTER WASH MARINE AGGREGATE REGIONAL ENVIRONMENTAL ASSESSMENT

ARCHAEOLOGICAL DESK-BASED ASSESSMENT

FINAL REPORT

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HUMBER AND OUTER WASH MARINE AGGREGATE REGIONAL ENVIRONMENTAL ASSESSMENT

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HUMBER AND OUTER WASH MARINE AGGREGATE REGIONAL ENVIRONMENTAL ASSESSMENT

ARCHAEOLOGICAL DESK-BASED ASSESSMENT

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Summary

Wessex Archaeology (WA) was commissioned by ERM Ltd on behalf of the Humber Aggregate Dredging Association (HADA) to undertake the archaeological assessment for a Marine Aggregate Regional Environmental Assessment (MAREA) in the Humber and Outer Wash region.

The aims and objectives of the MAREA process are:

- To inform and support the industry's applications for licence renewals or new applications;
- To allow regulators to better understand the regional context and impacts of these applications;
- To provide a regional perspective for the marine aggregate industry and inform the site specific Environmental Impact Assessments (EIAs), providing a baseline assessment of the regional environment to be used in the preparation of individual EIAs;
- To provide objective, evidence-based assessments of the distribution and importance of regional resources (living and non-living) and the potential impacts from the proposed activities on these resources at a regional level;
- To provide a context for site specific EIAs within the relevant MAREA area and to identify site specific issues that individual EIAs may need to focus on more specifically;
- To provide an assessment of the impacts of development scenarios by the aggregate extraction industry based on industry projections, and in relation to those due to other human activities and natural variability;
- To provide a robust assessment of cumulative and in-combination impacts at a regional level using consistent definitions and interpretations of such impacts, and thus contribute towards assessments of the magnitude and scale of such impacts in individual EIAs.

The aim of this study is to identify the baseline archaeological resource within all existing and planned future dredging operation areas and consider its importance at a regional scale. This report will contribute towards the MAREA process which will consider the potential cumulative and in-combination effects of the existing and planned dredging operations on the marine environment as a whole within this region.

This assessment provides an analysis of the known and potential archaeological resource within the MAREA Study Area. Information was sought from the National Record of the Historic Environment (NRHE), the regional Historic Environment Records (HERs) and

SeaZone data was used. Geotechnical and geophysical data were also reviewed and integrated with the palaeo-geographic baseline. The known and potential archaeological resource reviewed is sub-divided into four sections, as follows:

- Prehistoric archaeology;
- Eroded coastal archaeology;
- Maritime archaeology;
- Aviation archaeology.

Geophysical survey lines (Sub-bottom profiler) produced for the Humber Regional Environmental Characterisation (REC) have also been incorporated into the palaeogeographic assessment.

Within the MAREA Study Area 31 specific features of prehistoric interest were identified, namely evidence of submerged land surfaces of likely Holocene and Late Pleistocene age. These features compliment the regional palaeolandscape assessments (Humber REC and North Sea Palaeolandscapes Project (NSPP) highlighting the extensive archaeological potential in the region linked to palaeochannels and sediments of archaeological interest.

Records of wrecks, shipping casualties and seabed features were sought from the NRHE, Humberside, Lincolnshire, North Lincolnshire and North East Lincolnshire HERs and the United Kingdom Hydrographic Office (UKHO), via SeaZone.

Wreck and other site records were combined into a gazetteer of known sites and then compared and reviewed in the light of secondary sources. Information that could not be mapped in the GIS was compiled in a project archive and used qualitatively. The known maritime resource of the MAREA Study Area can be summarised as follows:

- 297 unidentified obstruction sites
- 626 shipwreck sites.

There are currently no protected wrecks within the MAREA Study Area, under either the Protection of Wrecks Act (1973) or the Protection of Military Remains Act (1986).

Aviation wreck records were collated from the NRHE, HER's, World War II (WWII) Air/Sea Rescue operations maps and secondary sources. Information that could not be accurately mapped in the GIS was used qualitatively. There are five known aviation wreck sites within the MAREA Study Area. There are currently no aviation wrecks within the MAREA Study Area protected under the Protection of Military Remains Act (1986).

In addition to the known archaeological resource, the desk-based assessment summarises the potential for currently unknown and uncharted resource within the MAREA Study Area. This assessment is drawn from a baseline review based on secondary sources alongside records relating to shipping and aircraft casualties for the MAREA Study Area.

Following the assessment of prehistoric archaeological receptors, the greatest significant impacts from dredging activities can be summarised as:

- moderate negative impacts to prehistoric receptors, specifically *late Pleistocene glacio-fluvial gravels* and *isolated prehistoric finds*.
- minor/moderate negative impacts to *Estuarine Alluvium* and *Peat* which could contain Mesolithic period archaeological material and submerged palaeolandscapes.

Following the assessment of maritime archaeological receptors, the greatest significant impacts can be summarised as:

- moderate/major impacts to *known charted wrecks, shipping casualties/recorded losses* and *unknown, uncharted wrecks*
- moderate negative impacts for *isolated maritime finds* as their positions can not accurately be known.

Following the assessment of aviation archaeology receptors, the greatest significant impacts are can be summarised as:

- minor/negligible negative impacts to *known charted aircraft crash sites*
- moderate/major negative impacts to *recorded aircraft losses* as their position can not be accurately known.
- up to moderate negative impact to i*solated aircraft finds* which can not be avoided

The significance of impacts on prehistoric, maritime and aviation archaeology is summarised below:

	Prehistoric Archaeology			**Maritime Archaeology**				**Aviation Archaeology**		
Receptor	Late Pleistocene Glacio-fluvial Sediments	Estuarine Alluvium and Peat	Isolated Prehistoric Finds	Known Charted Wrecks	Shipping Casualties/ Recorded Losses	Unknown Uncharted Wrecks	Isolated Maritime Finds	Known Charted Air Crash Sites	Recorded Aircraft Losses	Isolated Aircraft Finds
Significance of Impact (most significant impact highlighted)	Moderate Negative	Minor/ Moderate Negative	Moderate Negative	Moderate/ Major Negative	Moderate/ Major Negative	Moderate/ Major Negative	Moderate Negative	Minor/ Negligible Negative	Moderate/ Major Negative	Moderate Negative

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Acknowledgements

This Regional Environmental Assessment was commissioned by ERM Ltd on behalf of the Humber Aggregate Dredging Association (HADA) and the assistance provided by Laura Street and Kevin Murphy is gratefully acknowledged.

Data was provided by HADA, the National Record of the Historic Environment, the regional Historic Environment Records and SeaZone. We are grateful to the staff of these organisations for their co-operation. In particular, the assistance of Dr Andrew Bellamy and Graham Singleton of HADA is gratefully acknowledged.

Hanna Steyne and Andrew Bicket compiled this report with contributions from Louise Tizzard and Jack Russell. Louise Tizzard and Jack Russell undertook the geophysical and geotechnical data assessment. Kitty Foster prepared the illustrations. Toby Gane managed the project for Wessex Archaeology. Quality Control was provided by Toby Gane. Quality Assurance was provided by Euan McNeill.

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1 INTRODUCTION

1.1.1 Wessex Archaeology (WA) was commissioned by ERM Ltd. on behalf of the Humber Aggregate Dredging Association (HADA) to undertake a Marine Aggregate Regional Environmental Assessment (MAREA) for a large Study Area in the Western North Sea located in the Humber and Outer Wash coastal region.

1.1.2 This report provides an assessment of the known and potential archaeological resource within the MAREA Study Area through reviewing primary data retrieved by geotechnical and geophysical surveys, records held by national and regional inventories and secondary sources.

1.1.3 The report gives a overview of the known and potential resource for prehistoric, maritime and aviation archaeology in addition to the archaeology lost to coastal erosion. The methodology used in producing this report is detailed in **Section 4**.

1.1.4 For the purposes of this report, the marine archaeological resource is considered to comprise, and has been categorised as:

- Early prehistoric archaeology;
- Eroded coastal archaeology;
- Maritime archaeology; and
- Aviation archaeology.

2 AIMS AND OBJECTIVES

2.1.1 The aims and objectives of the MAREA process, outlined in the Marine Aggregate Regional Environmental Assessment Scoping Report, and based on the Marine Minerals Sector Framework for REAs (RAG 2008) are as follows:

- To inform and support the industry's applications for licence renewals or new applications;
- To allow regulators to better understand the regional context and impacts of these applications;
- To provide a regional perspective for marine aggregates and inform the site specific Environmental Impact Assessments (EIAs), providing a baseline assessment of the regional environment to be used in the preparation of individual EIAs;
- To provide objective, evidence-based assessments of the distribution and importance of regional resources (living and non-living) and the potential impacts from the proposed activities on these resources at a regional level;
- To provide a context for site specific EIAs within the relevant MAREA area and to identify site specific issues that individual EIAs may need to focus on more specifically;
- To provide an assessment of the impacts of development scenarios of the aggregate extraction industry based on industry projections, and in relation to those due to other human activities and natural variability;
- To provide a robust assessment of cumulative and in-combination impacts at a regional level using consistent definitions and interpretations of such impacts, and thus contribute towards assessments of the magnitude and scale of such impacts in individual EIAs.

2.1.2 The aim of this study is to identify the baseline archaeological resource within all the existing and planned future dredging operation areas at a regional scale. Areas identified for future dredging over the next 15 years are referred to within this report as 'Future 15 year extraction zones' (F15EZs). This report will contribute towards the MAREA process which will consider the potential cumulative and in-combination effects of the existing and planned dredging operations on the marine environment within this region.

3 STUDY AREA

3.1.1 The boundary of the MAREA Study Area was supplied by HADA defined by a line heading 38km east from Tunstall, East Riding of Yorkshire, then arcing south-east to a point 86km east of Donna Nook, arcing south-west making landfall at Seacroft, Lincolnshire. The Study Area was extended 1km inland of the Mean High Water line, and across rivers and estuaries. At the Humber River, the Study Area extended up river to Paull (**Figure 1**). This extension inland and upriver of the Humber enabled background searches of terrestrial archaeology, which informed the potential for submerged terrestrial archaeology and the characterisation of pre-19th century maritime activity in the Study Area. The search of terrestrial data was required due to the known extensive erosion which has taken place in the northern part of the Study Area and to an absence of known shipwrecks from earlier periods. The Study Area covers an area approximately 5030 square kilometres. **Figure 1** also shows the HADA licensed dredge areas in the Humber Regions as of July 2011, and the areas identified by HADA for dredging over the next 15 years. These areas are referred to within this report as 'Future 15 year extraction zones' (F15EZs).

3.1.2 Throughout the report all coordinates are presented in WGS84 (UTM z31N). Where necessary all coordinate conversions were made using Quest Geodetic calculator by Quest Geo Solutions Limited.

3.1.3 In order to provide a comprehensive account of the baseline environment within the MAREA Study Area, the potential for archaeological remains is considered with reference to archaeological studies within Lincolnshire, East Riding of Yorkshire and Norfolk. Archaeological evidence from bordering regions and around the North Sea, including 'Doggerland' is also considered to provide context, particularly for those periods when archaeological evidence within the Study Area is minimal.

4 METHODOLOGY

4.1 LEGISLATION

4.1.1 The statutory planning and policy context relating to the historic environment in the MAREA Study Area is set out in **Appendix I** of this report.

4.1.2 In summary, the legislation which relates specifically to the maritime historic environment in English territorial waters is the **Protection of Wrecks Act 1973**. The **Merchant Shipping Act 1995** is also relevant as it plays a significant role in the reporting of recovered marine archaeological material. Furthermore, the **Protection of Military Remains Act 1986** relates to the marine historic environment with regards to military ship and aircraft remains of historic interest. The introduction of the **National Heritage Act 2002** has given English Heritage (EH) responsibility for archaeology below the low watermark. This includes historic wrecks and historic landscapes in, or under the seabed, out to the 12 nautical mile territorial limit around England. Beyond the 12 mile limit EH should be considered a stakeholder and consulted at the Environmental Impact Assessment (EIA) stage and any advice that EH offer is given without prejudice.

4.1.3 The **Protection of Wrecks Act 1973** enables the Secretary of State to make orders to protect certain wreck sites in United Kingdom waters from unauthorised interference on account of either their historic, archaeological or artistic importance or their potentially dangerous condition. However, only a limited number of wrecks are protected by designation, and these do not necessarily represent the most important maritime remains in UK waters.

4.1.4 The **Protection of Military Remains Act 1986** makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft or designated vessel without a licence. All crashed military aircraft - which make up the vast majority of aircraft crash sites in the UK - receive automatic protection, but the Ministry of Defence (MOD) must individually designate vessels. The primary concern of the act is to protect the human remains of service personnel, and not necessarily the archaeological significance of the wrecks themselves. Military vessels can be afforded protection on the basis of historical significance, with *controlled sites* having to have sunk within the last 200 years and *protected places* since 4th August 1914.

4.1.5 The UK Government **High Level Marine Objectives** recognises that not all significant marine heritage assets are protected by legislation, but that protection and management of marine cultural heritage should be according to its significance, regardless of statutory protection. The **Marine and Coastal Access Act 2009** and associated **Marine Policy Statement** provide a best practice framework for the protection and management of the marine historic environment, based on significance assessments. Although the Act does not provide any specific statutory protection measures for the historic environment, it does introduce a new system of marine licensing based on the Marine Policy Statement.

4.1.6 There are currently no wrecks protected under the **Protection of Wrecks Act 1973** within the MAREA Study Area.

4.1.7 There are no ship wrecks currently protected under the **Protection of Military Remains Act 1986** within the MAREA Study Area. However, there are known to be

aircraft, whose exact location is unknown, that will be automatically protected by the act.

4.2 SOURCES OF INFORMATION

4.2.1 The MAREA Study Area has been used to define the search areas for archaeological and related data. The principle sources consulted in the assessment are as follows:

- Records of UKHO wrecks and obstructions, collated and provided by SeaZone Ltd;
- Records of Named Losses, other wrecks, maritime obstructions and terrestrial sites of all periods held by the National Record of the Historic Environment (NRHE);
- Records of terrestrial sites from the Lincolnshire, NE Lincolnshire, North Lincolnshire and Humber Archaeology Partnership Historic Environment Records (HERs);
- Various secondary sources relating to the palaeo-environment and to the Palaeolithic and Mesolithic archaeology of Northern Europe with specific reference to the ALSF Seascapes Project (Withernsea to Skegness) (MoLAS 2009) and information derived from BMAPA discoveries (Wessex Archaeology 2006a, 2007a, 2008a, 2009a and 2010a);
- Rapid Coastal Zone Assessment for Yorkshire and Lincolnshire (Buglass and Brighham 2008);
- Various secondary sources relating to historic shipping patterns, as well as those sources relating to known and potential wreck sites and causalities, with specific reference to ALSF England's Shipping (Wessex Archaeology 2003a) and ALSF Navigational Hazards (Bournemouth University 2007);
- ALSF Air Crash Sites at Sea (Wessex Archaeology 2008b) and various secondary sources relating to historic aviation patterns;
- ALSF Areas of Marine Archaeological Potential project (AMAP 1 and 2) (Bournmouth University 2008; University of Southampton 2011);
- Various other Wessex Archaeology sources relating to previous studies carried out within the MAREA Study Area;
- Geotechnical data, comprising vibrocore logs and photographs, provided by Hanson Aggregates Marine Ltd (HAML), CEMEX and Tarmac Marine Dredging (TMD). Geophysics data also supplied by these companies were reviewed in association with the vibrocore assessment;
- Geophysics data acquired in 2011 specifically for the Humber MAREA were reviewed; and
- The results of the geophysical and geotechnical data acquired during the Humber Regional Environmental Characterisation (REC).

4.2.2 Terrestrial site data from the Lincolnshire, NE Lincolnshire, North Lincolnshire and Humber Archaeology Partnership HERs for all periods was requested within 1km of the mean high water (MHW) mark to ascertain the level of coastal activity in the Study Area.

4.2.3 Data from Palaeolithic and Mesolithic periods were collated to assist with assessments of potential for submerged prehistoric sites within the Study Area. Data from later prehistoric periods onwards was collected in order to assess levels of coastal activity around the edge of the Study Area and infer potential for pre-19th century shipwreck and maritime related sites within the Study Area.

4.2.4 Terrestrial and maritime data from all periods within the Study Area were requested from the NRHE. The terrestrial data are primarily of use to supplement the terrestrial data from the HERs. The maritime data are useful to supplement the UKHO data as it contains information on historically recorded, but not located shipwreck events, historically and currently charted wreck sites and obstructions. This data can supplement data from geophysical surveys or the UKHO chart data, and therefore improve assessments of potential for archaeological sites underwater.

4.3 APPROACH

4.3.1 The sources outlined in **Section 4.2** were consulted to provide a review of the known and potential archaeological resource within the MAREA Study Area. This review was considered with regards to four fields of enquiry, comprising prehistoric archaeology (**Section 5**), post-Mesolithic eroded coastal archaeology (**Section 6**) maritime archaeology (**Section 7**) and aviation archaeology (**Section 8**)

4.3.2 In order to assess the potential for prehistoric sites within the MAREA Study Area, various secondary sources (*e.g.* finds recorded under the BMAPA Finds Protocol (TCE, BMAPA and English Heritage 2005); evidence reported in books and journals, previous archaeological investigations in the region were reviewed alongside the HER and NRHE datasets relating to the prehistoric terrestrial record within the onshore extent of the MAREA Study Area. The HER and NRHE terrestrial records were superimposed on a base map of the MAREA Study Area in the ArcView 9.3 Geographical Information System (GIS) software package and queried based on their period classification to provide an understanding of the distribution and density of the known prehistoric archaeological resource within the MAREA Study Area.

4.3.3 Geophysical and geotechnical data were also used to assess the prehistoric archaeology within the Study Area. Sub-bottom profiler geophysical survey data were assessed and interpreted with the aim of identifying prehistoric features of interest, namely indicators of former land surfaces and sedimentary fills of palaeoenvironmental interest. Any discernable patterns of these features which occur on a broad scale within the MAREA Study Area were also identified.

4.3.4 An assessment of 628 vibrocore logs was undertaken in conjunction with the results of the geotechnical assessment in order to better understand the sedimentary sequence within the MAREA Study Area and evaluate the geoarchaeological and palaeoenvironmental potential of sediments within the region.

4.3.5 Geophysical data, acquired as part of the Humber REC survey, were also interpreted to assess the maritime archaeological resource within the MAREA Study Area.

4.3.6 A review of the maritime archaeological resource within the MAREA Study Area was obtained through a consideration of various secondary sources alongside records of charted wreck sites, shipping casualties and seabed features, collated from the NRHE and SeaZone.

4.3.7 The SeaZone records relating to charted sites were queried based on their feature classification into wrecks and obstructions. Charted wreck sites are likely to be subject to mitigation following an EIA, at which stage the appropriate level of archaeological mitigation will be determined by an assessment of the importance of each individual site. Charted obstructions represent sites where the archaeological nature is not fully understood, and may also be subject to mitigation following EIA. Consequently, the entire wreck and obstruction data were queried by date and reviewed with regards to a composite timeline (Wessex Archaeology 2008c) which sub-divides vessels into a date range based on generalisations regarding wreck sites which are likely to be of special interest.

4.3.8 Data regarding recorded shipping losses listed by the NRHE (for which there are currently no known seabed remains) were assessed in order to provide a review of the potential for unknown and uncharted shipwreck sites within the MAREA Study Area. The data relating to shipping losses was also queried by date with regards to the composite timeline discussed above. The shipping casualties were displayed proportionately and were divided by the date ranges outlined by the composite timeline (Wessex Archaeology 2008c).

4.3.9 Records relating to aircraft crash sites listed by SeaZone and those relating to aircraft losses listed by the NRHE were considered alongside the records for WWII Air/Sea Rescue Operations. Along with an assessment of historic aviation patterns, these data were used to provide an understanding of the density and general distribution of aircraft activity, thus highlighting the potential for the discovery of aircraft crash sites within the MAREA Study Area.

4.3.10 The assessment of potential for unknown and uncharted archaeological sites within the MAREA Study Area was supplemented by an assessment of the potential for a range of site types to survive in the hydrological and seabed conditions of the MAREA Study Area and the likelihood that these sites will be visible archaeologically and detectable using marine geophysical techniques. Through a consideration of the geological nature and seabed topography of the MAREA Study Area alongside various secondary resources, it was possible to highlight the potential for unknown sites of archaeological interest to exist which may be impacted by existing or future dredging operations.

4.4 PALAEOGEOGRAPHIC ASSESSMENT METHODOLOGY

4.4.1 In addition to the results of the Humber REC project, additional geophysical and geotechnical data were used to assess the prehistoric archaeology within the Study Area. The data comprised geotechnical and geophysical data for specific aggregate dredging areas in the western region of the MAREA Study Area and the assessment of nine geophysical survey lines acquired by Osiris Projects in 2011 on behalf of Tarmac Marine Dredging Ltd (Osiris Projects 2011) specifically for the MAREA.

4.4.2 Nineteen geotechnical survey reports from CEMEX (CEM), Ready Mixed Concrete (RMC) (now CEMEX), United Marine Dredging (UMD) now Tarmac Marine Dredging (TMD), Hanson (HAN) and ARC Marine (ARC) (now Hanson Aggregates Marine Ltd.) were received for assessment. For the purpose of naming the vibrocores the company names at time of acquisition have been used. **Table 1** summarises the assessed datasets.

Survey Area	Year	Geotechnical data	Geophysical data	Reference
Area 102/105	1989		Sub-bottom profiler data	Gardline Surveys 1999
Area 102	1989	18 vibrocores		RMC1989a
Area 102	1994	34 vibrocores		RMC 1994a
Area 102	1999	17 vibrocores		RMC 1999
Area 102	2004	11 vibrocores		RMC 2004a
Area 102	2009	19 vibrocores		CEM 2009a
Area 105	1989	23 vibrocores		RMC 1989b
Area 105	1994	37 vibrocores		RMC 1994b
Area 105	2004	15 vibrocores		RMC 2004b
Area 105	2009	28 vibrocores		CEM 2009b
Area 106	1996	8 vibrocores		HAN 1996
Area 106/1, 106/2 and 106/3	1997	125 vibrocores		ARC 1997
Area 106/3	2002	10 vibrocores		HAN 2002
Area 197	1991		Sub-bottom profiler data	Britsurvey 1991
Area 197/493	2007		Sub-bottom profiler data	Gardline Lankelma 2007
Area 197	1997	15 vibrocores		UMD 1997
Area 197	2002	10 vibrocores		UMD 2002
Area 493	2008	22 vibrocores		UMD 2008
Area 254	2000	36 vibrocores		UMD 2000
Area 296	2000	39 vibrocores		UMD 2000
Area 400	2001	28 vibrocores		HAN 2001a
Area 480	2001	14 vibrocores		HAN 2001b
Area 481	1999		Sub-bottom profiler data	Andrews Survey 1999a
Area 481/1, 481/2	2000	10 vibrocores		UMD 2000

Survey Area	Year	Geotechnical data	Geophysical data	Reference
Area 481/1, 481/2	2001	17 vibrocores		UMD 2001
East Dudgeon	1999		Sub-bottom profiler data	Andrews Survey 1999b
East of Area 481	2000	10 vibrocores		UMD 2000
Tie-in survey lines	2011		Sub-bottom profiler data (206.5km)	Osiris Projects 2011

Table 1: Geotechnical and geophysical datasets provided for MAREA palaeogeographic assessment.

4.5 GEOTECHNICAL ASSESSMENT

4.5.1 The 19 geotechnical survey reports range in date from 1994 to 2009. The reports were provided as hard copies and contained data from 553 vibrocore locations. One report (UMD 2000) contained data from 75 vibrocore locations within aggregate dredging Areas 296 and 254 (offshore Great Yarmouth) and have not been integrated into this study.

4.5.2 The remaining 458 vibrocore locations within the present Study Area (**Figure 2**) have been reviewed. The logs and photographs were scanned and locations inputted, where present, into a database (**Appendix III**).

4.5.3 The assessed vibrocores, when plotted in plan, form three distinct groups within the Study Area (**Figure 2**). These groups are related to the dredging areas from which the survey data arises. The groups are a northern group (202 vibrocores) comprising Aggregate Dredging areas 102 (RMC 1994a, 1989a, 1999, 2004a and CEM 2009a) and 105 (RMC 1989b, 1994b 2004b and CEM 2009b); a central group (239 vibrocores) comprising Aggregate Dredging areas 106/1, 106/2, 106/3 (HAN 1996, HAN 2002, ARC 1997), 197 (UMD 1997 and 2002), 400 (HAN 2001a), 480 (HAN 2001b), 493 (UMD 2008) and a southern group (37 vibrocores). The southern group forms two distinct subgroups, a south-western group (27 vibrocores) associated with dredging areas 481/1 and 481/2 (UMD 2001 and 2000) and a south-eastern group (10 vibrocores) not associated with any currently licensed dredging area (UMD 2000).

4.5.4 The assessed viborocore data are noted to be variable in detail, with for example photographs being absent or inclusions not recorded within some of the data. This makes correlating the data difficult. Where made available, geophysical data have been integrated with the vibrocore interpretation in order to enhance the interpretation of the sedimentary sequence.

4.6 GEOPHYSICS DATA ASSESSMENT

4.6.1 The geophysical assessment principally consisted of an archaeological interpretation of all data acquired for the Humber MAREA study. In addition, geophysics data at the vibrocore locations were reviewed assessed as part of the geotechnical data assessment.

4.6.2 The assessment of the MAREA geophysics data comprised 206.5 line km of sub-bottom profiler data. The survey data were acquired in lines extending from the coast to the aggregate areas in the northern, central and southern regions of the SA (**Figure 2**). Some data (Line 1 and southern section of Line 9) lay outside the MAREA Study Area and are not considered in this assessment. Although the interpretations of the sidescan sonar and bathymetry were provided, only the sub-bottom profiler data were reviewed as part of this assessment. Only features within the confines of the MAREA Study Area have been included in this report.

4.6.3 The sub-bottom profiler data were studied in order to detect any in-filled palaeo-channels, potential land surfaces of archaeological significance and peat/fine-grained sediment horizons that may have archaeological potential. Specific features of archaeological interest are described in **Table 2**.

Feature type	Description
Channel	Channel cuts and associated infill deposits. May indicate extensions of present-day terrestrial system or now unconnected channels. May include both fluvial and estuarine environments. Can be described as filled, under-filled and unfilled. Archaeological potential for *in situ* and secondary context artefacts. Infill deposits may also be of palaeo-environmental interest.
Gravel terrace	Features associated with the edge of channel features, or within channel features. Archaeological potential for *in situ* and secondary context artefacts
Bank	
Cut and fill	As channel features. Cut and fill is used as a descriptor when the feature of interest can not be traced over distance. Generally used for isolated features. Can be described as simple (one phase of fill) or complex (multiple phases of infill)
Depression	Small isolated infilled feature which may include remnant features formed by erosion or be associated with inter-tidal deposits. Potential for *in situ* and secondary context artefacts. Infill deposits may also be of palaeo-environmental interest.
Fine-grained unit	
Peat	Indicator of former terrestrial land surface. Potential for *in situ* and secondary context artefacts. Deposits are of palaeo-environmental interest. Generally associated with other features such as channels or cut and fill features.
Organic matter	
Gas blanking	Gas blanking masks the seismic reflectors and is caused by the presence of shallow gas. Shallow gas may indicate the presence of organic matter/peat at a particular layer caused by microbial activity. Shallow gas can also be sourced from depth migrating to the surface along migration pathways. Discrimination is made during the assessment and only shallow gas thought to be associated with the presence of organic matter is recorded. Generally associated with channel infills, cut and fill features and erosion surfaces.
Strong	May indicate either hard ground layer or layer containing organic

Feature type	Description
reflector	matter.
Erosion surfaces	These tend to be broad scale features associated with erosion during transgression and regression. May include ravinement surfaces (transgressive erosion surface resulting from nearshore marine and shoreline erosion associated with a sea level rise)

Table 2: Features of potential prehistoric archaeological interest.

4.6.4 The geophysical dataset technical specifications and details of the geophysics data processing methodology are provided in **Appendix II**.

4.6.5 Additionally, the geophysics data provided by the aggregate companies for the individual aggregate licence areas were assessed at the vibrocore locations. This provided geological context to the vibrocore assessment. Many of the vibrocore logs do not have associated geophysics data and often the vibrocore locations are situated between the survey lines. Where the vibrocore locations are situated within 100m of a survey line the geophysics data has been assessed. Differences in the time from the acquisition of the geophysics data and the vibrocores, and associated potential changes to the seabed sediments, has been taken into account in the assessment. However, water depth values at the vibrocore locations were not available and as such, variations in the seabed depth between the vibrocores and the bathymetry could not be made.

4.6.6 Geotechnical data (in the form of vibrocore or borehole logs) for Areas 107, 439, 440, 441 and 448 were not available for assessment at the time of compiling this report. The deposit model for the east of the Study Area is therefore not as developed as that in the west of the Study Area. Whilst there are gaps in the geotechnical data for some areas, the geophysical survey lines, either REA or REC, covered the Study Area (and dredging Areas 107, 439, 440, 441 and 448) reasonably uniformly and there are no significant data gaps in the overall interpretation as a result.

4.7 REVIEW OF PREVIOUS ASSESSMENTS CONDUCTED IN THE AREA

4.7.1 There are significant problems of data quality and recording biases relating to national inventories such as the UKHO (provided under licence from SeaZone Ltd) and NRHE. The UKHO data are specifically orientated towards shipping and navigation hazards, and as such the associated historical information can often be inaccurate or incomplete. The NRHE data are more comprehensive and includes recorded losses as well as located wrecks, based on the UKHO data. The NRHE is a huge database however, and the quality of the information recorded can vary dramatically according to when the research was undertaken and what sources were used. Much of the NRHE data has come from historic records or secondary sources. It can often be some time before current research results make their way into these National databases. As such, in addition to a review of secondary sources, the research pertaining to the known and potential archaeological maritime resource has been supplemented by the results of previous assessments undertaken by WA in the MAREA Study Area.

4.7.2 WA has undertaken a number of archaeological assessments for the Aggregate Industry in the Humber region. The majority of these projects are relatively small

scale, but reviews of marine geophysical and geotechnical data for specific licensed areas assist in the development of wider background characterisations. The results of these investigations relating to the prehistory of the region are incorporated into **Sections 5 and 6** whilst those relating to maritime archaeology are incorporated in **Section 7** of this report.

4.7.3 **Table 3** provides a summary of previous assessments undertaken in the Study Area. The Study Areas for these reports are illustrated in **Figure 3**.

Project Name	Project Code	Year	Contents
Aggregate Dredging Area 480 (106 East)	51524	2003	Desk-based assessment of archaeological potential, archaeological assessment of geophysical data and impact assessment
Humber Area: Areas 483 and 484	53591	2003	Desk-based assessment of archaeological potential, archaeological assessment of geophysical and geotechnical data and impact assessment
Area 485 Southernmost Rough Aggregate Dredging Licence Application	59590	2005	Desk-based assessment of archaeological potential, archaeological assessment of geophysical data and impact assessment
Area 466 North West Rough	51412	2006	Desk-based assessment of archaeological potential, archaeological assessment of geophysical data and impact assessment
Area 481 Aggregate Dredging Licence Application	64690	2007	Desk-based assessment of archaeological potential, archaeological assessment of geophysical and geotechnical data and impact assessment
Areas 448 and 449 Off Spurn Head. Aggregate Dredging Licence Application	67200	2008	Desk-based assessment of archaeological potential, archaeological assessment of geophysical and geotechnical data and impact assessment
Aggregate Dredging Licence Area 480	69890	2008	Archaeological assessment of geophysical data, pre-dredging monitoring report.
Aggregate Dredging Licence Area 481	64691	2009	Archaeological assessment of geophysical data, archaeological monitoring report.
Triton Knoll Offshore Wind Farm and Export Cable Route	70070	2010	Desk-based assessment of archaeological potential, archaeological assessment of geophysical and geotechnical data and impact assessment.

Project Name	Project Code	Year	Contents
Race Bank Offshore Wind Farm Stage 2	62557	2010	Geoarchaeological recording of borehole samples.
Lincs Offshore Wind Farm	66034	2010	Archaeological monitoring and mitigation: Written Scheme of Investigation

Table 3: Previous Assessments undertaken by WA in the MAREA Study Area.

4.8 IMPACT ASSESSMENT METHODOLOGY

4.8.1 The impacts of the proposed dredging activity will be assessed for each cultural heritage receptor by comparing baseline environmental conditions as set out below with the conditions that would develop following the commencement of the activity.

4.8.2 As acknowledged by a number of noted sources (*e.g.* http://www.offshorewind.co.uk/Assets/archaeo_guidance.pdf), uncertainty and the precautionary principle are very important in certain aspects of archaeological assessment. Uncertainty can arise with regards to such matters as the presence/absence of features; if present, (*e.g.* as an anomaly) what they comprise; and, if present, their value and sensitivity. Uncertainty can manifest itself, for example, when assessing potential cultural heritage receptors, which are often indicated only by documentary sources with poor spatial locations; or geophysical anomalies that have archaeological potential but require further investigation in order to be verified as receptors. In this assessment, and in accordance with normal EIA practice, where there is significant uncertainty the 'precautionary principle' is applied both in terms of rating the significance of impacts and in determining appropriate mitigation.

4.8.3 The methodology used is based on an in-house Wessex Archaeology approach informed by COWRIE and, where possible, is aligned with the general EIA methodology applied by ERM. In the Impact Assessment Criteria compiled in the TEDA (Thames Estuary Dredging Association) MAREA (Wessex Archaeology 2010e), the template applied to this study, an 'impact' is considered to be a change (positive or negative) in the existing baseline for a given receptor that occurs as a consequence of an activity associated with dredging in the Study Area. This impact may be significant in its own right or when added to existing impacts.

4.8.4 Previous work undertaken for MAREA studies (including the South Coast, Thames and East Coast MAREAs) has helped inform the methodology for this IA. The IA process is discussed further in **Section 10**: Uncertainty and the Precautionary Approach.

4.8.5 Use of the RAG informed publication 'Marine aggregate Terminology: A Glossary' (BMAPA 2010) was adopted to ensure consistency of the lexicon used in this document, and to ensure clearly understood and acknowledged definitions of direct, indirect, cumulative and in-combination impacts and effects.

5 EARLY PREHISTORIC ARCHAEOLOGY (PALAEOLITHIC-MESOLITHIC)

5.1 INTRODUCTION

5.1.1 The following section presents an outline of the known geological and archaeological data for the MAREA Study Area. This baseline includes a discussion of all known and potential archaeological and geo-archaeological sites in the MAREA Study Area that may be impacted by existing and future dredging operations.

5.1.2 Sea level fluctuations and numerous glacial and marine transgressions and regressions have shaped the landscape within the MAREA Study Area over time. These changes in sea level have at times caused the sea-floor to be dry and beyond the limits of the glacial ice sheet, exposing a landscape which developed vegetation cover suitable for hominin/human exploitation.

5.1.3 The archaeological potential of the region has been considered with specific reference to remains that have become submerged as a result of sea level rise. Consequently, in order to assess the archaeological potential within the MAREA Study Area, the nature and causes of these fluctuations in sea level are discussed. **Appendix X** provides an approximate indication of relative sea level stands in the southern North Sea during the last *c*. 970,000 years.

5.1.4 The term Before Present (BP) is used throughout this report when describing the age of archaeological events which occurred from the Lower Palaeolithic to the Mesolithic period. The BP time scale is predominantly used to report raw radiocarbon ages which cannot be directly correlated with a calendar date due to the inconsistency of C14 levels within the atmosphere. The exception to this is the Mesolithic period, the radiocarbon ages for which can be correlated with a calendar date (9500-5500 BP, 8500-4500 BC). For the purposes of this report, the Mesolithic period will adopt the BP timescale. AD 1950 commonly forms the origin for the BP age scale. From the Neolithic period onwards, the time scales Before Christ (BC) and *Anno Domini* (AD) are used. Geological time, prior to periods of archaeological interest, is expressed in millions of years (Ma). Major glacial and interglacial stages are also referred to in terms of Marine Isotope Stages (MIS) to facilitate correlation with other sources.

5.1.5 Major archaeological periods and significant archaeological discoveries and events are shown within **Appendix X** to illustrate the relationship between these periods and the relative sea level stands.

5.1.6 For the purposes of this report the discussion of prehistoric archaeology has been divided into three phases:

- Pre-Devensian, *c*. 970,000-110,000 BP (MIS 25-MIS 5e), encompassing the period from the earliest evidence of hominin occupation of the UK (Parfitt *et al.* 2010). This period corresponds to the Lower and Middle Palaeolithic;
- Devensian to Late Glacial Maximum (LGM), *c*. 110,000-18,000 BP (MIS 5d to MIS 2), encompassing the onset of the last glaciation up to and including the LGM. This period includes the Middle and Early Upper Palaeolithic which saw the transition from Neanderthals to modern humans;

- Post-LGM and early Holocene, *c*. 18,000-6000 BP (MIS 1), encompassing human re-occupation of the British Isles following the LGM through to the final inundation of the MAREA Study Area during the Mesolithic.

5.1.7 In broad terms, archaeological sites can be found in either primary contexts or secondary contexts. Archaeological sites discovered in a primary context can be defined as those sites in which the spatial relationship of finds has not altered since they were deposited. Artefacts found in their primary context are not necessarily exactly at their point of deposition (*in situ*), but the overall artefact movement is small on a regional scale. Artefacts discovered within secondary contexts are those which have been moved from their original positions by natural or cultural processes. Archaeological material dating to the Palaeolithic is often discovered in secondary contexts as a result of fluvial re-depositing, glacial processes or marine regressions and transgressions. Although discoveries from secondary contexts are by their very nature derived artefacts, recent work has shown that they have the potential to provide information on patterns of human land use and demography (Ashton and Lewis 2002; Hosfield and Chambers 2004).

5.1.8 A review of the coastal and marine processes which operate during sea level rises and periods of sea level stasis highlights that a large proportion of the submerged archaeological resource is likely to be composed of artefacts in secondary contexts (Westley *et al.* 2004). This serves to add importance to the few primary context sites investigated.

Overview of Known Prehistoric Sites

5.1.9 With the exception of a relatively small number of sites and finds, primarily from the intertidal zone, the known submerged prehistoric archaeology of the MAREA Study Area is sparse. This paucity of evidence is largely due to the difficulty in locating and identifying archaeological material within the submerged environment and should not be considered to indicate a lack of hominin activity within the offshore extent of the MAREA Study Area.

5.1.10 In order to compensate for the limits of the archaeological record offshore, a 1km buffer above MHW has been added to the Study Area in order to fully assess the known and potential prehistoric archaeological resource (**Figure 1**). Due to the changes in the configuration of the coastline from the Lower Palaeolithic period to the modern day, it is not unreasonable to assume that the human activity represented by terrestrial prehistoric sites also occurred within the submerged extent of the MAREA Study Area at times when it was exposed as dry land.

5.1.11 A relatively small number of records from the NRHE and regional HERs date to the prehistoric period. In order to obtain an understanding of the density and nature of prehistoric human activity along the river valleys and coastline adjacent to the MAREA Study Area, a number of queries were conducted on the NRHE and regional HER records, sub-dividing the sites based on their period classification.

5.1.12 A total of 74 NRHE records of prehistoric date or description (from Lower Palaeolithic to Iron Age) were recorded within the MAREA Study Area, with a further 9 records of 'prehistoric' date which could not be ascribed to a specific period and 11 sites were of Iron Age/Romano-British date. Just one of the NRHE records dated to the early prehistoric period (Palaeolithic to Mesolithic), a duplicate record of a Palaeolithic blade also recorded in the Lincolnshire HER. Of the 64 records ascribed to later prehistoric periods (Neolithic, Bronze Age, Iron Age and Iron Age/Romano-British), there were a total of 11 Neolithic sites, 27 Bronze Age sites and 15 Iron Age

and 11 Iron Age/Romano-British sites. Of the total 74 prehistoric records 30 are located on the foreshore or below low water. Sites on the foreshore include a number of Iron Age salt working sites, the wooden henge and barrow at Easington, the Bronze Age Kilnsea boat, a settlement site and 3 burials.

5.1.13 Lincolnshire HER supplied 24 prehistoric records within the MAREA Study Area, of which 1 was early prehistoric, 16 were later prehistoric and 7 were 'prehistoric' but not assignable to a specific period.

5.1.14 NE Lincolnshire HER supplied 13 prehistoric records within the MAREA Study Area, of which 0 were early prehistoric, 8 were later prehistoric and 5 were 'prehistoric' but not assignable to a specific period.

5.1.15 North Lincolnshire HER supplied 18 prehistoric records within the MAREA Study Area, of which 10 were early prehistoric, 8 were later prehistoric. None of the North Lincolnshire records were of general 'prehistoric' date.

5.1.16 Humber Archaeology Partnership HER supplied 39 prehistoric records within the MAREA Study Area, of which 4 were early prehistoric and 32 were later prehistoric and 3 were 'prehistoric' but not assignable to a specific period.

5.1.17 A total of 17 sites potentially dating to the early prehistoric period were included in this assessment, summarised below in Table 4 and illustrated in **Figure 4**. Sites presented by the NRHE and regional HERs as lines and polygons were converted into points.

	Number of records					
Period	**NRHE**	**Lincolnshire**	**NE Lincs**	**North Lincs**	**Humber Archaeology Partnership**	**Total**
Palaeolithic (700,000-10,500 BP)	1	1	0	0	2	4
Mesolithic (10,500-5,500 BP / 8,500-4,000 BC)	0	0	0	10	2	12
'Prehistoric' records likely to be Palaeolithic/ Mesolithic	0	0	1	0	0	1
Total	1	1	1	10	4	**17**

Table 4: Prehistoric sites listed by the NRHE and regional HERs, queried by period.

5.1.18 The Palaeolithic records comprise one Lower Palaeolithic blade recorded in both the NRHE and Lincolnshire HER, a flint scraper and an elephant tooth recorded in the Humber HER. Of the two flint artefacts dating to the Palaeolithic, one has no further information, other than it is a Lower Palaeolithic blade, whilst the second is recorded as similar to a Levallois flint scraper discovered in the Midlands. The Levallois technology is generally ascribed to the Lower or Middle Palaeolithic periods. No

finds dating to the Upper Palaeolithic period have been found within the MAREA Study Area.

5.1.19 The figures displayed in **Table 4** should not be viewed as directly representative of the volume of hominin activity within a given period. The survival of archaeological sites and artefacts is variable and depends on a complex array of interrelating factors, whilst the NRHE and HER databases are reliant on the reporting of finds, which is not a legal requirement and therefore may not always occur for individual finds. The NRHE and HER records do, however, attest to hominin activity within the region throughout prehistory.

5.1.20 In contrast to the Humberside and North Lincolnshire coast, two highly significant sites lie to the south of the MAREA Study Area and have produced the earliest evidence of the occupation of Britain, dating to between 970,000 and 700,000 BP. Archaeological excavations at Pakefield and Happisburgh have yielded stone artefacts, faunal and plant remains enabling reconstruction of past activities and landscapes (Parfitt *et al.* 2005, Stuart and Lister 2001).

5.1.21 A small number of prehistoric artefacts have been reported via the TCE/BMAPA/EH protocol for reporting finds of archaeological interest within Humber aggregate areas (Wessex Archaeology 2006a, 2007a, 2008a, 2009a, 2010a).

5.1.22 Whilst the East and South Coast dredging areas have recovered many prehistoric items, between 2005 and 2011 (at the time of writing) only three finds were reported as part of the protocol within the Humber aggregate dredging areas relating to prehistoric archaeology, summarised in **Table 5** and illustrated in **Figure 4**.

Dredging Area	Description	Date	Report ID and year
102 or 251 (East Coast Region)	Radius from a mammal of similar size to a horse, possibly hippopotamus.	Middle Palaeolithic, Ipswichian interglacial?	Cemex_0093 (2006-2007)
102	Mammoth Jaw Bone Fragment	Palaeolithic	Cemex_0352 (2010-2011)
408*	One curved section of tusk. Represents the most northerly example in the North Sea.	Middle Palaeolithic C14 44,250 (+/- 600 years)	Hanson_0035 (2005-2006)
*Although Area 408 is in the Humber dredging region, it is not located within the MAREA study area and therefore not shown in Figure 4.			

Table 5: Possible Prehistoric finds reported through the TCE/BMAPA/English Heritage Protocol for Reporting Discoveries of Archaeological Interest.

5.1.23 The Mammoth tusk recovered from Area 408 (**Hanson_0035**) is of particular interest as this is the most northerly example of *Mammuthus primigenius* for which good positional data is available and may have significant implications for understanding of the distribution of this species during the last Ice Age in the wider Humber region.

Recently another fragment of mammoth jaw bone was reported from Area 102 (**Cemex_0352**) which is currently in the process of assessment.

5.1.24 In addition to the early prehistoric material discussed above, there is also the potential for archaeological sites or finds of a non-maritime nature to be present on the seabed of the MAREA Study Area dating to the later prehistoric periods due to the significant rates of erosion on the Humberside and Lincolnshire coasts. Up to 5km of land is thought to have been lost from the Humberside coast and around 2km from the Lincolnshire coast since the Roman Period (www.eastriding.gov.uk/coastalexplorer/pdf/1development.pdf, Buglass and Brighham 2008). Whilst no sites from these periods have yet been located underwater within the Study Area, sites on the foreshore and coastal regions from this period have been used to provide a context for the discussion of potential for sites within the MAREA Study Area. These terrestrial sites will also provide context for the discussion of coastal and seafaring activity within the vicinity of the MAREA Study Area during the Neolithic, Bronze Age and Iron Age in **Section 7**.

General Geological Setting

5.1.25 Since the earliest occupation of Britain, possibly as early as *c*. 970,000 BP[1], the landscape of the MAREA has been severely affected by a number of glaciations. Generally, the geology of the Study Area comprises pre-Tertiary rocks (Upper Cretaceous Chalk) underlying a thickness of Pleistocene glacial till, which in turn underlies Holocene marine sediments (Cameron *et al.* 1992).

5.1.26 Offshore, the majority of early and middle Pleistocene deposits are shallow, deltaic sediments similar to the Dutch Pleistocene formations on the southern side of the North Sea. The offshore stratigraphy of the MAREA Study Area has not been fully correlated with the eastern England onshore sediments and a separate suite of formation names have been adopted (Cameron *et al.* 1992: 101; Tappin and Dove *et al.* 2009: 30).

5.1.27 Lower deposits of early Pleistocene date represent prodelta, delta front and delta top, and these strata lie on an angle from North to South, due to differential subsidence across the Study Area. Palaeomagnetic measurements from these deltaic sediments suggest they belong to the early Pleistocene Matuyama period of reversed polarity (Cameron *et al.* 1992: 103).

5.1.28 Within the MAREA Study Area both the early Quaternary deltaic sediments and the later Quaternary glacial/interglacial sediments are present. However, whereas deltaic sediments constitute a great thickness of Pleistocene sediments to the east of the Study Area, they are only exposed on the seabed in small parts of the MAREA Study Area, mainly along the edges of the deeps (Cameron *et al.* 1992: 103).

5.1.29 Exposed deltaic sediments include the Winterton Shoal Formation and Yarmouth Roads Formation, although neither have been sampled in the Study Area and have been identified from their seismic signature only (BGS Spurn Quaternary geology sheet). Where sampled, the Winterton Shoal Formation is a bioturbated, calcareous, sandy mud, with glauconite and granules of partly pyritised monosulphide in the prodelta facies (Cameron *et al.* 1992: 106; Tappin and Dove *et al.* 2009: 34). The

[1] Parfitt *et al*. (2010) presented new evidence from Happisburgh demonstrating that Early Pleistocene hominins were present >0.78m years ago and *potentially* up to *c*. 970,000 BP. This date is therefore tentative.

Yarmouth Roads Formation comprises decalcified sands, with scattered pebbles and plant debris, peat and wood clasts suggesting of environments ranging from lagoonal to coastal/littoral to terrestrial (Cameron *et al.* 1992: 107).

5.1.30 The middle-Upper Pleistocene, glacial sediments are represented by the Swarte Bank, Sand Hole, Egmond Ground, Eem, Bolders Bank and Botney Cut Formations. These were laid down in both glacial and interglacial environments. (Cameron *et al.* 1992: 109; Tappin and Dove *et al.* 2009: 34).

5.1.31 The Swarte Bank Formation records the first unequivocal record of the invasion of ice into the southern North Sea Basin. It infills a fan-like array of valleys up to 12 km wide and 450 m in depth that are cut into the Pleistocene deltaic deposits and underlying bedrock. Where sediment is preserved (some of the deeps at seabed are flushed clean), the valleys contain three sedimentary members, sampled in BGS boreholes. The basal member is a Till characterised by chalky-Jurassic bedrock clasts. It comprises stiff, grey diamictons with, in some instances, lenses of coarse-grained glacio-fluvial sand. The middle member is the most dominant and formed of stratified, stiff, grey, glaciolacustrine mud that records an upward transition from unfossiliferous, lacustrine clay into marine clay with a benthonic foraminiferal assemblage characteristic of shallow waters where frequently ice formed to the seabed. The upper member comprises marine interglacial sediment (Cameron *et al.* 1992: 109; Tappin and Dove *et al.* 2009: 34).

5.1.32 The boat-like form of the valleys indicates that they were formed by subglacial meltwater under pressure (Boulton and Hindmarsh, 1987; Ehlers *et al.* 1984), although Wingfield (1990) proposed that they are the result of Jökulhlaup, catastrophic floods of meltwater produced by a breakthrough at the glacial margin. Recent research in the Humber REC area by Praeg (2003), using 3-D seismic volumes, shows these valleys to contain retrograde sedimentary infills that are the result of subglacial rivers that were formed under a retreating ice sheet. The stratigraphic position of the Swarte Bank Formation, sandwiched between the Cromerian complex, Yarmouth Roads Formation and sediments with interglacial Holsteinian fossil assemblages (BGS Spurn Quaternary geology sheet) indicates that it dates to the Anglian glaciation (Cameron 1992: 110; Tappin and Dove *et al.* 2009: 34). The Formation is the only offshore relic of the of the Anglian glaciation, and if the interpretation of the subglacial origin of the valleys is correct, and the work of Praeg (2003) provides convincing evidence that it is so, then a line joining the present southern termination of each valley represents the minimum southern limit of a major stillstand of an ice sheet at that time. Such a line agrees with the inferred onshore limit of the late Anglian readvance from north Norfolk. It should be noted however, that this is probably not the most southerly limit of overall Anglian glaciation, which is further south (Cameron 1992: 110; Tappin and Dove *et al.* 2009: 34).

5.1.33 With the decay of the Anglian ice sheet (around 424,000 years ago) as the climate ameliorated, rising sea level combined with continuing tectonic subsidence led, to the re-establishment of a shallow sea in the MAREA Study Area. The result was the deposition of the Sand Hole and Egmond Ground formations. The Sand Hole Formation is entirely confined to a bowl-like area around the Silver Pit (in which it is exposed at seabed), in the west of the MAREA Study Area. It is up to 20m thick and in BGS borehole 81/52A comprises 14m of laminated clay which elsewhere in the vicinity yield abundant dinoflagellate cysts and a rich diverse assemblage of interglacial, shallow marine foraminifera (Fisher *et al.* 1969). The interpretation is that it was laid down during the early, warm part of the Hoxnian Stage, in a low

energy, restricted marine environment (Cameron 1992: 111; Tappin and Dove *et al.* 2009: 35).

5.1.34 Sediments from the Saalian glaciation (*c*. 250,000-150,000 BP) are not preserved in the MAREA Study Area, although small areas do survive to the north and east of the Study Area. The lack of tills of Saalian date in the Southern North Sea and lack of deep 'scaphiform' valleys, suggest the Study Area was not covered by an ice sheet during this period, but may have been a partly flooded, periglacial region (Cameron 1992: 112).

5.1.35 During the next climatic amelioration, the Ipswichian (also known as the Eemian) interglacial (*c*. 150,000-110, 000 BP), the climate warmed, the ice sheets melted and sea levels rose again. During this period of higher sea level the Eem Formation was deposited to the east of the MAREA Study Area. Where positively identified, the Eem Formation comprises up to 20m of shelly sands, grading westwards into muddy sandy mud, which are intertidal in character (Cameron 1992: 112; Tappin and Dove *et al.* 2009: 35). The Eemian Formation is followed, to the south-west of the MAREA Study Area by the Brown Bank Formation. Whilst not found within the Study Area, the formation is significant in that it represents the onset of the Devensian (also known as the Weichselian) glaciation (*c*. 110,000 BP) and the associated fall in sea level, resulting in the region becoming a shallow, restricted, brackish lagoonal environment (Cameron 1992: 113).

5.1.36 The Devensian glaciation (*c*. 110,000-10,000 BP) saw extensive ice sheets across northern and highland Britain, and down the east coast as far as the north Norfolk coast. The Devensian glaciation eroded and reworked much of the previously deposited sediments in the region, and, as the last of the Quaternary glacial deposits, the Bolders Bank Formation is the best preserved and most extensive (Cameron 1992: 109; Tappin and Dove *et al.* 2009: 36) across the seabed of the MAREA Study Area.

5.1.37 The Bolders Bank Formation is characterised by reddish to greyish brown, stiff, poorly sorted sediment. The majority of its pebbles are derived from the sedimentary rocks of eastern England, however chalk is the most prevalent. In general the formation is less than 5 m thick but is 15 to 20m thick off the Lincolnshire coast and may increase to 25 m within the MAREA Study Area (Cameron 1992: 113; Tappin and Dove *et al.* 2009: 36). Based on both seismic character and micromorphology, the formation is interpreted as a composite of subglacial and supraglacial deposits (Cameron 1992: 113; Tappin and Dove *et al.* 2009: 36).

5.1.38 As the climate ameliorated, the ice sheets melted and retreated laying down the Botney Cut Formation in scaphiform valleys, similar to those described above. These are less than 100 m deep and up to 8 km wide; but smaller than those of the Elsterian glaciation (Swarte Bank Formation) discussed above. Their smaller size is probably due to a smaller mass of ice in the Devensian glaciation. The Formation comprises stiff, reddish brown diamicton, similar to the Bolders Bank Formation. An upper member is composed of soft to stiff, laminated, sporadically pebbly, glaciolacustrine to glaciomarine mud, commonly with the same distinctive reddish brown tints as the Bolders Bank Formation (Cameron *et al.* 1992: 115; Tappin and Dove *et al.* 2009: 37).

5.1.39 The surface of the Bolders Bank Formation is likely to be modified by small channels and depressions created by meltwater and fluvioglacial processes as the ice sheet began to retreat. Within the channels, carved out by the meltwater, sands and gravels would have been deposited. By the end of the Dimlington Stadial at around

13,000 BP (*c.* 13,400 cal. BC) no ice would have remained over the Study Area and a periglacial landscape would have prevailed (Coles 1998).

5.1.40 The end of the Devensian glacial sees the transition to the Holocene period. The rising sea level, caused by melting ice sheets, was initially offset by the isostatic rise of the land. Glaciomarine muds were deposited in the troughs and valleys, followed by intertidal mud, silt and peat of the Elbow Formation; marking the return of fully marine conditions to the Study Area (Cameron *et al.* 1992: 115; Tappin and Dove *et al.* 2009: 37). Whilst the Elbow formation is extensive to the east of the MAREA Study Area, equivalent deposits are found around the eastern English coast off Lincolnshire (Cameron 1992: 119). Similar peats recovered offshore, near the Leman Bank, have yielded a radiocarbon date of 8425 + 70 BP (Godwin 1960) and a Mesolithic bone harpoon point (Godwin and Godwin 1933).

5.1.41 The seabed bathymetry of the MAREA Study Area is relatively flat, broken by the scaphiform valleys of Silver Pit and Sole Pit, and the deeper part of the Wash. Linear sandbanks lie to the south-west of the Study Area. Holocene sediments in the MAREA Study Area generally form a thin layer over the Pleistocene sediments described above, and range from sands to gravels. The Humber Estuary and Wash have thick accumulations of sands and muddy sands, whilst the rest of the Study Area is dominated by gravels and gravelly sands. The present-day bathymetry of the North Sea roughly approximates to the morphology of a pre-Holocene land surface, with modifications by later sediment accretion and erosion, especially in coastal regions (Cameron *et al.* 1992: 116 and Figure 111; Tappin and Dove *et al.* 2009: 37). Wenban-Smith (2001) suggests that the gravels in the northern part of the MAREA Study Area are glaciogenic outwash gravels and can be related to the general period of the peak of the last glaciation (OIS 2).

Palaeogeographic Assessment

5.1.42 The following assessment relates specifically to the palaeogeographic assessment of the geotechnical core logs and the geophysics data associated with the vibrocores and the geophysics data acquired specifically for the MAREA. However, reference to the REC data has been made where relevant. **Figure 5** illustrates the interpretation of features of archaeological interest identified in the data assessed for the MAREA and the results presented in the REC report (Tappin *et al.* 2011). **Figures 6-8** illustrate the same data focussed on the northern, central and southern areas, respectively.

5.1.43 Stone artefacts have long been found in sediments associated with river channels, either in sand and gravel layers or associated fine-grained sediments and peats (*e.g.* Wymer 1999). The presence and survival of these artefacts are closely linked to the environmental processes that caused the associated deposits to be formed. Whilst the vast majority of Palaeolithic artefacts have been found in re-deposited sediments, a number of finds from the Lincolnshire Wolds are thought to be close to, if not in their original place of deposition, within bedrock depressions filled by glacial till deposits (Bee 2005). To the south of the Study Area, artefacts have also been recovered *in situ*, from fluvial and estuarine sediments at Pakefield and Happisburgh (Parfitt 2008; Parfitt *et al.* 2010).

5.1.44 Peat is formed by the deterioration and compression of ancient land surfaces, primarily vegetation. The preserved vegetation, together with other organic remains such as insects and pollen, enable archaeologists to build up a detailed picture of the environment that was once present. Peat forms in waterlogged and anaerobic conditions, which often preserve organic artefacts such as wood, antler and textiles.

5.1.45 The geoarchaeological assessment of the vibrocore data set out below summarises the positively identified sediments (Units 1, 2, 3 and 4) contained within the vibrocores by area (northern, central and southern). The interpretation of the vibrocore and geophysics data has revealed four main sedimentary units, as follows:

- Unit 4: Holocene marine sediments
- Unit 3: Late Pleistocene/early Holocene sands and gravels (including Botney Cut Formation)
- Unit 2: Glacial Till (Bolders Bank Formation)
- Unit 1: Upper Cretaceous Chalk bedrock

5.1.46 The vibrocores contained predominantly gravel and sand. It was difficult to differentiate more recent seabed sediments (Unit 4) from glacial, fluvial and estuarine sediments (Unit 3) and where this was the case, the sediment was assigned to Unit 3/4. Units 2 and 3 have been further subdivided into Subunits 2a, 2b, 3a, and 3b based on the sedimentary descriptions. **Table 6** below summarises the Units, Subunits, their description and interpretation.

Unit	Subunit	Description	Interpretation
Unit 4		Shelly sand and gravel	Seabed sediment
Unit 3/4		Sand and gravel	Undesignated
Unit 3	Subunit 3b	Clayey silty sand	(glacio)fluvial/estuarine alluvium
	Subunit 3a	Sand and Gravel	Glaciofluvial alluvium
Unit 2	Subunit 2b	Stratified silty sandy clay	Diamicton (Bolders Bank)
	Subunit 2a	Massive gravelly clay	Diamicton (Bolders Bank
Unit 1		Chalk	Upper Cretaceous Bedrock

Table 6: Description and interpretation of Units and Subunits identified in the vibrocores.

5.1.47 It should be noted that some of the units may be more widespread than indicated by the data. In the lower Units (Unit 1 and 2) the depth of vibrocore penetration and recovery was a problem. In 57 vibrocore locations low penetration and sediment recovery of less than one metre was recorded. The overlying Units 3 and 4 also achieved thickness in excess of 5 metres which in some areas (particularly gravelly sediments) will have prevented the vibrocores penetrating Units 1 and 2.

5.1.48 The interpretation of the vibrocore data, particularly sands and gravels (widespread within aggregate dredging areas), has meant that much of the assessed sedimentary data have been assigned to Unit 3/4; the true extent of Units 4 and 3 are difficult to interpret. However, where possible the associated geophysics data has been used to delineate the units. Only positively identified units are discussed below.

5.1.49 Based on the geoarchaeological assessment the archaeological potential of each unit can be described as follows:

- Unit 4: Holocene marine sediment which is likely to contain more recent *in situ* archaeological remains such as aircraft and or shipwrecks. Any prehistoric archaeological material contained within this unit is likely to have been reworked.

- Subunit 3b: the finer grained clays, silts and sands, are interpreted as alluvial (fluvial and estuarine) sediments. These may be related to the last Holocene sea level rise and as such the unit has potential to contain *in situ* prehistoric archaeological material. In some areas the unit is found relating to the valley features infilled with the Botney Cut Formation and it is possible that sediment within these features may contain *in situ* or derived prehistoric archaeological material.

- Subunit 3a: coarser grained gravels and sands that are interpreted as late Pleistocene fluvial and glaciofluvial alluvium deposited as the ice sheet retreated. It is possible that this unit may contain *in situ* and derived prehistoric archaeological material.

- Unit 2: a Devensian diamicton or till (Bolders Bank Formation). Whilst its deposition has occurred during the Upper Palaeolithic archaeological period, its mode of deposition (subglacial) and extremely cold conditions associated with it, mean that it is unlikely to contain any *in situ* archaeological material. There is however the possibility that *in situ* archaeological material may exist on the top of this unit, especially where for example soil formation has occurred.

- Unit 1: Upper Cretaceous Chalk bedrock has no potential to contain archaeological remains. However, as with Unit 2, the surface of Unit 1, where not eroded by Pleistocene marine and glacial processes, may contain *in situ* archaeological remains, as exemplified by the survival of possible periglacial features in vibrocore UMD_2001_VC12. This core is situated in the southern part of the survey area where the surface of Unit 1 is likely to have been less affected by glacial erosion in this part of the Study Area.

5.1.50 In the 2011 MAREA sub-bottom profiler data, a total of 31 features of archaeological interest were identified. The identified features were characterised by feature type and are summarised in **Table 7** and detailed in **Appendix III**.

Feature	Number of features identified			
	Northern Area	Central Area	Southern Area West	Total
Complex cut and fill	6	2	1	9
Simple cut and fill	5	4	4	13
Bank	-	4	1	5
Depression	1	-	2	3
Sediment unit	1	-	-	1
Total	13	10	8	31

Table 7: Distribution of features of archaeological interest identified in the MAREA data.

5.1.51 All the features of archaeological interest identified in the geophysics data refer to features cut into or overlying the till unit (Unit 2) and are associated with Unit 3

sediments, as observed in the vibrocores. The complex cut and fill features are predominantly associated with channels cut as the last glacier retreated (MIS 2) and are possibly infilled with Botney Cut Formation sediments, at least in part. These channels are infilled by a number of different fill units, indicating changing conditions and flow regimes as the channel developed and then finally infilled. Where observed in the vibrocores, the upper sediments of this infill can comprise sands and gravels (Unit 3a) or finer-grained sediments (Unit 3b). A number of vibrocores contained what appeared to be Subunit 2b (Bolders Bank Formation) but were notably softer and/or contained molluscan remains. It is possible that this is related to the Botney Cut Formation. The Botney Cut comprises a network of channel features thought to have been cut during the late Devensian (OIS 2) and subsequently infilled with 'soft to stiff, laminated, sporadically pebbly glaciolacustrine and glaciomarine muds, commonly with the same distinctive reddish brown tints as the Bolders Bank Formation' (Cameron *et al.* 1992).

5.1.52 The simple cut and fill features (with only one fill unit) and infilled depressions were probably cut by meltwater and fluvioglacial processes as the ice sheet retreated. These features would have then been filled by sands and gravels (Unit 3a). The vibrocores indicate that the bank features observed in the geophysics data in the aggregate areas are primarily composed of coarse-grained sands and gravels with some finer sediments near the top of the banks. These are interpreted as possible remnants of outwash gravels deposited as the glaciers retreated and modified with the onset of the last transgression. Further features (simple cut and fill, remnant sediment units and banks) are observed on the geophysics close inshore and are thought to be Holocene features associated with the continued changing coastline developed prior to the last marine transgression. The features are discussed in more detail below.

5.1.53 The results of the geoarchaeological and geophysical assessment for each area are discussed in more detail below. Details of the units identified in each vibrocore and associated geophysics interpretation are provided in **Appendix III**.

Northern Area (Figure 6)

5.1.54 Within the aggregate areas (102 and 105) all four major sedimentary units (and subunits) were recovered within the 202 vibrocores. Unit 1, Chalk bedrock was recorded in three of the vibrocores (CEM _2009a_VC1a, CEM _2009a_VC8 and RMC_2004a_VC068). The unit was not fully penetrated in any of the vibrocores.

5.1.55 Unit 2 occurred in 131 of the vibrocores from this area and was not fully penetrated in any of them. Subunit 2a, a brown, massive, stiff gravelly clay was the predominant Subunit and recorded in 114 of the vibrocores from this area. Subunit 2b, a stratified brown sandy clay occurred in 19 of the vibrocores. Where Subunits 2a and 2b occurred in the same vibrocore (RMC_2004a_VC064, RMC_2004a_VC071), Subunit 2a overlay Subunit 2b. Unit 2 was relatively widespread although was not recorded in a number of the vibrocores from the central part of dredging area 105.

5.1.56 The upper part of Subunit 2a contained molluscan burrows in two of the vibrocores (RMC_1994a_VC3 and RMC_1994a_VC10). A particularly interesting record from a vibrocore log (RMC_1989a_VC91) indicates that a soil 'Rubified clay soil layer' (RMC 1989a) exists at 2.13 to 2.15m below seabed, formed upon the surface of Subunit 2a. This is overlain by Subunit 3a at this location. The geophysics data indicates that the vibrocore targets an infilled shallow channel cut into the till.

5.1.57 Unit 3 occurred in 35 of the vibrocores and comprised predominantly the coarser grained sands and gravels interpreted as Subunit 3a (recorded in 29 vibrocores), the greatest thickness of which (2.09m) was recorded in vibrocore RMC_1994b_VC-47. Subunit 3a comprised sands and gravels with the gravel comprising flint, sandstone and igneous rocks. Subunit 3a is generally associated with channel cut features, occasionally with dipping reflectors and bank features up to 2m high.

5.1.58 Subunit 3b was recorded in six of the vibrocores from this area (CEM_2009a_VC2, CEM_2009b_VC10, CEM_2009b_VC8, CEM_2009b_VC16, RMC_1989a_VC95 and RMC_1994b_VC59). The subunit achieved its maximum thickness in vibrocore CEM_2009b_VC10 (2.76m) where from 1.80 to 2.76m below seabed it was noted to contain 'occasional lignite' (CEM 2009b). Lignite and clay was also recorded within RMC_1994b_VC-59 upon the surface of a pink brown very fine sand. This sequence of pink sand, lignite and clay was not recorded elsewhere. RMC_1989a_VC95 contained an unusual sequence interpreted as Subunit 3b of 'white-grey soft clay with large 60mm pebbles and a little coarse sand' at the base of the vibrocore, between 1.05 and 1.15m below seabed. Where geophysics data coverage was available the occurrences of Subunit 3b were observed in the upper units of channel infill features exhibiting well-layered sediments or small isolated cut and fill features.

5.1.59 Unit 4 was positively identified in 166 vibrocores although the 53 cores where the unit was not identified contained Unit 3/4. Unit 4 comprised shelly gravel and sand. The gravel, where described, comprised flint and occasional igneous rocks including granite. Organics were recorded within the unit and were particularly abundant within vibrocores RMC_1994b_VC57 and RMC_1994b_57A. Some of the finer grained deposits of sand presently allocated to Unit 3/4 such as in RMC _1989b_VC85 may be part of seabed features such as sandwaves. In general, the geophysics data indicates a veneer of seabed sediments, occasionally thickening to 2m across the area. Occasional sandwaves are also observed.

5.1.60 A total of 13 features of archaeological interest (7001-7013) were identified on the MAREA geophysics data (**Figure 6**). Two features (7004 and 7013) are situated within aggregate dredging Area 102. Feature 7004 is a complex cut and fill feature observed in the northwest corner of the aggregate area, outside the F15EZ. Feature 7013 is a broad, shallow simple cut and fill feature and is situated in the Sand Hole feature within the F15EZ. Sand Hole is a tunnel valley feature and as such has no archaeological potential itself, however, sediments deposited on the sidewalls and at the base of Sand Hole may have some limited potential for derived artefacts. Three further simple cut and fill features (7007, 7010 and 7011) are also associated with Sand Hole may also have some archaeological potential and lie within the Area 448 F15EZ. The vibrocores situated within, or on the edges of, the Sand Hole feature indicate a mix of Unit 3/4 sediments which are not clearly delineated.

5.1.61 Features 7002, 7003, 7006, 7008 and 7009 are complex cut and fill features and tie in with similar features identified in the REC as Botney Cut channels. Numerous fills are associated with the cuts and the geophysics data indicates a range of coarse-grained and fine-grained deposits, indicating changing flow regimes within the development and eventual infilling of the channel. An example of a complex cut and fill feature (7002) is illustrated in **Figure 9**.

5.1.62 The remaining features associated with the northern area (7001, 7005 and 7012) are all situated nearshore and are possibly associated with the early development of the coastline prior to inundation of the last transgression. Features 7001 and 7005 are situated in the north and are interpreted as a complex cut and fill feature and a remnant of an early Holocene sediment unit, respectively. Feature 7012 is observed

to the south of the northern area and is an infilled depression with well-layered sediments deposited prior to the last marine transgression.

Central Area (Figure 7)

5.1.63 Within the aggregate areas (106, 197, 400, 480 and 493) in the central area all four major sedimentary units were recorded. Unit 1 was recorded in one vibrocore (HAN_2001a_VC17A) where it reached a thickness of 0.43m and was not fully penetrated. This vibrocore was located in the Silver Pit, a large north-south trending tunnel valley, and the chalk in the vibrocore is noted to have a periglacial related sedimentary structure, probably an ice wedge cast on its surface.

5.1.64 Unit 2 was recorded in 69 of the vibrocores. Of these, 57 contained subunit 2a, the stiff massive gravelly clay, and 13 contained Unit 2b, a stratified silty and sandy clay. They occurred together in vibrocore ARC_1997_VC42 (Area 106) where Subunit 2a overlay Subunit 2b. The Unit was noted to outcrop on the seabed in 19 of the vibrocores.

5.1.65 Unit 3 was recorded in 80 of the vibrocores. Subunit 3a the coarser grained sands and gravels occurred in 25 of the cores and unit 3b within 54 of the vibrocores. Where these subunits occurred together in vibrocores ARC_1997_VC2, HAN_2001a_VC19, HAN_2002_VCX10 and HAN_2001b_VC10) Subunit 3b overlay Subunit 3a. There was no geophysics coverage in this area to establish the conditions in which the subunits occur together.

5.1.66 Subunit 3a, the coarser grained unit was noted to be most frequently identified within Area 493 whereas the finer grained Subunit 3b was more commonly identified within Areas 106, 197 and 400.

5.1.67 The finer grained Subunit 3b was noted to be very organic within vibrocore ARC_1997_VC27, and Subunit 3b contained lignite in vibrocore UMD_2002_VC4A between 1.62 to 1.75m below seabed. Subunit 3b within the base of the vibrocore UMD_2002_VC9 (aggregate area 197) was notably dark and fined grained although the 'slightly shelly' record indicated that it might relate to estuarine or lagoonal deposition. Another example of very fine grained sediment within this unit was the clay recorded in vibrocore UMD_2002_VC15.

5.1.68 Unit 4 was widespread throughout the area and was positively identified within 114 of the assessed vibrocores. It comprised shelly gravels and sand with the gravel fraction where recorded noted to comprise flint, basalt, quartz, chert and gneiss.

5.1.69 Three vibrocores were located within the Silver Pit (HAN_2001a_VC10, HAN_ 2001a_VC11, and HAN_2002_VCX1). The area has been mapped by the British Geological Survey as Upper Chalk bedrock (Unit 1) as proved in vibrocore HAN_2001a_VC17A.

5.1.70 HAN_2001a_VC11 achieved a recovery of 0.96m interpreted as Unit 4. HAN_ 2001a_VC10 was interpreted as containing Unit 4 overlying Unit 2b, and as such probably represents a presently unmapped outcrop of the Bolders Bank Formation.

5.1.71 HAN_2002_VCX1 was interpreted as containing Unit 4 overlying Unit 2a. At the base of the vibrocore, between 3.15 and 3.26m below seabed the vibrocore log description reads 'Soft grey (2.5Y 5/1) slightly gravelly slightly sandy CLAY (Gravel is fine to rounded to angular chalk, sand fraction is fine)' (Hanson 2001b). Whilst the grain size and inclusions are similar to other sediments allocated as Unit 2a, its

location, colour (grey rather than brown) and softness (soft rather than stiff) mean that is possible that this sediment may be periglacially weathered and disturbed by vibrocoring. It is also noted that the sediment may, like HAN_ 2001a_VC10 represents a presently unmapped outcrop of the Bolders Bank Formation. This vibrocore was notably very close to the edge of the Silver Pit which marks the mapped limit of the Bolders Bank Formation.

5.1.72 Within the central area only the vibrocores to the west in Area 197, 400 and 493 have associated geophysics data. In the northwest corner of Area 197, within the F15EZ, is a large broad shallow channel feature with the infill forming a bank feature up to 7m thick. This feature overlies till (Unit 2). The vibrocores (UMD_2008_46-56, 58 and 59) indicate that the bank feature generally comprises sands and gravels (Subunit 3a) which is overlain by a veneer of marine seabed sediments (Unit 4). The channel cuts into the underlying till formation which is variable in nature in this area, as indicated by VC57 (Subunit 2b) and VC55 (subunit 2a).

5.1.73 In the southwest corner of Area 493, within the F15EZ vibrocores UMD_2008_35-39 are all associated with a broad, channel feature in excess of 2km wide and 10m deep. The vibrocores indicate that the infill comprises sands and gravels (Subunit 3a) overlain by a veneer of marine seabed sediments (Unit 4).

5.1.74 In the central region of Area 197, within the F15EZ, UMD_2002_VC4-12 are associated with a shallow cut and fill feature where the fill has formed a bank over the cut. This feature is also observed on the MAREA data (7028-7031) as a large bank feature up to 6.7m high. The vibrocores indicate that the bank and fill comprises clays, silts and sands (Subunit 3b), overlying till (Subunit 2a). To the west of this feature UMD_2002_VC1 is associated with a shallow depression up to 3.5m deep infilled with Unit 3 (undifferentiated) sediments. An example of a bank feature (7031) is illustrated in **Figure 10**.

5.1.75 A cut and fill feature was identified in the REC data within the eastern region of Area 197 indicating further cut and fill features.

5.1.76 To the west of the aggregate areas further features of archaeological interest were identified on the geophysics data. Feature 7015 and 7016 are simple cut and fill features forming part of the same landsurface but have been separated by subsequent erosion. Both features are overlain by Holocene sediments forming banks. These bank structures are thought to be post-transgression features.

5.1.77 Feature 7018 and 7019 are two associated broad-scale cut and fill features with infill units of varying type. These features can not be extended beyond the limits of this single data line, however, small isolated cut and fill features were identified in the Humber REC data to the south of these features.

5.1.78 Feature 7014 and 7017 (simple cut and fills) are situated close to the present-day shoreline. The fill of 7014 has little structure but does show evidence of shallow gas blanking indicating some organic content towards the base of the fill. The fill of 7017 exhibits a series of faint dipping reflectors indicating some sediment structure. Both features are thought to have infilled prior to the last transgression, possibly associated with the development of the coastline.

Southern Area (West) (Figure 8)

5.1.79 A total of 27 vibrocores were assessed from Area 481/1 and 481/2, and Units 1, 2, 3 and 4 were positively identified. Many of the vibrocores, however, had sediment allocated to Unit 3/4.

5.1.80 Unit 1 was recorded in four of the vibrocores (UMD_2001_VC12, UMD_2001_VC13, UMD_2001_VC14 and UMD 2000_VC85). This was, relatively the highest proportion of cores to contain this unit within any of the areas. Vibrocore UMD_2001_VC12 contained evidence of possible periglacial weathering on its surface. Whilst difficult to interpret from the vibrocore photograph, it is possible that the top 1.1m (*c*. 1.42 to 2.52m below seabed) contains a solifluction structure which is evidence of seasonal freeze and thaw. The vibrocore log, however, records the inclusion of shell within this unit which may indicate reworking by marine rather than glacial processes. The unit was noted to outcrop on the seabed in vibrocore UMD_2000_VC85. The upper part of Unit 1 in UMD_2001_VC13 and UMD_2001_VC14 were also noted to be weathered.

5.1.81 Unit 2 was recorded in nine of the cores and was predominantly Subunit 2a which occurred in 6 of these. Subunit 2a was noted to outcrop on the seabed at location UMD_2001_VC8. The two subunits did not occur together in any of the vibrocores in this area.

5.1.82 Subunit 2b occurred in three of the vibrocores. Within vibrocore UMD_2001_VC7, (where it occurred between 0.23 and 1.08m below seabed) it was notably very sandy between 0.55 and 0.94m below seabed.

5.1.83 Unit 3 was recorded as Subunit 3b in one vibrocore only (UMD_2000_VC71). It is likely to exist more extensively within this area and is presently allocated to Unit 3/4.

5.1.84 Unit 4 occurred in nine vibrocores and was identified by correlating the vibrocore data with the geophysical data.

5.1.85 The dominant feature in this survey area is the southern extremes of the Silver Pit. The REC interpreted the central and eastern parts of the survey area as covered in glacial outwash deposits.

5.1.86 Eight features of archaeological interest were interpreted (7020-7027) within the MAREA dataset. The features included four simple cut and fill features (7020, 7023, 7024 and 7027), two depressions (7021 and 7022), one bank feature (7025) and one complex cut and fill feature (7026; **Figure 11**). All are situated on the eastern edge of the Silver Pit. The nature of the fill associated with features 7020-7022 is unknown as there are no vibrocore locations nearby. As such, it is difficult to ascertain if the fill comprises sands and gravels belonging to Unit 3 or if these features are infilled with till (Unit 2). If these features were proved to be infilled with till then there would be no archaeological potential.

5.1.87 Features 7023-7027, however, are thought to have some archaeological potential with fill likely comprising Unit 3 sediments. Features 7023-4 and 7026 lie within Area 481/2 and Feature 7027 lies within both Area 481/2 and 107 F15EZ.

Southern Area (East) (Figure 8)

5.1.88 The Southern Area (East) contained 10 vibrocores (UMD_2000_VC71-VC80a) which were assessed as part of this study and are all situated in the eastern area of

the East Dudgeon Reconnaissance survey area. The vibrocores are all situated in the eastern portion of the 1999 geophysical survey area and all but three (VC71, VC73b and VC79a) have associated geophysical coverage.

5.1.89 Within this eastern area the geophysics data generally indicates till (Unit 2) with a veneer of seabed sediments (sands and gravels; Unit 4). This surficial unit increases in thickness where associated with sandwaves, which are up to 10m high in places.

5.1.90 Within the vibrocores Units 2, 3 and 4 were identified. However, the recovery of the sediments was limited to 1.25m.

5.1.91 Unit 2 occurred in two of the vibrocores from this area where it was identified as Unit 2b (UMD_2000_VC74 and UMD_2000_VC75). Only a short section (0.1m) was recorded in vibrocore UMD_2000_VC75 where it outcropped on the seabed. The geophysics data at these locations indicates a veneer of seabed sediments over till.

5.1.92 Unit 3 was positively identified in one vibrocore only where it was represented by Subunit 3b within vibrocore UMD_2000_VC71. There was no geophysics coverage over this vibrocore to correlate the data.

5.1.93 With correlation of the vibrocore and geophysical data it has been possible to identify Unit 4 within cores UMD_2000_VC76a, UMD_2000_77a and UMD_2000_78, where sands recorded within the vibrocores are associated with sandwave features identified in the geophysical data assessment.

5.1.94 The geophysics data also indicated the presence of small isolated infilled cut and fill features are observed close to the surface which may comprise Unit 3. However, these features were not targeted by the vibrocores and as such the true nature of the fill is unknown.

5.1.95 To the west of the area, the sub-seabed sediments are primarily composed of till overlain by large sandwave features (up to 7m high). Possible cut and fill features are observed in the western and central areas. The nature of these fills is unknown, but the features may represent internal cuts within the till units. A large channel feature is observed in the central region and the initial cut is below the till and is interpreted as a Swarte Bank Channel infill overlain by till and Holocene sediment up to 7m thick.

5.1.96 Within the East Dudgeon geophysics survey area no features of archaeological interest were recorded in the REC project (Tappin *et al.* 2011). However, immediately to the east of the geophysics survey area a complex system of Holocene channels is observed extending over a distance of approximately 1.5km. It is possible that the small isolated cut and fill features observed in the survey area are associated with this channel complex.

Wider region

5.1.97 Generally, the units identified in this geophysics and geotechnical data assessment are similar to those identified throughout the MAREA Study Area, as identified in the Humber REC (Tappin *et al.* 2011). Features of archaeological interest identified in the REC include channel features identified by the geologists as Botney Cut Formation and features of potential archaeological interest including palaeo-channels, Holocene land surfaces and possible lacustrine features. Some of the Botney Cut channels coincide with channels of archaeological interest, although it should be noted that the geologists used legacy datasets and have as such,

interpreted additional occurrences of Botney Cut channel features that were not archaeologically assessed for the REC (Tappin *et al.* 2011), as illustrated in **Figures 5-8**.

Pre-Devensian (970,000-110,000 BP)

Overview

5.1.98 The initial hominin occupation and subsequent settlement of Britain and north-west Europe took place during the Quaternary period (1 million years ago-present), which is characterised by the recurrence of a series of glacial and interglacial cycles. During the pre-Devensian period (970,000-110,000 BP) the entire north-west European landscape was shaped, and re-shaped by a series of marine transgressions and regressions associated with fluctuating glacial and interglacial conditions. In the last 880,000 years at least 12 warm and cool cycles, of varying lengths, have been identified through analysis of the relative proportions of the Oxygen isotopes O^{16} and O^{18} in deep-sea sediments and ice-core records, known as Marine Isotope Stages (MIS) (Gaffney, Fitch and Smith 2009: 107).

5.1.99 During periods of glaciation, sea-water is frozen to form extensive ice sheets, resulting in the lowering of the sea level (glacio-eustacy). Glacial periods have repeatedly caused the exposure of vast areas of the North Sea basin as dry land. **Appendix X** provides an approximate indication of relative sea level variations in the southern North Sea during the last *c*. 970,000 years, in relation to MIS stages and approximate dates. Major archaeological periods and significant archaeological discoveries and events are shown to illustrate the relationship between these periods and the relative sea level stands.

5.1.100 There are many knowledge gaps in our understanding of the relative sea level history of the North Sea and the configuration of the coastline at any one time. As such, there is also only a limited understanding of the Pleistocene and Holocene evolution of the south-western North Sea (Shennan *et al.* 2000: 300).

5.1.101 At least six distinct temperature phases have been identified within the **Cromerian** complex (MIS 19-13, *c*. 787,000-478,000 BP) (Preece 2008). During its warmer phases, the Cromerian has been described as having a climate similar to that of the present day Mediterranean, however, this was interspersed by colder phases during MIS 16 and MIS 14 During the latter part of the Cromerian Complex, during a glacioeustatic low sea level stand, the southern North Sea was predominantly occupied by a huge delta complex. (Wymer and Robins 2006: 464-466). The palaeo-Yorkshire River is thought to have flowed eastwards across the MAREA Study Area from the Humber Estuary during the Cromerian Complex (www.qpg.geog.cam.ac.uk/research/projects/nweurorivers/cromerian.html).

5.1.102 The increasing cold and the advance of the ice sheets during the **Anglian** glacial stage (MIS 12, *c*. 478,000-423,000 BP) transformed most of Britain into an ice-covered or peri-glacial landscape, connected to the European mainland. The glacial processes during this phase transported sediments over large distances and changed the course of major rivers. Movements of ice and glaciers caused massive reworking of previous geological deposits and had a dramatic effect on the landscape (Campbell and Bowen 1989: 15). The Anglian glaciation was the most extensive of those in the Quaternary period, and in those areas covered by the ice sheet, most evidence of pre-Anglian hominin occupation has been destroyed, leaving only stone artefacts in secondary, reworked deposits. The identification of a pre-Anglian (Cromerian Complex) channel during research for the Outer Thames

Estuary REC is interpreted as lying beneath the Anglian ice margin (Emu *et al.* 2009) and implies that not all pre-existing landscape features - or archaeological deposits - were completely destroyed and scattered by the ice sheet as previously thought (Flemming 2002: 6).

5.1.103 The land between Britain and Continental Europe was probably first breached during the late Anglian glaciation, after which Britain is likely to have become a peninsula or island during the Hoxnian interstadial (MIS 11, *c*. 423,000-380,000 BP) (AHOB: http://www.ahobproject.org/Downloads/Chart.pdf).

5.1.104 The extent of the **Wolstonian** glaciation (MIS 10 to 6, *c*. 380,000-130,000 BP) remains a contentious issue, although most estimations show the extent of ice covering Lincolnshire and the Midlands (Wymer 1999: 18, http://www.qpg.geog.cam.ac.uk/research/projects/nweurorivers/saaliandrenthe.html) suggesting much of the MAREA Study Area would have been beneath the ice sheet at this time.

5.1.105 It is likely that Britain remained connected to northern Europe until the **Aveley** interglacial (OIS 7, *c*. 245,000 BP), when raised beach deposits suggest it became an island again. The most favourable conditions for occupation would have existed during cooler periods, when the connection to northern Europe was still in place, but ice sheets were not so expansive i.e. the transitional periods between glacials and interglacials (Ashton and Lewis 2002: 393).

Pre-Anglian (*c*. 970,000-478,000 BP)

5.1.106 During this period (MIS 25-13) there were at least eight temperate phases and, with the exception of MIS 16 and MIS 14, which are thought to represent colder phases (Wymer and Robins 2006: 464-466), this period has been described as having a warm climate, similar to that of the present day Mediterranean. The temperate phases are likely to have been favourable for hominin activity in Britain. Sea level varied throughout the period in relation to the extent of ice sheets, falling to approximately 90m below its current level during MIS 16. As such, there are periods between the extremes of sea level and climate when the MAREA Study Area would have supported human inhabitation.

5.1.107 Very few artefacts of Lower and Middle Palaeolithic date have been found in northern Britain, with the most northerly found at Whitby, but most located in the Midlands. Recent research has located a number of artefacts in the Lincolnshire Wolds, bringing the total number of artefacts from this period to 23 in this county (Bee 2005), whilst two Middle Palaeolithic artefacts have been found at Sewerby, just south of Flamborough Head (NRHE 1508785 and 910679). Just two artefacts have been found of Lower and Middle Palaeolithic date within the MAREA Study Area.

5.1.108 The earliest evidence for hominin occupation of Britain comes from Happisburgh, Norfolk to the south of the MAREA Study Area. The site, Happisburgh 3, has extended the timescale of hominin activity back to at least 780,000 BP (potentially up to almost 1 million years BP) (Parfitt *et al*. 2010; Roberts and Grün 2010). Lower Palaeolithic flint tools, mammal bones and palaeoenvironmental records from the site indicate that Happisburgh was occupied during relatively colder conditions than previously thought for hominin groups, on the margins of high latitude boreal forests. The site is the furthest north of all known sites in Eurasia and is therefore of international importance (Parfitt *et al*. 2010).

5.1.109 Evidence for animals including mammoth, horse, bison, giant elk and sturgeon fish have been found at Happisburgh whilst butchery marks on a number of bones indicate that these were a food source for early hominins living a the site (Parfitt *et al.* 2010).

5.1.110 Fossil plants, beetles and pollen remains recovered from sediments at Happisburgh have enabled the reconstruction of the climate and environment during this period of occupation. The remains suggest a large and slow-flowing river with freshwater pools and marshes, whilst salt marsh and coast was nearby. The surrounding flood-plain was dominated by grasses whilst pine cones and pollen suggest the site was on the edge of a conifer dominated boreal forest (www.nhm.ac.uk/about-us/news/2010/july/ancient-britons-were-earliest-northern-europeans72335.html).

5.1.111 Happisburgh pre-dates the previous estimate of *c*. 720,000 BP for the first occupation of Britain, which was based on finds at Pakefield, near Lowestoft, Suffolk (Parfitt *et al.* 2005). Happisburgh and Pakefield provide the best information and evidence for early hominin occupation and activity in the vicinity of the MAREA Study Area, and although outside of the Study Area, are discussed briefly below.

5.1.112 The flint artefacts found at Pakefield, Suffolk (Parfitt *et al.* 2005: 1008), were located in the Cromer Forest-bed Formation, an extensive deposit of organic mud attributed to MIS 19-17. The presence of microdebitage within the Pakefield assemblage indicates that flint knapping was undertaken at the site, with the material used sourced locally from the banks of the channel (Parfitt 2008). Fossils, plant and beetle remains from Pakefield suggest the floodplain would have provided a resource-rich environment for early humans, whilst the flint-rich river gravels provided raw materials for tool manufacture (Parfitt *et al.* 2005).

5.1.113 At Happisburgh, Lower Palaeolithic deposits within the Cromer Forest-bed Formation are considered to be associated with the Ancaster palaeoriver, which was infilled by the Happisburgh Formation, deposited during the Happisburgh glaciation, thought to date to MIS 16. The Happisburgh glaciation was the first Middle Pleistocene glaciation of lowland eastern England and the adjacent margins of the North Sea Basin (Lee *et al.* 2004). The Ancaster River drained from northern England across The Wash and transported sediments to northern East Anglia and the southern North Sea delta. (Parfitt *et al.* 2005; Preece and Parfitt 2008).

5.1.114 The Cromer Forest-bed Formation and associated Bytham River sands and gravels are partially equivalent of the Yarmouth Roads Formation offshore. The Yarmouth Roads Formation has been dated approximately 2.3MA-480,000BP, although has not been positively identified within the MAREA Study Area. (Cameron *et al.* 1992). Sediments to the north of the MAREA Study Area are of Cromerian Complex age (*c*. 790,000-480,000 BP) (Cameron *et al.* 1992: 107) and pollen analysis of a core in the Dutch Sector indicates that the deposition of the sediments at a similar latitude occurred during the Cromerian III Interglacial, around 720,000 to 690,000 BP (Zagwijn 1983). Deposition of this formation occurred through to the end of the Cromerian Complex with a basin-wide marine transgression progressing south to around 52° latitude by 400,000 BP. It was during this transgression phase that the Cromer Forest-bed Formation was deposited. There may be remnants offshore of these sediments, although it has been suggested that the uppermost parts of the Yarmouth Roads Formation have probably been eroded (Cameron *et al.* 1992: 108).

5.1.115 It is possible that Lower Palaeolithic material may be preserved *in situ* within late Cromerian Yarmouth Road deposits, if they survived within the MAREA Study Area. The potential would be greatest where later Yarmouth Roads Formation deposits

are associated with features (river valleys, shorelines etc.) cut into earlier Pleistocene or pre-Pleistocene formations.

Anglian (*c*. 478,000-423-000 BP; MIS 12)

5.1.116 The Anglian glaciation was the most extensive of the Pleistocene glaciations, with ice sheets reaching as far south as the north Cornwall coast and the Thames Valley (Wymer 1999: 17). The extensive Anglian ice sheets resulted in a fall in sea level thought to be the lowest recorded around the British Isles and estimated at 130m below the present level. During this phase the MAREA Study Area would have been covered with ice (Allen and Sturdy 1980: 2).

5.1.117 Extensive remodelling of the landscape took place during the Anglian glaciation, with old river courses such as the Bytham River in East Anglia ceasing to exist. The Thames and its tributaries were diverted southwards and a large ice-dammed lake developed in the southern North Sea directly to the south of the ice front, into which the Thames and other major European rivers, such as the Rhine, flowed (Gibbard 1988). It is unclear what the impact of the glaciation was on the palaeo-Yorkshire River.

5.1.118 The Swarte Bank Formation dates to the Anglian glaciation, and fills the array of valleys described above. The southern extent of the valleys is thought to reflect the southern extent of the ice sheet in the MAREA Study Area, and as such it is unlikely that hominins would be present in the MAREA Study Area at this time.

Hoxnian (423,000-380,000 BP; MIS 11)

5.1.119 The Hoxnian interglacial was a temperate phase, which followed the Anglian glaciation. During the Hoxnian period, Britain is likely to have become a peninsula of north-western Europe. Analyses of marine sediments in the MAREA Study Area suggest the region would have been a low energy marine embayment (Cameron 1992: 111).

5.1.120 Nationally significant sites from this period include the lake deposits at Hoxne (after which the Hoxnian period is named) which contained a number of Lower Palaeolithic artefacts (Wymer 1999: 156-159), and a fragment of skull from Swanscombe, Kent (Wymer 1999: 74-79). No sites dating to the Hoxnian have been reported within the MAREA Study Area.

5.1.121 The distribution of known sites within the wider region suggests that river valleys and lakeside situations were favoured for settlement during this period (Darvill 1987: 31). It is also likely that coastal and estuarine environments would have equally been exploited by humans during the Hoxnian. Early humans would have made use of the full range of resources that such water-side environments provide, such as a diversity of animal, plant and lithic resources, as well as many being major routeways through the landscape (Ashton *et al.* 2006). By exploiting river valleys, early humans were able to make use of their plentiful resources, whilst the valleys themselves operated as open corridors through the otherwise dense forest, having good accessibility and being easily navigable, as well as being prominent landscape features which were simple to relocate.

5.1.122 Offshore, the Egmond Ground and Sand Hole Formations sediments date to the Hoxnian period (Cameron *et al.* 1992: 111) and represent a transgression sequence associated with the development of a shallow sea. It is thought that there may be potential for artefacts to be preserved within these transgressive sediments and,

where Egmond Ground Formation forms the infill to channel deposits, there is the possibility of derived artefacts.

Wolstonian (380,000-130,000 BP; MIS 10-6)

5.1.123 The Wolstonian comprised three cold stages (MIS 10, 8 and 6) interspersed with two temperate phases (MIS 9 and 7). The extent of the ice sheets during the cold stages is unclear and the focus of continuing research. It has been tentatively suggested that the ice margin ran across Lincolnshire and the Midlands (Wymer 1999: 18), with its limits extending from the Wash eastwards and then north before heading south and west. Another view suggests British ice sheets joined with the Scandinavian ice across the northern North Sea, leaving the sea floor south of an approximate line from Southwold to Scheveningen outside the limits of the ice front (Flemming 2002: 8). Gibbard (2007) has proposed that the Wolstonian ice sheet dammed a lake in the southern North Sea, with the sea level close to present levels and the Rhine and Meuse rivers forced to flow to the southwest into this ice-marginal lake. Cameron *et al*. (1992: 112) suggests the lack of Saalian period glacial sediments (*c*. 250,000-150,000 BP) in the general southern North Sea region implies that the Study Area was not covered by an ice sheet during this period, but may have been partly flooded and subject to periglacial conditions. During Wolstonian cold stages sea levels are estimated to have been up to approximately 120m below their current level.

5.1.124 Whilst the picture for this period is quite mixed, the suggestions are that the MAREA Study Study Area was on the edge of the glacial ice sheet and would have been connected to northern Europe by dry land. The landscape is also likely to have included many rivers and possibly also river estuaries, glacial lakes or shallow seas. In this scenario, the periodic terrestrial landscape may have been dominated by cold tundra and open steppe (Barton 2005: 26).

5.1.125 Within the Wolstonian, two temperate phases have been identified-the Purfleet interglacial (339,000-303,000 BP; MIS 9) and the Aveley interglacial (245,000-186,000 BP; MIS 7). During these phases it is thought that sea level was at similar levels to today and that during these times Britain was an island. Analysis of deposits assigned to the Purfleet interglacial indicates a range of habitats including riparian, woodland and grassland environments with climatic conditions that are thought to be warmer than the present day (Bridgland and D'Olier 1995: 178).

5.1.126 Traditionally, the onset of the Avelely interglacial is associated with the transition from the Lower to the Middle Palaeolithic, also defined by a change in tool technologies and the first appearance of Levallois techniques. One artefact has been reported as dating to this period, a flint scraper similar to a Levallois artefact found in the Midlands.

5.1.127 Sediments assigned to the Wolstonian period include the Eem and Brown Bank Formations, neither of which has been positively identified within the MAREA Study Area.

Ipswichian (*c*. 130,000-110,000 BP, MIS 5e)

5.1.128 For the purposes of this report the Ipswichian Interglacial is referred to as dating to *c*. 130,000-110,000 BP, MIS 5e only. Certain authors integrate MIS 5 a-d with the interglacial and mark the start of the Devensian Glaciation at MIS 4 (75,000-60,000 BP), as it is at this point in the faunal record that animals are cold adapted (Currant

and Jacobi 1997). However, it is more common for MIS 5d to be used as the onset of the Devensian, after the peak of the interglacial (Wymer 1999; Kukla *et al.* 2002).

5.1.129 The onset of MIS 5e was marked by an abrupt climatic transition from the Wolstonian glaciation to a climate that was similar to that of today, possibly even warmer, with hot summers and mild winters (Barton 2005). The southern North Sea was submerged during this time, with the sea level 5-6m higher than it is today. There is no evidence of Ipswichian marine sediments in the MAREA Study Area.

5.1.130 Faunal remains from the Ipswichian period, discovered at Trafalgar Square, indicate a climate suitable for large mammals such as lions, hippopotami, straight-tusked elephants, rhinoceri, giant deer, red deer, fallow deer, aurochs and bison along the Thames floodplain (Wymer 1999: 33) and to the north of the Study Area in Yorkshire within the important Sewerby raised beach deposits (Rawson 1992). Evidence from England suggests vegetation comprising predominantly mixed oak forests (Allen and Sturdy 1980: 3) within the general vicinity of the MAREA Study Area.

5.1.131 Skeletal remains of both Neanderthals and modern humans have been found on the Continent dating to the Ipswichian, however no hominin remains have been discovered in Britain from this period, and few sites have been fully excavated with artefacts in a primary context (Wymer 1999: 33; Ashton and Lewis 2002). If finds, securely dated to this period were found, they would be of great importance.

Archaeological Potential of the MAREA Study Area (*c*. 970,000 BP-110,000 BP)

5.1.132 The pre-Devensian period saw a number of extensive glaciations interspersed by warmer inter-glacial periods which provided habitable landscapes across Britain for hominins. Stone tools are the primary archaeological signature of hominin activity from this period, often found in secondary contexts as a result of sediment redeposition in subsequent glacial periods. Archaeological evidence for hominin settlement of the northern part of England is sparse, however the small number of finds do indicate occupation far to the north of the MAREA Study Area.

5.1.133 Very few artefacts from the pre-Devensian period have been located in Lincolnshire or Humberside, and just two flint artefacts have been reported from within the MAREA Study Area. In contrast, the north Norfolk coast has produced internationally important sites dating to this period. No anthropogenic artefacts have been identified within current aggregate dredging areas or proposed aggregate licence areas. A small number of animal remains have been recovered both on the foreshore within the MAREA Study Area and from aggregate dredging areas which could date to this period.

5.1.134 Given the small number of anthropogenic artefacts recovered in the Study Area, the potential for further finds is low however, the recovery of animal remains highlights that the MAREA Study Area was dry land and the potential does exist for archaeological finds to be discovered, and for the survival of deposits which would provide important environmental information on the Study Area during the first colonisation of Britain. Any archaeological remains dating to this period would be of great archaeological importance.

5.2 DEVENSIAN TO LAST GLACIAL MAXIMUM (LGM) (*C*. 110,000 BP-18,000 BP)

5.2.1 The Devensian glaciation (110,000-13,500 BP) was the last glacial stage to occur before the present climatic amelioration. During MIS 5a-d (*c*. 110,000-70,000 BP) there was a general deterioration in climate characterised by interstadials (5c and

5a) and stadials (5d and 5b). Periglacial conditions prevailed during the stadials, but pollen indicates this did not entirely limit tree growth across Britain (Barton 2005).

5.2.2 The Devensian is represented geologically by the deposition of glacial gravels on land, whilst offshore, early Devensian sediments are ascribed to the Brown Bank Formation. This formation was deposited during the marine regression at the onset of the glacial stage, and records the region of the southern North Sea as a shallow, restricted brackish lagoon (Cameron 1992: 113). Brown Bank deposits have not been identified within the MAREA Study Area.

5.2.3 MIS 4 (*c*. 70,000-60,000 BP) marked the onset of very cold conditions in Europe, with the advancement of the Scandinavian ice sheet, and although most of southern Britain would have remained ice free, it seems that it was uninhabited until at least 67,000 BP, at the start of MIS 3 (Wymer 1999: 34; Boismier 2003).

5.2.4 The late Middle Palaeolithic (MIS 3 *c*. 60,000-25,000 BP), is typified by a sharply oscillating climate in which short cooling episodes and milder climatic events are recorded. In Britain, cool dry conditions enabled the development of rich arid grasslands (mammoth steppe) which supported large mammals such as mammoth, woolly rhino, lion, bear, etc. The migration of these animals probably also coincided with the re-population of Britain by Neanderthals. No archaeological sites or artefacts from this period have been identified within the MAREA Study Area; however animal remains from this period have been recovered from aggregate dredging areas within the MAREA Study Area (**Table 5**). For example, a mammoth tusk recovered from Licence Area 408 has recently been radiocarbon dated to before the last glacial maximum some 45,000 years old (Allen *et al*. 2008). In contrast, a number of sites in Norfolk (Boismier 2003) suggest that Neanderthal populations were active in the central/southern part of Britain to the immediate south of the MAREA Study Area.

5.2.5 Evidence for the first anatomically modern humans in Britain is dated to around 31,000 years old (Barton 2005: 28) and comes from the Gower Peninsula, South Wales. It is from this period that the Mammoth tusk recovered from Area 408 (mentioned above) has been dated, demonstrating the presence of arid grasslands within the Study Area at this time.

5.2.6 The Dimlington Stadial (*c*. 20,000-13,500 BP, MIS 2) marks the climax of the Devensian Glacial period and the maximum extent of ice cover. It is thought that Britain was again unoccupied by hominins from *c*. 22,000 BP due to the extensive ice cover. The ice sheet covering Britain did not join the Scandinavian ice sheet across the North Sea Basin, however, the lowered sea level created a wide plain affected by permafrost over much of the southern and central North Sea (Woodcock and Strachan 2000). The southern edge of the ice sheet is thought to have extended in a line from the Severn to the Wash (Flemming 2002: 7), putting most of the MAREA Study Area entirely beneath ice during the LGM.

5.2.7 Having reached its maximum at approximately *c*. 18,000 BP, the ice sheet of the Dimlington Stadial retreated. The MAREA Study Area remained exposed as dry land, and is not thought to have been re-colonised until the mid-Upper Palaeolithic, around 12,500 BP, during the Windermere Interstadial.

Archaeological Potential of the MAREA Study Area (*c*. 110,000 BP-18,000 BP)

5.2.8 The UK's terrestrial archaeological record suggests that Britain was largely uninhabited between *c*. 180,000-67,000 BP, although a number of sites are the

subject of continuing research by the Ancient Human Occupation of Britain project (www.ahobproject.org). The possibility of a human presence throughout the Devensian prior to the LGM should not be disregarded within the MAREA Study Area.

5.2.9 The MAREA Study Area would have been on the margins of the ice front during this phase, exposing it as a peri-glacial landscape. This, together with the proven presence of protein-rich foods (animals) within the rivers valleys that ran through the region, suggests that the MAREA Study Area would have provided a landscape suitable for hunting, but possibly not for sustained settlement (Wymer 1985: 11).

5.2.10 The NRHE records only two artefacts dating to the Upper Palaeolithic from all of Humberside and 3 from Lincolnshire. No archaeological sites are known within the MAREA Study Area from the Upper Palaeolithic. The lack of sites and finds from this period may be due to a low population density across the region, although it is possible that the dearth of Upper Palaeolithic sites could be due to the lack of cave sites which have proved to be so important for the preservation of Upper Palaeolithic sites in other areas of Britain (Austin 1997: 9).

5.2.11 There have been 3 reported finds of prehistoric material reported as part of the BMAPA protocol within the offshore Humber aggregate dredging areas (**Table 5**, **Figure 4**), all of which were animal remains. One Mammoth tusk was been reported from Area 408, dated to *c*. 45,000 BP, whilst the large mammal/possible hippopotamus bone from Area 102/251 could date to *c*. 130,000-80,000 BP. These finds illustrate that the MAREA Study Area was home to animals which could have been food sources for hominin groups during this period. The large number of handaxes discovered off East Anglia indicates that archaeological deposits of the Devensian and pre-Devensian period can survive offshore. Any archaeological material discovered offshore from this period would be of high archaeological importance.

5.2.12 As the glacial maximum approached, the conditions became too cold to be favourable for human exploitation, rendering the MAREA Study Area region uninhabitable between *c*. 22,000-13,000 BP.

5.2.13 During the geophysical assessment a Devensian diamicton or till (Bolders Bank Formation) was observed across the Study Area (Unit 2). Whilst its deposition has occurred during the Upper Palaeolithic period, its mode of deposition (subglacial) and extremely cold conditions associated with it mean that it is unlikely to contain any *in situ* archaeological material. There is however the possibility that *in situ* archaeological material may exist upon this unit, especially where for example soil formation has occurred.

5.3 POST LGM AND EARLY HOLOCENE (18,000-6,000 BP)

5.3.1 As the climate warmed and the glaciers began their retreat, sea level began to rise from a eustatic low of *c*. 120m below present day levels during the glacial maximum (Cameron *et al.* 1992).

5.3.2 At approximately 12,000 BP, during the Windermere Interstadial (13,500-11,000 BP) Britain was re-colonised by humans. The Windermere Interstadial provided a slightly warmer climate and a tundra-like landscape in the Humber region, containing a mixture of herbaceous plants and dwarf shrubs such as *Juniperus communis* (juniper), *Betula nana* (dwarf birch) and *Salix* (willow) (Tappin, Dove *et al.* 2009:

101). Light birch woodland and grasslands developed in much of the north-east of England, favourable for human occupation and exploitation.

5.3.3 During the following cold period, known as the Loch Lomond Stadial (11,000-10,000 BP), glaciers formed once again in the Scottish Highlands and colder conditions returned to Britain, until the climate finally ameliorated with the onset of the Holocene period, approximately *c*. 10,000 BP.

5.3.4 By 10,000 years ago the regional sea levels were approximately 50m below present day level. The seabed within the MAREA Study Area lies at depths around 20 m and as such would have been dry land during this period, some distance from the coast.

5.3.5 The Pre-Boreal period (10,000-9500 BP), which equates with the start of the Early Mesolithic period in Britain, saw a marked improvement in climate, accompanied by the development of a forest environment containing trees such as *Pinus sylvestris* (Scots' pine), *Betula* (birch) and *Corylus* (hazel) within the general vicinity of the MAREA Study Area (Allen and Sturdy 1980: 4; Tappin, Dove *et al.* 2009: 101).

5.3.6 During the Early Boreal (*c*. 9500BP) the eastern section of the MAREA Study Area would have been situated on the western edge of a tidal channel separating it from the higher land of the Dogger Bank to the north. The period between *c*. 10,000 and 4000 BP saw incredibly fast sea level rises. Sea level rose by approximately 35m to around 15m below current levels by *c*. 7500 BP (Shennan *et al.* 2000). This rapid rise in sea level would have first encroached up river valleys but quickly flooded the relatively flat parts of the MAREA Study Area. Around 9500 BP the climate is thought to have been similar to the present day, with a range of flora returning to Britain. The absence of larger herbivores, possibly contributed to by hunting by hominins during previous periods of occupation, allowed for the formation of forests across the country. Similarly, climate change, loss of habitat, and changes in migration patterns may all have played a part.

5.3.7 The Atlantic period (7200-5500 BP) saw the end of the Late Mesolithic period and the start of the Neolithic in Britain. During this stage, the landscape within lowland Britain developed predominantly into mixed oak forest, comprising of alder, oak, elm, and lime (Allen and Sturdy 1980: 4; Austin 1997: 10; Tappin, Dove *et al.* 2009: 102).

5.3.8 Climate warming and melting glaciers during the Atlantic period created a rapid rise in sea level, of up to 30mm per year. By *c*. 6200 BP, when sea level was still approximately 7m below current, the Holderness landscape consisted of flooded marshlands with numerous small lakes, whilst submerged forests located off Owthorne and Cleethorpes could date to this period, indicating that the lower lying/ shallower parts of the MAREA Study Area were still dry land. The submerged forest reported on the Withernsea foreshore comprised oak and hazel. When the English Channel flooded, around 5000 BP, Britain became an island for the last time.

5.4 ARCHAEOLOGICAL POTENTIAL OF THE MAREA STUDY AREA (18,000-6,000 BP)

5.4.1 It was not until *c*. 13,500 BP, during the Late Upper Palaeolithic that the warming stages of the Windermere Interstadial (13,500-11,000 BP) provided a climate which was conducive to human re-occupation and exploitation of Britain. During this period Britain is thought to have been slowly re-colonised by modern humans from the Continent, and this is likely to have included parts of the southern North Sea and the MAREA Study Area. The discoveries of butchered or worked animal bones trawled from Dogger Bank certainly support this contention (Coles 1998: 60). Furthermore

flint and bone artefacts have also been trawled up around Brown Ridge and Dogger Bank (Louwe Koojmans 1970; Verhart 1995; Flemming 2002), indicating the likely presence of archaeological sites on the seabed in these regions.

5.4.2 Recent research into the landscape characteristics of the Dogger Bank, to the north-east of the Study Area, has revealed a complex pattern of landscape features dating to the early Holocene (Gaffney, Fitch and Smith 2009). Significant features identified include large palaeochannels draining into an estuary at Outer Silver Pit, a massive salt marsh and a lake. These features indicate the presence of productive coastal environments favoured by Mesolithic communities (*ibid*: 93). The Doggerland region has been characterised as a massive plain dominated by rivers, marshes and coastlines, which would have been inhabited by a variety of animals, birds, marine life and plants. These resources would have varied as the climate changed in the post-glacial period, but all would have provided suitable resources for Mesolithic communities (*ibid*: 100). The findings from this research highlight the suitability of the offshore region for occupation during the early Holocene and the potential for preservation of archaeologically important deposits and finds.

5.4.3 No records dated to the Upper Palaeolithic have been recorded within the MAREA Study Area. Although evidence for the presence of people in the MAREA Study Area during the Upper Palaeolithic region is scarce, this dearth of evidence should not be taken to imply a lack of human activity during this period. Given a landscape with access to major river valleys and a burgeoning resource of plants and animals, it is highly likely that Upper Palaeolithic human groups were present within the vicinity of the MAREA Study Area.

5.4.4 The eventual end of the ice age at *c*. 10,000 BP was presaged by at least two short-lived returns to cold conditions, including the Loch Lomond Stadial (11,000-10,000 BP), which may have interrupted human occupation, leading to the lack of continuity in the British archaeological record for the transition from the final Upper Palaeolithic to the Mesolithic (Wenban-Smith 2002).

5.4.5 The advent of the Mesolithic (*c*. 10,000-5500 BP) was probably not a change of population, but a technological manifestation of the adoption of new means of hunting in the new, wooded and watery post-glacial environment (*ibid*.).

5.4.6 Early Mesolithic sites and find spots are often found adjacent to wetlands and estuaries, indicating a preference by these communities for landscapes in which they could exploit marine resources. The presence of the Humber River flowing through the MAREA Study Area, with the vegetation and fauna this would attract, would have also created a landscape attractive for human occupation.

5.4.7 Terrestrial data for Mesolithic sites recorded in the NRHE and regional HERs (**Figure 4** records a total of 12 sites with dated Mesolithic material within the onshore part of the MAREA Study Area, including one lakeside settlement site and an extensive flint scatter. The lakeside settlement at Sands-le-Mere was identified in the late 19th century however the recent Yorkshire and Lincolnshire Rapid Coastal Zone Assessment (RCZA) suggests that without confirmation by further assessment and scientific dating, the settlement is more likely to be of Neolithic/ Bronze Age date (Brigham, Buglass and George 2008: 96). Peat found on the foreshore at Sands le Mere was dated to 2000BP, the suggested date of formation for the peat (*ibid*: 97).

5.4.8 By the Late Mesolithic period, brackish conditions would have begun to occur in the river estuaries of the MAREA Study Area and the low-lying ground would have been

subject to periodic flooding and the generation of marshland. Mesolithic occupation sites within the offshore MAREA Study Area are possible; however the rapidly rising sea level would have progressively forced people further inland, making long term settlement unlikely. The retreating communities may, however have continued to have exploited the coastal areas and marine resources of the newly formed marshes throughout the period.

5.4.9 The coastline would have been further to the east in the Mesolithic period, and the steady rise in sea level at this time may have subjected coastal margins to periodic flooding and the consequent generation of marsh land, providing a landscape preferable to Mesolithic communities for exploitation. Terrestrial sites, such as that at Sand-Le-Mere, East Riding of Yorkshire, highlight the potential for additional sites dating to this period in wetland areas which now lie submerged within the offshore MAREA Study Area. The Mesolithic sites and findspots along this stretch of the coastline are relatively few in relation to the suggested volume of human activity in the region, and as such should be viewed as a bare minimum baseline of activity.

5.4.10 Units 3 and 4 (and 3/4) are of archaeological interest during the post-glacial period as they have the potential to contain *in situ* and reworked prehistoric materials, respectively. All the features of archaeological interest identified in the geophysics data (**Table 7**, **Appendix V**, **Figures 5-8**) refer to features cut into or overlying the till unit (Unit 2) and are associated with Unit 3 sediments, as observed in the vibrocores. The complex cut and fill features are predominantly associated with channels cut as the last glacier retreated (MIS 2) and are possibly infilled with Botney Cut Formation sediments, at least in part. These channels are infilled by a number of different fill units, indicating changing conditions and flow regimes as the channel developed and then finally infilled. Where observed in the vibrocores, the upper sediments of this infill can comprise sands and gravels (Unit 3a) or finer-grained sediments (Unit 3b). A number of vibrocores contained what appeared to be Subunit 2b (Bolders Bank Formation) but were notably softer and/or contained molluscan remains. It is possible that this related to the Botney Cut Formation. The Botney Cut Formation comprises a network of channel features thought to have been cut during the late Devensian (OIS 2) and subsequently infilled with 'soft to stiff, laminated, sporadically pebbly glaciolacustrine and glaciomarine muds, commonly with the same distinctive reddish brown tints as the Bolders Bank Formation' (Cameron *et al.* 1992).

5.5 EARLY PREHISTORIC ARCHAEOLOGY: SUMMARY

5.5.1 Due to the repeated action of glacial erosion during the last 1 million years there is a clear bias in the preservation of post-glacial, Holocene palaeolandscapes in the Humber region (Gaffney *et al.* 2007, Fitch *et al.* 2009, Tappin *et al*. 2011). Large scale palaeolandscape reconstructions have identified terrestrial sediments of Mesolithic date (Tappin *et al.* 2011) which are of considerable archaeological interest. There is some potential for the survival of sediments of Palaeolithic date in areas where Devensian glacial activity has not eroded earlier sedimentary deposits, such as the Botney Cut Formation. This Formation has, however, been assessed as likely to only contain derived artefacts in secondary contexts (Tappin *et al.* 2011). There have been several finds of early prehistoric date reported in the region through the BMAPA protocol, including a mammoth tusk and Hippopotamus bone, both of Middle Palaeolithic dates.

5.5.2 The rarity of Palaeolithic material means that any *in situ* material will have national importance. Even derived artefacts are important and can provide unique information on past human activity and distributions (Hosfield and Chambers 2004).

Similarly, any archaeological material of Mesolithic date is likely to be of national importance due to its rarity offshore. Finds reported under the TCE/BMAPA/EH protocol are especially important as they provide additional information which assists with the development of the most effective and sustainable approach to the management of underwater cultural heritage and practicable mitigation measures.

6 ERODED COASTAL ARCHAEOLOGY

6.1 INTRODUCTION

6.1.1 The Holderness coastline, in the north of the MAREA Study Area, is the fastest eroding coastline in Europe with an average loss of 2m per year. The low coastal cliffs are formed of unconsolidated glacial till, which is easily eroded by wave action as landslides. The coastal beaches are narrow and overlying sand is thin providing minimal protection from waves. In some areas the seabed drops off steeply allowing the full force of waves from the North Sea to hit the beaches and cliffs. Sand from the eroding tills is mobile and accumulates at the Humber estuary, which formed Spurn Head in the 16th century (Sistermans and Niewenhuis 2007).

6.1.2 The Lincolnshire coastline is underlain by glacial tills; however, it is almost completely covered by more recent sediments. Prior to the medieval period, the coastline was an extensive wetland protected by offshore sand and gravel banks. These offshore banks were breached and eroded by severe storms around the 13th century exposing some areas to wave action and erosion (www.naturalengland.org.uk/ourwork/conservation/geodiversity/englands/counties/area_ID40.aspx).

6.1.3 The coastline of the MAREA Study Area has been subjected to significant historically recorded erosion with estimates of a strip of land between 2km and 5km wide lost since the Roman period (Sheppard 1912; Brigham, Buglass and George 2008: 22). It is estimated that between 16 and 22 villages or towns have been lost to the sea, within the northern part of the MAREA Study Area since the Domesday survey in 1086 (**Figure 12**) (Sheppard 1912; www.hidden-holderness.org.uk; Brigham, Buglass and George 2008: 102). The RCZA for Yorkshire and Lincolnshire highlighted that in addition to the loss of documented medieval villages, roads and churches, many of the World War II (WWII) beach defences have also been lost due to coastal erosion.

6.1.4 Recent work at Dunwich has demonstrated that monumental structures, primarily churches and monastic buildings, can survive the process of cliff collapse and submergence in shallow water. Here geophysical surveys and ground-truthing by divers identified individual pieces of worked stone and larger collections of masonry which could be attributed to specific historically recorded buildings (Sear *et al.* 2010). As such, this section characterises the potential for terrestrial archaeological remains, including perhaps a very small chance of human skeletal remains, to be found underwater within the MAREA Study Area.

6.2 LATER PREHISTORIC (NEOLITHIC-IRON AGE)

6.2.1 The majority of the NRHE and HER records for Neolithic activity within the MAREA Study Area comes from isolated finds of stone axes, a number of which were found on the foreshore and are thought to have come from eroding cliff deposits (Brigham, Buglass and George 2008: 106). The presence and recovery of these finds from the foreshore illustrates the potential for this type of object to survive within seabed deposits. More substantial evidence for occupation and exploitation of the area during the Neolithic comes from a settlement site south of Easington and a henge monument identified eroding out of the foreshore at Easington, whilst it is thought that the stone axes found on the foreshore came from eroding occupation deposits (Brigham, Buglass and George 2008: 106).

6.2.2 A number of Bronze Age barrows and occupation sites are known within the MAREA Study Area, in addition to a number of isolated finds and three boats. Many of the sites and finds were located on the foreshore, or exposed in eroding cliff sections. One of the boats was within an oak and hazel forest deposit, thought to be the remains of a mere, illustrating the inland, but wetland nature of the landscape at this time. Whilst sites such as barrows and occupation sites are unlikely to survive in their entirety, for the reasons outlined above, individual finds such as stone and bronze tools are likely to survive in the marine environment and may be recovered from seabed deposits. The recovery of two Bronze Age logboats and a fragment of sewn-plank boat from the foreshore (WA_1061) highlight the potential for the survival of wooden objects *in situ* within the marine environment.

6.2.3 Iron Age sites in the MAREA Study Area are dominated by salt working sites and isolated artefacts. Like the preceding periods a number of the finds were recovered from the foreshore, or from eroding cliff deposits. Finds including coins, ceramics and briquetage are all types which could survive well in the marine environment.

6.3 ROMANO-BRITISH

6.3.1 The Romano-British period saw the introduction of stone and brick built domestic and civic structures at major settlement and military sites. There is some potential for the survival of these types of remains in seabed sediments, however inland settlements excavated within the MAREA Study Area have not recovered brick or stone buildings to date. Occupation sites have revealed features similar to later prehistoric periods, including roundhouses, earthwork enclosures, hearths and trackways.

6.3.2 Whilst it is unlikely that the remains of villas or substantial civic buildings would have been built within the MAREA Study Area, there is the possibility of small finds, as above, surviving within seabed deposits.

6.4 SAXON

6.4.1 Anglo-Saxon buildings were primarily timber and thatch built, with ecclesiastical buildings including churches and monasteries built of stone. A number of settlements recorded in the Domesday Book with Anglian names are known to have been lost to coastal erosion, whilst Kilnsea is thought to have been the location of a 7th- to 8th-century Saxon monastery.

6.4.2 Despite documentary evidence for widespread occupation of the coastal areas of the MAREA Study Area, little archaeological evidence has been found dating to this period. The majority of archaeological remains within the region are cemeteries or remains of field systems, with a small number of individual artefacts such as metal knifes, brooches, pottery and coins. A possible fish trap dating to this period has been identified on the Cleethorpes foreshore, and whilst wooden structures such as this have been found in many areas, they are unlikely to be identifiable in the process of dredging operations. The potential for worked timber to survive in marine deposits, however, is highlighted.

6.4.3 There is the small possibility that the stone remains of early church or monastic buildings could lie within seabed deposits, however it is more likely that any remains dating to this period would be isolated finds similar to those found on land, including coins, jewellery and ceramics. It is possible, but less likely that iron work would survive in the marine environment but this could depend on its burial within sediments, the objects size and metal composition.

6.5 MEDIEVAL

6.5.1 The impact of the Norman invasion on the Anglo-Saxon political, economic and social systems was considerable and identifiable in many ways in the archaeological record. Many of the villages and towns along the coastline of the MAREA Study Area have medieval origins and maintain post-conquest road and land layouts. Information about the medieval economy of the Study Area can be gained through a study of the numerous examples of medieval ridge and furrow field systems and salterns along the coast; however, these earthworks will not survive coastal erosion and cliff collapse processes.

6.5.2 One of the enduring impacts of the invasion was the construction of fortified manors and castles, with moated sites and manors surviving either as ruins or within currently occupied houses or farm buildings. Other significant stone built structures during the medieval period include the numerous monastic houses, granges and churches. A number of stone built churches survive on land within the MAREA Study Area whilst 15 settlements and one priory is recorded to have been lost to coastal erosion since being recorded in the Domesday Book (Sheppard 1912: Plate 1). The larger or wealthier of these settlements would undoubtedly have had stone built churches, whilst the Priory can be expected to have included a number of significant stone buildings.

6.5.3 Owthorne and Old Withernsea both had churches, built in the late medieval period. Old Withernsea church was lost in the 15th century with the town and Owthorne church lost in 1816 (www.hidden-holderness.org.uk). Burstall priory was founded in 1115 by Benedictine Monks on the north coast of the Humber Estuary. By 1721 the priory was a ruin and by 1950 it had been totally inundated (*ibid.*).

6.5.4 Recent work at the medieval town of Dunwich has shown that the remains of churches recorded as collapsing into the sea in the late medieval period can be identified archaeologically on the seabed (Sear *et al.* 2010). There is the possibility that similar processes may be at work of Holderness and that the remains of medieval buildings could remain within or on seabed deposits.

6.5.5 With the loss of entire villages, there is also the potential for a full range of individual artefacts to survive within seabed sediments, including ceramics, stone objects and potentially also glass and metal although these latter two are likely to be highly degraded and possibly unidentifiable as medieval objects.

6.6 POST-MEDIEVAL

6.6.1 By the post-medieval period, many villages and settlements had expanded, with most buildings being stone or brick built, in part if not wholly. As settlements grew, coastal erosion continued to destroy villages and settlements on the coastline of the MAREA Study Area.

6.6.2 At Owthorne, just north of Withernsea, the church was only 12 yards from the cliff edge in 1786 and the whole village was lost by the early 19th century. In this instance, the congregation recognised that the church was under threat made plans for the total demolition of the church, and re-use of dressed stones where possible

6.6.3 The medieval village of Kilnsea village is recorded as largely intact in the 18th century, with houses, fields and a medieval church. By the early nineteenth century Kilnsea was on the cliff edge and in 1824 the chancel fell over the cliff. A year or so later another large storm took the partition, with the north wall, its pillars, pointed

arches, pulpit, the reading desk and books, down the cliff 'with a tremendous crash'. The tower remained for only a year or two, before finally falling over the cliff in 1831.

6.6.4 Sea wall defences are recorded as being constructed in this period, suggesting an attempt to control and protect significant settlements and buildings. It can be assumed that few buildings constructed in this period, of any intended longevity, have been lost due to erosion but that they were constructed inland at some distance from the sea.

6.6.5 The two examples of building destruction during erosion illustrate two different approaches to the impending destruction of significant buildings on the coast. The work at Dunwich again highlights the potential for the survival of those buildings left to collapse into the sea from this period. Whilst the rough locations of many settlements is known, no work has yet been undertaken to investigate the potential survival of structures within or on the seabed within the MAREA Study Area.

6.7 MODERN

6.7.1 The largest group of documented historic monuments known to have been lost to coastal erosion are WWII defences. These sites were deliberately built on the coastline, and were designed with a relatively short intended life span. As such, these sites have been heavily impacted by coastal erosion, with lost sites including anti-aircraft batteries, pillboxes and infantry trenches, whilst additional sites are known to be on the verge of collapse.

6.8 ARCHAEOLOGICAL POTENTIAL OF THE MAREA STUDY AREA

6.8.1 Large stone or brick buildings, particularly churches, dating from the medieval period are known to have been lost to the sea through the erosion of the coastline within the MAREA Study Area, and their remains could survive on or within seabed deposits, as has been shown through the investigations at Dunwich, up to 5km offshore.

6.8.2 More recent structures including post-medieval village buildings and WWII defences are documented to have fallen into the sea, some of which can be seen in the intertidal zone.

6.8.3 There is some potential for individual finds to be recovered from seabed deposits dating from all periods, however they are likely to be isolated finds and limited in contextual information. Items which could survive, or be recovered could include stone, ceramic, vitreous and metal items. Stone, ceramic and bronze items will survive best in the marine environment, whilst vitreous material can be heavily degraded by sand abrasion and iron objects are likely to corrode, particularly in high energy, shallow areas where high levels of dissolved oxygen are present.

6.9 ERODED COASTAL ARCHAEOLOGY: SUMMARY

6.9.1 There is a considerable range in the type and date of archaeological sites within the Study Area, both on the current coastline and sites which have collapsed into the sea due to erosion (*i.e.* Medieval villages on the Holderness coast). Due to the high rate of coastal retreat in the Study Area, there is potential for archaeological material to be present on several kilometres of previously inhabited land now lost to the sea. The distance of this eroded historic coastline from dredging areas within the MAREA Study Area suggests that dredging activity is unlikely to encounter *in situ* eroded coastal material. It is possible that derived material could be found within dredging

areas if sediment transport and coastal currents are suitable, but this is relatively unlikely. The importance of eroded coastal archaeological material will be dependent upon the age and rarity of the material. Finds reported under the TCE/BMAPA/EH protocol are particularly important as they provide additional information which contributes to the implementation of effective and sustainable underwater cultural heritage management practices and practicable mitigation measures.

7 MARITIME ARCHAEOLOGY

7.1 INTRODUCTION

7.1.1 Maritime archaeological sites can be broadly defined for the purposes of this study as comprising either wrecked or abandoned vessels on the seabed or intertidal zone, or debris which has been accidentally or deliberately lost overboard from a vessel. As an island nation, the UK has a long maritime history and there is potential for the archaeological evidence of maritime sites of all periods dating from the Mesolithic period to the present within the MAREA Study Area. Other sites such as maritime infrastructure sites (*e.g.* Harbour and navigational structures) may be present on the coastline, or underwater, and can add significantly to our understanding of past maritime activity.

7.1.2 Cargo or ballast, which may be the only remaining evidence-at least superficially-of a shipwreck site, should be considered maritime archaeology. Particularly where wooden wrecks are concerned, a ballast or cargo of non-perishable material (often stone) may be all that remains at or near the surface of the seabed. Organic material may be preserved in sediment beneath the ballast mound if the right (anaerobic) conditions prevail.

7.1.3 The evidence for coastal and maritime activity within the vicinity of the MAREA Study Area will be discussed with regards to the composite time line for shipwrecks around England, produced by Wessex Archaeology (2008c). The timeline takes into account the broad chronology of shipbuilding and employment and draws out a few generalisations regarding the age and special interest of vessels.

- **Class A: Pre-1508 AD**: The earliest category within the time line covers the period from the earliest Prehistoric evidence for human maritime activity to the end of the medieval period, *c*. 1508. Very little is known of watercraft or vessels from this period and archaeological evidence of them is so rare that any archaeological remains of vessels will be of special interest.
- **Class B: 1509-1815**: The second category covers the period from 1509-1815, encompassing the Tudor and Stuart periods, the English Civil War, the Anglo-Dutch Wars and later the American Independence and French Revolutionary Wars. Remains of boats and ships dating to this period are also rare; the majority of boats and ships dating from this period can be expected to be of special Interest.
- **Class C: 1816-1913**: Category three covers the period 1816-1913, during which there were great changes in the way in which vessels were built and used, corresponding with the introduction of metal to shipbuilding and steam to propulsion technology. There are more examples of boats and ships from this period so greater discrimination is warranted in determining which ones are of special interest. However, this period is also a time of immense change in how vessels were built and used; boats and ships that make a distinct contribution to understanding and appreciating this century should readily be regarded as having special interest.
- **Class D: 1914-1945**: The fourth category on the time line extends from 1914-1945, encompassing World War I (WWI), the inter-war years and World War II (WWII). The highest volumes of known boats and ships lost in UK waters were casualties of WWI and WWII, with lesser numbers lost in the inter-war years. Greater discrimination will be required. Nonetheless, technological changes, the

magnitude of events and the consequences locally and globally of activities in these years will clearly give rise to some boats and ships having special interest.

- **Class E: Post 1946**: The last category extends from 1946 through the post-war years to the present day. The volume of boats and ships lost to archaeological contexts falls dramatically. A strong case will need to be made for boats and ships lost after 1945 to have special interest.

7.1.4 The Humber Estuary and River has been an important navigation route for shipping in England since the medieval period, with York, Hull and Grimsby representing the major ports for trade, whaling and fishing in the north-east of England (Childs 1990; Davis 1978; Bellamy 1979; and Robinson 1987). Of the thousands of vessels which passed through the MAREA Study Area, it can be assumed that since the medieval period a considerable number are likely to have foundered, as a result of natural causes (sea and weather), collision or war (Bournemouth University 2007: 33).

7.1.5 The Humber Estuary was identified as an Area of Maritime Archaeological Potential (AMAP), primarily because of the high potential for the preservation of shipwreck sites rather than because of a high number of hazards on the approaches. The approaches to the Humber Estuary are relatively clear although very exposed to prevailing and onshore winds. The approaches from the south are hindered by the presence of numerous overfalls. There are substantial foreshore banks on the entrance to the Estuary including Spurn Head, and the Outer Binks (Bournemouth University 2007: 34). The seabed character outside of the estuary is predominantly coarse grained gravels, whereas the inside of the estuary is characterised by extensive estuarine muds and silts, encouraging the preservation of archaeological material (*ibid*.: 35).

7.2 MARITIME GEOPHYSICAL ASSESSMENT

7.2.1 No marine geophysical data suitable for identification of anthropogenic remains on the seabed (*i.e.* Sidescan sonar, bathymetry or magnetometer), were assessed as part of this study. However, anomalies of potential archaeological interest have been identified by WA in the course of previous archaeological assessments of geophysical data. These are listed in **Table 8**:

Assessment Report	Description
Area 466 North West Rough (Wessex Archaeology 2002)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for aggregate extraction Areas 466. A total of 9 sidescan sonar anomalies were identified none of which were identified as wreck sites or could be correlated with recorded shipwrecks.
Areas 483 and 484 (Wessex Archaeology 2003)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for aggregate extraction Areas 483 and 484. A total of 21 sidescan sonar anomalies were identified none of which were identified as wreck sites or could be correlated with recorded shipwrecks.
Area 480 (106 East) (Wessex Archaeology 2003)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for the aggregate extraction Area 480 (106 East). A total of 10 sidescan sonar anomalies were identified, of which none were interpreted as wreck sites, and of which two correspond to previously charted wreck sites.

Area 485 (Wessex Archaeology 2005)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for aggregate extraction Areas 485. A total of 7 sidescan sonar anomalies were identified, none of which were identified as wreck sites or could be correlated with recorded shipwrecks.
Area 481 East and West (Wessex Archaeology 2007)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for the aggregate extraction Area 481 West and East. A total of 6 anomalies were identified, of which two correspond with previously charted wreck sites. Of the remainder, none were interpreted as wreck sites.
Race Bank Offshore Windfarm (Wessex Archaeology 2008)	Archaeological interpretation of geophysical data. A total of 177 geophysical anomalies were identified of which 2 correspond to charted wreck sites and a further 5 are thought to be previously unknown wreck sites.
Areas 448 and 449 (Wessex Archaeology 2008)	Desk-based assessment and archaeological assessment of geophysical data in preparation for a dredging license application for aggregate extraction Areas 448 and 449. A total of 17 sidescan sonar anomalies were identified of which none corresponded with known wrecks and four were identified as previously unknown wreck sites.
Area 480 (Wessex Archaeology 2008)	Archaeological assessment of geophysical data as part of pre-dredging monitoring process. A total of 6 sidescan sonar anomalies were identified of possible archaeological interest, but none could be correlated with charted wreck sites or identified as previously uncharted wreck sites.
Area 481 (Wessex Archaeology 2009)	Archaeological assessment of geophysical data as part of monitoring process. A total of 16 anomalies were identified of which two correspond to previously charted wreck sites and one is a previously uncharted wreck.

Table 8: Anomalies of potential archaeological interest identified by WA in the course of previous archaeological assessments of geophysical data.

7.3 MARITIME ARCHAEOLOGY GAZETTEER

7.3.1 As no geophysical assessment could be made to fully deconflict the maritime wreck datasets (*i.e.* SeaZone, NRHE and local HER wreck sources) a composite gazetteer was prepared based upon merging records that shared a name and duplicate position. The NRHE wreck record was initially based upon the UKHO archive of wrecks which also provides the basis for the SeaZone wreck record. The SeaZone records are updated frequently whereas the NRHE maritime records may be based on data from the mid-1990s and be out-of-date. The HER wreck data records links to both SeaZone and NRHE sources as well as independent records (which may not appear in SeaZone or NRHE sources). HER records have been merged where appropriate ID number, name or position duplication is clear. The positions given for recorded wrecks are derived from the SeaZone dataset only, *i.e.* the most recently updated from the parent UKHO archive **Figure 13** (**Appendix VI**).

7.3.2 In addition, the BMAPA protocol for reporting finds has identified a number of objects relating to shipping and possible wrecks within the Study Area, which are summarised in **Table 9**, and which provide contextual information aiding the assessment of potential for encountering known and unknown wrecks within the

MAREA Study Area (**Figure 14)**. It should be noted that the locations given for protocol finds are not necessarily accurate and will only give an approximate position if discovered onboard the dredging vessel.

WA_ID	Dredging Area	Description	Date	Report ID and year
5009	107	Piece of cast iron, possibly broken ship's knee	Modern	CEMEX_0015 (2005-2006)
5078	102 or 251 (mixed cargo so could be either area)	Elongated, blade shaped iron object, possible agricultural tool	Unknown	CEMEX_0093 (2005-2006)
5200	106C (now 106/3)	Refractory or firebrick	late 19th century	Hanson_0190 (2008-2009)
5348	Possibly 107	Ships timber, probably framing from a carvel vessel	Medieval; Post Medieval; Modern	CEMEX_0294 (2009-2010)
5366	107	Roman pottery sherds from a mortarium	Roman AD 150-250	CEMEX_0301 (2009-2010)

Table 9: Finds associated with shipping and possible wrecks from offshore aggregate dredging areas.

7.3.3 A total of 2089 records are listed in the Maritime Archaeology gazetteer (**Appendix VI-VII**) data within the MAREA Study Area (**Figure 13** and **14**) (**Table 10**).

Feature Type	Number of Sites
Recorded Wrecks	626
Obstructions	297
Casualty Record	1166
Total	2089

Table 10: Features within the Maritime Archaeology gazetteer.

7.3.4 In order to provide a broad overview of the density and nature of maritime activity within the MAREA Study Area as indicated by the maritime archaeology gazetteer, a number of queries were conducted based on the date of the Recorded Wrecks and Obstructions. The composite time line for shipwrecks around England, produced by Wessex Archaeology (2008c), was used as a framework in which to attribute a class to the wrecks based on the dates of these charted sites (see **Section 7.2**). **Table 11** below represents the results of the queries conducted on the gazetteer based on the date ranges classified within this composite time line. These sites are illustrated in **Figure 13**.

Class	Date	Wrecks	Wreck State			
			Dead	Live	Lift	Unknown
A	<1508	2	0	0	0	2
B	1509-1815	5	1	3	0	1
C	1816-1913	62	31	25	1	5
D	1914-1945	241	53	164	19	5
E	>1946	62	17	35	8	2
	Unknown	254	34	105	12	103
	Total	626	136	332	40	118

Table 11: Recorded Wrecks and unspecified sites queried by date range and wreck state.

7.3.5 When comparing the number of sites from each period there are a significantly larger number of charted wrecks dating from 1914 onwards. The period of 1816 to 1913 is comparatively low in charted wreck sites, and under closer scrutiny the data further illustrates a distinct lean to the latter half of the period, with the earliest wreck from this grouping sinking in 1851. The three sites dating to the period 1509-1815 are all reported sinkings dating to 23/03/1808, charted as obstructions or foul ground.

7.3.6 Overall, the wreck sites are dispersed fairly evenly across the MAREA Study Area, focussed on the central part running parallel with the shore. Concentrations of wrecks occur on the shoals in the central southern part of the Study Area and at the entrance to the Humber River. There are few wrecks in the far eastern or far south-western part of the Study Area. This may be a consequence of being further from the shore and therefore less likely to have been reported, especially for older wrecks.

7.3.7 The majority of shipwrecks dating to WWI and WWII are located within the deep water channels of the Study Area, and approaches to the Humber River, indicating that these vessels were lost as a result of enemy action rather than the usual means of navigational error or storms. The latter processes usually results with shipwreck events on shoals and navigation hazards.

7.3.8 The UKHO (and ultimately the SeaZone dataset analysed here) records report the perceived status of the wrecks and obstructions as a means of assessing their potential for being a hazard to vessels.

- DEAD wrecks are reported as being no hazard either because they are dispersed or buried with little upstanding structure from the seabed. This does not suggest that they are no longer of archaeological interest as being burial in seabed sediments provides additional protection from degradation. There are 136 records of DEAD wrecks in the gazetteer with a significant concentration dating between 1914 and 1945 (n=53).

- LIVE features are assessed by the UKHO to present a hazard for shipping and may have considerable structure preserved above the seabed. There are 332

records of LIVE wrecks in the gazetteer with a significant concentration dating between 1914 and 1945 (n=164).

- LIFT features have been salvaged or raised in some way from the seabed and much of the structure of the vessel will have been removed from the wreck site. However, there may be debris or some structural elements left on or in the seabed which may be of archaeological interest. There are 40 records of LIFT wrecks in the gazetteer with a significant concentration dating between 1914 and 1945 (n=19).

7.3.9 There are also 118 records of wrecks with an unknown status.

Obstructions

7.3.10 As a further record of potential hazards to vessels and maritime activity, there are 297 records of obstructions that have been reported, some for example where fishing vessels have snagged their nets. There is potential for some of these features to relate to wrecks and other features of maritime archaeological interest, some will be geological in nature. Without geophysical assessment it is not possible to verify how many of these features are of archaeological interest. This dataset is used as an illustration of wreck potential only and is not assessed further (**Figure 14**).

Recorded Losses

7.3.11 A total of 1166 documented shipwreck events, termed 'casualties'[2] or 'recorded losses' are listed in the gazetteer within the MAREA Study Area. It is important to note that the positions[3] of recorded losses are often vague and inaccurate and also only represent those loses which were actually recorded. Recorded Losses are used to inform the potential for encountering unknown shipwrecks in the region. Documented aircraft losses are discussed in **Section 8**.

7.3.12 The recorded losses records have been classified into the date ranges outlined above (**Section 7.3**). The results of these queries are presented into **Table 12** below and illustrated in **Figure 14**.

Class	Date	Shipping Casualties
A	pre 1508	21
B	1509-1815	328
C	1816-1913	725
D	1914-1945	86
E	post 1946	4

[2] A *casualty record* is a recorded loss of a ship/aircraft known to be lost but with no accurate position. These are linked to *named locations*. The position is unlikely to relate to the position on the seabed and is merely an indication of the general locality in which it is believed to have sunk.
[3] The *named location* given as a wreck site is a polygon centred on a point (on Admiralty Charts) to which a *casualty record* is attached. More than one *casualty record* may be attached to a *named location*.

Class	Date	Shipping Casualties
	Unknown	2
	Total	1166

Table 12: NRHE shipping casualties queried by date range.

7.3.13 The distribution of casualty records/recorded losses is completely different to that of the wrecks, with over 1000 wrecking incidents located at just 76 positions within the MAREA Study Area. The majority of the recorded positions are located close to shore and within the Humber Estuary. This distribution is primarily due to the nature of the records, where descriptive locations such as 'foundered during a storm whilst en route from London to Kingston-upon-Hull' or 'lost on passage from Newcastle-upon-Tyne to London' have been given estimated locations. Many of the Named Locations are coastal towns where ships were last seen. Other casualty records are slightly more accurate with descriptions of losses at or on specific shoals or sand banks such as the Binks, Outer Dowsing Shoal and New Sand Hole. Some records provide location details such as '6 leagues NNW of Cromer' or '4 miles from the River Humber lightship and 11 miles east of Kinsey'. Each of these descriptive, but vague locations have been ascribed a specific location on Admiralty Charts, known as a Named Location by the NRHE.

Discussion

7.3.14 The charted wreck sites and casualty records (and potentially some of the obstructions) should not be regarded as directly representative of the wreck sites that lie on the seabed within the MAREA Study Area. Prior to the advent of the Lloyds of London List of shipping casualties in 1741, there was no central record of ship losses and as such the record of shipping casualties is biased towards wrecking incidents which occurred from the mid 18th century onwards. It must also be taken into account that the shipping casualties refer to wrecking incidents for which there are no known positions other than a description of the general area and may consequently lie outside the MAREA Study Area. By the same principle there is the potential for wrecks, recorded as casualty records attached to a named location ouside the Study Area to be physically present within the Study Area.

7.3.15 The casualty records of ships in the Study Area prior to 1509 (**WA_10074 to 10096**) are clustered along the Lincolnshire coast. With the exception of a small number of potential prehistoric logboat finds within the Study Area, no other wreck remains have been located dating to the pre-1508 period.

7.3.16 Casualty records dating to the period between 1509 and 1815 (**WA_8931 to 9258**) are primarily located along the coastline, however as discussed above, this may not be illustrative of actual wreck event locations. There are also a number of wrecks located on the shoals in the southern part of the Study Area, including Inner Dowsing, Outer Dowsing, Dudgeon and Cromer Knoll.

7.3.17 The casualty records for the period 1816-1913 display a similar pattern (**WA_9259 to 9983**), however wreck sites within the SeaZone data extends further offshore particularly in the northern part of the Study Area. Not surprisingly, a number of wreck sites are also recorded on the shoals in the southern part of the Study Area.

7.3.18 Casualties recorded during the period covering the two World Wars are similar (**WA_9984 to 10069**), with wreck events recorded at most of the Named Locations in the Study Area. The wreck site data, however, presents a very different pattern with the majority of wreck sites located in the central part of the Study Area, with a significant cluster around the entrance to the Humber.

7.4 COASTAL AND SEAFARING ACTIVITY: PRE-1508

Early Prehistoric (Palaeolithic-Mesolithic)

7.4.1 There is no evidence for Palaeolithic watercraft pre-dating the Last Glacial Maximum (LGM) (*c*. 18,000 BP) anywhere in the world. This lack of evidence should not, however, be taken to indicate a lack of maritime activity during this period as the resources, and technological knowledge required to construct small craft would certainly have been available at this time. Stone artefacts from the island of Flores, east of Bali, date to *c*. 800,000 BP and are interpreted as evidence for the presence of *Homo erectus* on the island. Flores would have been separated from mainland Asia by three deepwater straits at this time, with the shortest crossing being 19km of open water (Flood 2004: 3).

7.4.2 The presence of a relatively large population of early modern humans in Australia is the clearest example of the maritime skills, with dates from inland sites (Lake Mungo) in the southern part of the continent dating to around 60,000 BP (Flood 2004: 1). Dates of around 40,000 BP have now been recovered from sites across Australia, At this time, Australia and its surrounding land (the continent of Sahul) was isolated from mainland Asia by approximately 70km of open water, which would have required not only relatively sophisticated watercraft (Flood 2004: 2) but also, probably, some degree of forward planning and means of navigation.

7.4.3 Human settlement patterns around the North Sea, including Scotland suggest that open water voyages were being conducted as early as 7000 BC, during the Mesolithic period. The type of craft used for these voyages and how extensively they were used is unknown. The earliest archaeological evidence for logboats, in the North Sea region, dates to the Mesolithic (7920-6470 BC) and was found in Pesse in the Netherlands (McGrail 2004: 173). Other examples of Mesolithic logboats include one discovered in Noyen-sur-Seine (France) dated to *c*. 7190-6340 BC (McGrail 2004: 173), whilst another from Lough Neagh in the north of Ireland was radiocarbon dated to *c*. 5300 BC (Breen and Forsythe 2004).

7.4.4 A large timber excavated from Bouldner Cliff in the Solent, and dated to 6240-6000 BC (Beta 249735), has been interpreted as associated with the construction of a large logboat. If so, this would be the earliest evidence of boat building in England. The timber was tangentially split, and thought to have come from a tree approximately 1.5-2m wide and capable of producing planks, or a logboat 10m long (www.hwtma.org.uk/investigations-in-2010). The timber fragment recovered, however, is not complete, and whilst it does push wood working techniques back into the Mesolithic, it is not conclusive evidence for logboat construction at this date. It was generally thought that logboats were used for transport and fishing in inland and sheltered waters during the Mesolithic period, however, ethnographic evidence suggests that logboats can be modified making them suitable for sea journeys, for example with the addition of out-riggers.

7.4.5 There are a number of references in Roman texts dating to the 1st millennium BC for the use of sea going hide boats in the seas around Britain, with descriptions of the boats as ‘osiers covered with stitched hides’ (McGrail 2004: 181). Whilst no

archaeological remains of prehistoric hide boats have yet been found, McGrail suggests that many of their features, such as being light weight, seaworthy, relatively quick to construct and repair would make them highly suitable to the environment, economy and technology available in the Mesolithic period in England (McGrail 2004: 183).

7.4.6 A number of sewn plank boats dating to the later prehistoric periods have been found in the Humber region. The relatively complex technology seen in these boats indicates a tradition of water transport in the region, highlighting the potential for boat finds from earlier periods. The marine transgression of the Mesolithic period saw the fairly rapid inundation of the lowland areas of the southern North Sea and the deposition of Holocene alluvial muds over the former land surfaces, on which Mesolithic activity may have taken place. As such there is the potential for the survival of remains of such early craft beneath the alluvial deposits which are currently offshore.

7.4.7 The palaeo-Humber was one of the main rivers flowing into the North Sea basin, across what was dry land around 10,000 years ago. The coastline is thought to have been approximately 15 to 20km to the east of the present coastline at this time, and much of the North Sea basin would have been boggy marsh (www.eastriding.gov.uk/coastalexplorer/pdf/1development.pdf) The palaeo-river channels are likely to have been used as routes for travel and communication and have the potential to contain similar types of inland watercraft, such as the log, sewn plan or hide boats described above. Similar craft may have also been used to travel, hunt and fish in the protected parts of the North Sea marshes. Any remains of these vessels would now be located somewhere in the eastern part of the MAREA Study Area.

Neolithic and Bronze Age (4,000-700 BC)

7.4.8 By the early Neolithic (*c*. 4000 BC) the MAREA Study Area would have been predominantly submerged, with the coastline over 2km to the east of today's coastline, illustrated by the discovery of a possible henge monument on the Easington foreshore, in the north western part of the Study Area. Furthermore, over half of the Neolithic finds from the Study Area have been made on the foreshore. Only a small number of Neolithic settlements have been located within the Study Area.

7.4.9 Logboats provide the only archaeological evidence in the UK directly relating to watercraft during the Neolithic period (Niblett 2001), which may have been used to transport goods along and across inland waterways such as the Humber and its tributaries. The discovery of porcellanite stone axes from Ireland, on the UK mainland and the Western Isles of Scotland, implies trade and transport of goods over sea was taking place by this period (Breen and Forsythe 2004: 32).

7.4.10 The technological advances of the late Bronze Age and early Iron Age of Europe brought with it greater human interaction, resulting in the transference of materials, belief, concept, traditions and ideas, either reciprocal or forced (Agbe-Davies and Bauer 2010: 15-20). Such a growth in social cohesion and a broadening in relationships were all established by elite individuals spreading structural linkages, resulting in the establishment of a coastal economy (Chapman 2008: 348-52).

7.4.11 The growth in social organisation brought an increase in the scale of seafaring and although dugout logboats were still used, as evidenced by the Brigg logboat, dated

c. 1000 BC, finds of sewn plank boats from the Humber region demonstrate that more complex boat building technologies were also in use (McGrail 2004: 184).

7.4.12 The sewn plank boats found in the Humber basin are some of the earliest examples of Bronze Age watercraft in Northern Europe, and of international significance. The Kilnsea fragment, from within the MAREA Study Area, dated to 1,870-1,670 BC (Van de Noort *et al.* 1999) and three boat found at North Ferriby built between 1440-1060 BC, are illustrative of craft suitable for estuarine and possibly even sea-going use (McGrail 2004: 187).

7.4.13 Research into the most intact of these vessels, Ferriby 1, suggests a double ended boat measuring 15.4 x 2.6 x 0.70m. The boat was constructed oak planks fastened together with lashings of yew. Additional transverse timbers wedged within cleats kept the bottom planking tight and aligned. It is thought that the boat could carry a crew and cargo of up to 5.5 tonnes. The boat would have been propelled by poles in shallow waters and by paddles in open water, and ferried people, animals and goods around the Humber estuary and tributaries (McGrail 2004: 186).

7.4.14 The Brigg logboat is a typical example of Bronze Age logboats in England, hewn from an oak log at least 15m long and a girth of 6m near its base. The boat originally measured about 14.78 x 1.37 x 1m, narrowing from stern to bow. It is estimated that the boat could have carried two steersmen and up to 26 paddlers, or five crew and 5.5 tonnes of cargo. The boat was probably used in the tidal creeks and rivers of the Humber to carry people and goods. The boat had been repaired in a number of places using a system of cleats and wedges similar to that seen on the Bronze Age sewn plank boats described above (McGrail 2004: 174).

7.4.15 The Brigg 'raft' (820-790 BC) demonstrates a slightly different construction technique to the other early Bronze Age boats found in the Humber region, thought to reflect the more sheltered riverine environment in which it was used. The Brigg raft was a long but narrow flat-bottomed boat, propelled by poles and paddles and would have been used as a across the middle reaches of the tidal Humber (McGrail 2004: 187). McGrail (2004: 188) suggests the boat could have safely carried 26 sheep and four men or 17 cows and six men.

7.4.16 These three types of boat construction demonstrate the importance of river transport and communication to people in the Humber Basin, and their ability to adapt and advance technology to suit the variety of riverine and estuarine environments they needed to navigate. With the Estuary being at least 3km further eastward than its current location, it is possible that boats similar to those described above could have been navigating the outer parts of the estuary in the Bronze Age, now in the vicinity of the MAREA Study Area.

7.4.17 In the south of England, a number of assemblages of metal work have been found offshore at Langdon Bay near Dover, Salcombe and the Erme Estuary in Devon. The assemblages from Langdon Bay and Salcombe both date to around 1300 BC and comprise a variety of implements of northern French design and origin. Whilst there is much debate about whether Bronze Age vessels such as Ferriby 1 or the Dover boat were capable of sea-going voyages (Clark 2004: 210; McGrail 2004: 194; Crumlin-Pedersen 2006), the assemblages of French metal work demonstrate that there was cross channel trade.

7.4.18 The distribution of settlement sites along river valleys in the Humber basin during this period, in addition to the numerous boat finds, highlights the importance of water transport to communities in the Bronze Age period. It is thought that between 5 and

2km of land has eroded into the sea since the Roman period, and it is therefore possible that there could have been additional riverside and coastal settlements within the Study Area, using estuarine and coastal shipping for communication and transport. There is a high likelihood of vessels passing through the Archaeological Study Area during the Bronze Age, and the possibility that some would have foundered and wrecked.

Iron Age and Roman (700 BC-500 AD)

7.4.19 Archaeological sites dating to the Iron Age cluster around Spurn Point and Ingoldmells, within the Study Area. There are a small number of settlement sites and enclosures. In addition one complete cinerary urn, and fragments of another, was discovered on the beach at Kilnsea. The vast majority of sites dating to this period however, are salterns or debris associated with salt workings, illustrating that the coastline and coastal resources were an important part of the economy at this time.

7.4.20 Major trading ports dating to the Iron Age have been identified elsewhere in England at Mount Batten in Plymouth and Hengistbury Head in Dorset, demonstrating that England's Iron Age populations in the south of England had close links with the continent and were using sea-going vessels. When the Romans arrived on the south bank of the Humber in 48 AD, the settlement at Redcliff, North Ferriby was already in use as a ferry port, thought to have linked either the settlement at South Ferriby or Winteringham (Sitch and Williams 1992: 3).

7.4.21 There are a number of archaeological examples of Iron Age vessels in the Humber region, all demonstrating close technological links with vessels dating to the Bronze Age. The 12.87m long Hasholme boat dates to 750-390 BC and was made from a 600-800 year old oak. The boat had a transom stern, beam ties and washstrakes, and incorporated a range of woodworking and boat building techniques in its construction and repairs. The boat retained the tapered shape of the parent oak tree, and is estimated to have carried a maximum of two steersmen and 18 paddlers, or five crew and 5.5 tonnes of cargo. A semicircular area 0.75m in diameter had been carved *c*. 10mm deep into the timber at the starboard bow, which has been interpreted as an '*oculus*' or eye of the boat. The port side bow area was badly damaged before excavation, but is thought to have had a matching 'eye'. Whilst this is the most obvious oculus, the Brigg logboat discussed above, and a second from Loch Arthur in Scotland are also thought to have similar 'eyes'. It is thought that such a large boat would not have been ideal for navigating the Humber tributaries and creeks, and it has been suggested that the choice of such an old large tree for its construction may not have been made purely on technological or economic grounds, but also as a symbol of status. The presence of the *oculi* at the bow may be further evidence that this boat had a special status beyond a ferry or cargo vessel (McGrail 2004: 178).

7.4.22 Excavations in 1836 at Roos Carr near Withernsea uncovered a collection of wooden objects including a set of figurines, paddles and shields and a serpent-headed boat. The figurines measure between 35 and 41cm tall and are carved from yew wood with quartzite eyes. The Figures have been radiocarbon dated to around 600 BC, and are thought to have been a votive offering, buried in blue clay suggesting deposition in or near water. This would be in keeping with a northern European wide practice of depositing metal work in watery environments, suggesting these environments held religious or spiritual meaning for the people of the later Bronze Age and Iron Age (www.hullcc.gov.uk/museumcollections/collections/storydetail.php?irn=484&master=449).

7.4.23 The Ferriby 5 fragment, dated 410-350 BC is a cleat similar to that found on the Bronze Age Brigg 'raft' discussed above, demonstrating the continuation of boat building traditions in the Humber basin (McGrail 2004: 187).

7.4.24 In addition to logboats and sewn plank boats, there is representational evidence for the use of hide boats from the late bronze age in NW Europe and there are also accounts of their use in pre-Roman parts of Europe including Britain (Johnstone 1988: 28-29). The 3rd century BC historian Timaeus describes the British using seagoing boats made from 'osiers covered with stitched hides'. Roman authors, including Caesar, describe British and Irish hide boats built on a woven willow framework with prominent keels, which would have made them stronger and more seaworthy than the currachs and coracles currently being built in western Ireland and Wales (McGrail 2004: 182).

7.4.25 Direct maritime archaeological evidence from the Roman period has been found in the Thames, Severn Estuary and in Guernsey, representing both a 'Romano-Celtic' shipbuilding type and also Mediterranean shipbuilding techniques. No boats or ships of Roman date have been found in the Study Area, however the recovery of fragments of Roman mortarium from within Area 107 indicates Roman shipping within the Study Area, and the potential for finds associated with a shipwreck from this date.

7.4.26 One of the best examples of Romano-Celtic ship construction technology is the Blackfriars 1 ship, found in London, dating to the 2nd century AD. Blackfriars 1 was a sailing ship, probably also capable of being propelled by oars, and would have measured approximately 18.5 x 6.12 x 2.86m. The estimated cargo capacity is for 63.7 tonnes and theoretical analysis suggests it would have been suitable for seagoing voyages (McGrail 2004: 198).

7.4.27 The County Hall ship was built of oak in the south-east of England using almost entirely Mediterranean ship construction techniques, and is the most complete example of this type of boat in northern Europe. It was excavated in London, close to the Thames and dates to AD 290-300 (McGrail 2004: 194). The excavated remains measured 13 x 5.5m comprising much of the bottom and one side of the vessel, with a reconstructed length of just over 19m (Delgado 1997: 116), similar to Blackfriars 1.

7.4.28 Whilst there are no examples of Roman period wrecks in the Humber Region, there are some tentative examples of possible shipwrecks dating to the Roman period in the North-East, including putative sites at: Herd Sand beach, South Sheilds; Hartlepool Bay; and Carr House Sands, Seaton Carew (Petts and Gerrard 2006: 47). This clearly indicates that Roman seafaring in the North Sea was widespread.

7.4.29 Foreign ceramics and glass found at ports and terrestrial sites all across the North-East (particularly from the *vici*) from all over Roman Britain and further afield, indicate shipping continued to play an important role in trade and communication within the Humber Basin (Petts and Gerrard 2006: 56-7).

7.4.30 When the Romans invaded Britain, the land to the north of the Humber was inhabited by the Parisi and the land to the south by the Corieltauvi. Neither of these communities seems to have offered much resistance when the Romans arrived on the south bank of the Humber in 48 AD. For many years the Parisi traded peacefully with the Romans across the Humber from the major settlement at North Ferriby, exchanging imported luxury goods for cattle, grain and slaves (Sitch and Williams 1992: 3).

7.4.31 The Romans crossed the Humber in 71 AD to complete their conquest of England, and established the significant urban centres, forts and ports at Brough, known as *Petuaria* and at York, known as *Eboracum*.

7.4.32 York became an important centre when the Brigantian tribal area became a Roman client state. It also became a busy trading port and would have been largely supplied by sea via the River Ouse and the routes through the Humber estuary. The city was founded in 71 AD, when the IXth Legion conquered the increasingly hostile Brigantes and constructed a Fort on flat ground above the River Ouse and River Foss. The fortress was important, evidenced by its size, and was later rebuilt in stone, covering an area of 20 ha and garrisoned by 6,000 soldiers (Willis 1988: 26-27; Shannon and Tilbrook 1990: 2).

7.4.33 Petuaria had a sandy natural harbour and is listed as a terminal point for official sailing to and from the continent. It is possible that the Roman Navy also used the port as a base from which to patrol the Humber (Sitch and Williams 1992: 6). A ferry is recorded as continuing to link the north and south banks of the Humber between Petuaria and Winteringham, replacing the Iron Age crossing between North and South Ferriby (Sitch and Williams 1992: 6).

7.4.34 Petuaria would have been a bustling harbour, and the Humber estuary busy with cargo vessels bringing luxury items from the continent and exporting grain, jet, cloth and lead. The shipping channels up the Humber were difficult to navigate and pilots were employed to provide local knowledge. Numerous harbours and safe anchorages would have been needed along the estuary and river to provide safe anchorage between tides and to pick up pilots. These smaller harbours would also have been important for the transhipment of goods to smaller vessels and for local trading networks. Smaller harbours have been identified at Faxfleet, Winteringham, South Ferriby and possibly also East Halton and Foulness. Bridlington bay is thought to be the safe harbour referred to by Ptolemy, although it has long since been lost to erosion (Sitch and Williams 1992: 10).

7.4.35 In the late 3rd and 4th centuries the Roman Empire was under attack, including Britain. The south and east coast of England was defended against the raiding Germanic tribes and Frisians by a line of forts and signal stations. It seems that rural Britons living in the Humber region were largely unaffected by the raids, demonstrated by the expansion of villa life and increasing investment in Roman luxury items. Meanwhile, the defences at Roman Brough were remodelled suggesting some concern about raiders in the Humber (James and Fairbank 2000: 3). Many forts survive along the south and north-east coast of England and it is possible that they were linked by more along the Holderness coastline; however these would now have been lost to erosion (Sitch and Williams 1992: 32).

7.4.36 As the threat of invasion grew across the Empire, the Romans employed Germanic mercenaries to supplement legionary garrisons. It is unclear whether the same approach was taken in Britain, however 3rd and 4th century Germanic style belt fittings and brooches have been found in the Humber region. Despite this, it is unclear whether they belonged to mercenaries, raiders who settled in the region or the adoption of Germanic fashions by indigenous Britons (James and Fairbank 2000: 3). Which ever scenario is correct, the finds demonstrate the movement of people, objects or crafts across the North Sea between continental Germany and the Humber basin.

7.4.37 After the withdrawal of the Roman garrisons and administration in 410 AD Britons had to seek protection from coastal raids. The 6th century writer Gildas records that Germanic mercenaries were employed to defend the east coast.

Early Medieval and Medieval (AD 500-1508)

7.4.38 In the century after Roman withdrawal from Britain, the Germanic mercenaries identified weaknesses in the remaining administration and began to exploit their employers. Immigrants began arriving on the east coast of England from north-eastern Europe in increasing numbers. Instead of protecting the Britons as before, groups began to take inland rural land for themselves and to settle across the region. Archaeological evidence from 5th century cemeteries at Sancton, Elsham and Manton support the presence of German immigrants across Humberside and north Lincolnshire (James and Fairbank 2000: 3).

7.4.39 There is no evidence for co-habitation of the German immigrants and indigenous populations as no Germanic artefacts have been found in the Romano-British settlements at Barton-upon-Humber, South Ferriby, Winteringham or Brough (James and Fairbank 2000: 4). The lack of Germanic artefacts at riverside settlements and the location of German cemeteries inland suggests that the indigenous Britons were able to keep hold of their settlements along the Humber, and potentially also continue to control shipping in the region.

7.4.40 The coastline of the MAREA Study Area was primarily invaded and settled by the Angles and Frisians, who established the Kingdom of Deria north of the Humber and Lindsey south of the Humber (James and Fairbank 2000: 4). The earliest evidence for a Germanic presence close to the Humber is the 6th to 7th century Pagan Anglian cemetery at Barton-upon-Humber (James and Fairbank 2000: 4).

7.4.41 Of the seven Saxon Kingdoms, the first one to achieve supremacy was Northumbria, which was created by the union of two independent kingdoms, Bernicia and Deira. King Edwin of Deira (616-32) accepted Christianity in 627 (www.hullwebs.co.uk/content/c-anglo-saxon) and the rich culture of the north-east during the seventh century is reflected in such works as the Lindisfarne Gospels. The central territories of Yorkshire and Northumberland remained independent until the Vikings took York in 866 (www.regia.org/history.htm).

7.4.42 Archaeological evidence for Anglo-Saxon settlement in the region surrounding the Study Area is particularly rich, with a palace complex excavated at Yeavering dating to the 6th and 7th centuries and a possible administrative centre at Thwing dating to the 8th and 9th centuries (James and Fairbank 2000: 10). Two important settlement sites dating the early medieval period have been excavated in the region at Flixborough and Heslerton providing unique and unusual insights into life during a period where most archaeological information comes from cemetery sites. In addition, a number of nationally important cemetery sites have been excavated in the region (James and Fairbank 2000: 10). Despite the richness of early medieval archaeological sites in Yorkshire and Lincolnshire, the MAREA Study Area has just two find spots dating to this period.

7.4.43 Although there is a range of terrestrial archaeological sites attesting to the migration and influence of the Germanic tribes in Yorkshire and Lincolnshire, there are no archaeological examples of the boats or ships in which they came. By comparison, a number of boat finds have come from Suffolk which illustrates the introduction of Scandinavian-style boat construction in England.

7.4.44 The Nordic ship building tradition is characterised by double ended boats built hull first with overlapping 'clinker' planking. Examples of these boats have been found around the North Sea with particularly spectacular finds from Scandinavia and Denmark. These boats are thought to have been sea going oared vessels, and were probably used by the Angles and Jutes in their migrations across northern Europe. Examples of these types of boats dating to the 7th century are much bigger and more strongly built than their predecessors (McGrail 2004: 210).

7.4.45 One of the earliest Anglo-Saxon boats found in England was discovered in an old watercourse near Ashby Dell, Lowestoft in 1830, thought by Bruce-Mitford to be from the 4th or 5th century (NRHE MON: 1244923). It was believed that the approximate length of the vessel was 15.5m with a beam of 2.45m. The entire vessel was held together by lashings and treenails. It was powered by 14 oars, and there was no provision for a sail. Comparison has been made with the double ended five strake sided Nydam 2 ship from Jutland of around AD 310 to AD 350.

7.4.46 The Anglo-Saxon burial mounds of Sutton Hoo discovered on a promontory overlooking the River Deben in Suffolk, not only represents the type of Northern European shipbuilding practices in use during this period, but along with the Snape boat burial site, provides evidence of the perceived social or cultural importance of ships and seafaring to those living within the vicinity of the MAREA Study Area at this time (Bruce-Mitford 1972; Evans 1994).

7.4.47 Although the Sutton Hoo vessel was constructed to sit low in the water so oars could function, and was probably not suited to the open sea in difficult conditions, there was nonetheless evidence of continental influences. Amongst the grave goods, 37 minted coins were discovered from 37 different locations across northern and southern France and western Germany (Bruce-Mitford 1972: 56-57). The Kvalsund Ship of AD 700 found in western Norway has been compared closely to that of Sutton Hoo. Although Sutton Hoo does not reflect an ocean-going cargo vessel it does represent that shipbuilders were developing sailable hulls by the early 8th century.

7.4.48 York had developed, following the decline of the Roman occupation, into the Saxon trading port of *Eoforwic* and continued to be a major node for trade via the Humber and out into the North Sea and beyond (Jones and Mattingly 1990: 317).

7.4.49 The year 793 saw the first major raid by Vikings in England at the Northumbrian monastery at Lindisfarne. Over the following decades Viking groups carried out raids on settlements along the southern and eastern coasts of England. Whilst most of the 'Vikings' came to north-east from the now Danish archipelago, they had a shared language and culture with the rest of Scandinavia and raiders from Norway headed for Scotland, Ireland and the Isle of Man (James and Fairbank 2000: 23). Evidence from place names indicates that some towns within the MAREA Study Area have a Scandinavian origin, such as Grimsby, and may have had few if any English inhabitants. The majority of place names, however, are a mix of Scandinavian and Anglo-Saxon suggesting that English and Danes lived together without too much hostility (James and Fairbank 2000: 25).

7.4.50 During the Viking period, there would have been continued trade and travel between communities based in England, Denmark and Norway, much of the regional trade from York, by now a major Viking trading centre. No examples of these Viking boats have been found within the MAREA Study Area, however two oak rudders, thought to date from AD 850 to AD 950 have been found in East Anglia. The smaller was found in a fishing net in 1981 near Eastern Bavents and the larger washed up on a

beach just north of Southwold pier in 1986. Both rudders were over 4m, long and are thought to originate from Anglo-Saxon vessels or a Viking fleet. Both had holes to accommodate tiller bars, identifying them as 'steering-board' side rudders, rather than stern-mounted rudders.

7.4.51 At around this time it is also possible that an English ship-building tradition developed from the Scandinavian style (Goodburn 1986; 1994). The Graveney Boat, discovered in a marsh in north Kent, was built using the Scandinavian clinker approach with, Nordic timber working techniques and Romano-Celtic affinities (McGrail 2004: 218-220) and has been dated to the early 10th century. The boat would have been suitable for sea-going voyages and would have been capable of carrying six or seven tons of cargo under sail (Greenhill 1995: 204).

7.4.52 In 1990 a boat was discovered at Buss Creek, near Southwold in Suffolk, the entry to which is through the Blyth River. The timbers, built for a clinker vessel, had an approximate length of between 9.1m to 12.2m and produced radiocarbon dates of AD 890 to AD 970 (Bacon 1996: 18-22). It is possible these timbers represent a vessel similar to that of the Graveney boat, with cross cultural traditions, capable of small scale cargo carrying in calm open water, and may represent what would be expected to have been a staple of maritime seafaring across the entire east coast of England at that time.

7.4.53 York continued to play an important role in the trade links between, Scandinavia, continental Europe and the Humber region, eventually merging with the Kingdom of Northumbria and losing its political independence to the House of Wessex in 960.

7.4.54 The latter part of the medieval period was just as turbulent as the 5th to 10th centuries but also witnessed further advances in communication and technical skills. The strategic geographical benefit of the east coast region in relation to sea resources and the neighbouring continental economies was also enhanced. Documented evidence from 11th to 15th centuries, although still relatively sparse, does provide a valuable picture for the scale and diversity of trade that took place within the MAREA Study Area and the surrounding pattern of exchange of commodities.

7.4.55 At the time of the Norman invasion, a number of the Humber basin and adjacent coastal ports had developed into busy trading centres. The Study Area was at the front line of activity around the time of the Norman invasion. On 18th September 1066, Harold Hardrada, King of Norway, sailed up the Humber with a fleet of 300 ships to Riccall on the Yorkshire Ouse. With assistance from Tostig (brother of Harold II King of England) and Scottish allies, Hardrada and Tostig defeated the Earls of Northumbria and Mercia at the battle of Fulford. Although they briefly held York, King Harold of England headed north and killed both Hardrada and Tostig at the battle of Stamford Bridge on 25th September 1066 (Williams and Fairbank 1991: 3). The sagas record that the defeated fleet set sail from 'Ravens Sandbank' or 'the raven tongue of land', thought to be the port settlements of Ravenser or Ravenserodd on Spurn Point, heading for Orkney (Sheppard 1912).

7.4.56 In 1069 Swein, King of Denmark, sent a fleet of 240 ships up the Humber, taking advantage of the many rebellions which had taken place in England after the invasion and conquest by William, Duke of Normandy. The Danes were joined by a large English force and were able to capture the castles at York. York was recaptured by William, who followed up with systematic destruction of villages, crops and the slaughter of animals and people across the North of England. This action resulted in widespread famine and became known as the 'Harrying of the North'.

The ongoing result of this action can be seen in the Domesday Book entries for the East Riding of Yorkshire, where approximately one third of manors are recorded as uninhabited and uncultivated (Brooks 1986: 41).

7.4.57 After the Harrying of the North, the Norman lords built castles across the north to provide a safe haven for them and as way of demonstrating strength and power over the local population. The first castles were wooden built on large earth mounds; the mound of one survives at Skipsea Brough. Skipsea Castle was built as part of a string of coastal defences erected to protect from Scandinavian invaders, but also to establish a port at the site (Williams and Fairbank 1991: 4).

7.4.58 In addition to developing coastal trade, the castle at Barrow-upon Humber may have allowed the Normans to control shipping on the Humber between Paull and Barrow. It would also have served as a crossing point to link estate lands on the north and south side of the Humber (Williams and Fairbank 1991: 5).

7.4.59 At time of the Domesday survey Barton-upon-Humber was the main port in the Study Area, although Grimsby was also an established fishing port with Norwegian ships recorded as visiting in the 11th century (Williams and Fairbank 1991: 22).

7.4.60 With growth of the wool and cloth export trade in the 12th and 13th centuries, Beverley, Hedon and Ravenserodd developed as major trading ports for the north of England, whilst Grimsby specialised as a fishing port. The hamlets of Wyke and Myton at the mouth of the River Hull were acquired by the monks of Meaux Abbey in the 12th century, both to graze sheep and ship out the wool (Williams and Fairbank 1991: 13).

7.4.61 Sheep farming and wool exports from Wyke flourished and when King John introduced experimental tax on trade in 1203-4, Wyke was the sixth busiest trading town taxed. When a permanent system of export duties on wool was established in 1275, Wyke on the River Hull was made one of the customs head ports (Childs 1990: 5). The Hull customs officials supervised all ports along the Yorkshire coast, including Whitby, Scarborough and Ravenser which were busy enough to warrant permanent officials. These ports did not handle wool but specialised in imports, particularly of fish (Childs 1990: 5).

7.4.62 Hedon declined as a port during the 13th century, partly due to the difficult approach by a winding creek, whilst Ravenserodd on the coast was exposed (Childs 1990:5), and subject to erosion. King Edward I bought Wyke from Meaux Abbey in 1293 and the port at Hull developed significantly, furthering the decline of other ports in the Study Area (Childs 1990: 5).

7.4.63 By the early 14th century, two thirds of wool export ships were foreign, with masters predominantly from the Low Countries. Of the English ships involved in wool exports from Hull, half were Yorkshire owned, mostly by Hull merchants. In 1304-5 there were a total of 142 wool ships leaving Hull (Childs 1990: 22).

7.4.64 Most foreign imports came on foreign ships, from the Low Countries mostly, but also Scandinavia and Germany. Scarborough also had foreign imports from NE France. In addition to the 142 wool ships, 91 ships brought foreign goods into Hull. By In comparison, 462 foreign ships bought goods into Scarborough, Whitby and Ravenser (Childs 1990: 22). Shipping patterns changed through the 14th century, with larger ships bringing similar total tonnages of goods, with 54-80 ships exporting wool and cloth from Hull and 66-85 importing goods (Childs 1990: 22).

7.4.65 By the late 14th century half the wool exporting ships working out of Hull were English, the rest coming from the Low Countries. The English share of shipping in the Humber was maintained at about 50% through to the end of the 1500's (Childs 1990: 23).

7.4.66 Ships were of a variety of types and sizes, but were generally round-bottomed and described as 'naves'. There was also the occasional 'cog' a ship typical of the Hanseatic merchants with even fewer described as barges or balingers. Ships including ketches, '*keels'* and '*hodulcogs'* acted as lighters for larger ships in the rivers (Childs 1990: 24).

7.4.67 Many of the sea-going cargo ships were under 100 tuns, with most under 200 tuns. The main categories for duties in Hull were 10-20 tuns, 20-60 tuns, 60-100 tuns and over 100 tuns. By the end of the 14th century however, ships were significantly larger. Wine ships from Hull demonstrate the increasing sizes with a max tonnage recorded in 1348-9 of 130 tuns and by 1445-6 a max tonnage of 380 tuns (Childs 1990: 24).

7.4.68 Although technically capable of sailing any known route at this period, it seems that the Hull ships rarely ventured beyond the sea routes across the North Sea, with the exception of trade with Bordeaux for wine. The Hull ships were, however, amongst some of the first to develop fishing and trade with Iceland (Childs 1990: 25).

7.4.69 Fish was an important part of the medieval diet. The church forbade meat for more than two days a week, plus during the six weeks for Lent (Saul 1981: 33), making fish a very necessary commodity. The main fish imports to Hull were herring and cod, but plaice, mudfish, skate and eels were also brought from the North Sea, Skania and south-west Norway by merchants from Hanseatic ports and the Low Countries. Salmon was also imported by Hanseatic and Scottish merchants. It is known that there was a large local Humber and Yorkshire coast fishing fleet although almost no information has been recorded about it as they were not taxed and therefore their activities have left no record (Childs 1990: 16). By the late 14th century foreign imports of fish were no longer in hundreds of small boats but a few larger vessels, mostly owned by locals.

7.4.70 The wine trade from Bordeaux to Hull accounted for a significant proportion of all shipping in the Humber, as Hull was one of three provincial importers in England. Average annual imports between 1400 and 1420 were around 1200 tuns, with a maximum recorded of 1800 tuns (Childs 1990: 17).

7.4.71 Pitch, bitumen and timber for building and shipbuilding were imported ever since customs records began in Hull. These items came mostly on Hanseatic and Norwegian ships. Whilst local timber seems to have been used to construct ships hulls, imported material seems to have been used for internal work and superstructure. Some masts were also imported (Childs 1990: 20).

7.4.72 By 1400 Hull was the third busiest port behind London and Boston. Exports from the Humber region were initially dominated by raw wool, hides and skins, but after 1400 by woven textiles. Imports to Hull came primarily from the closest geographical neighbours in Scandinavia, Germany, the Baltic, Low Countries and north-east France, however, there was also established trade with Spain, Portugal, Italy and Bordeaux. Imports included softwoods, iron and furs from Scandinavia, leather, olive oil and fruit from Spain and Portugal and spices, silk and wine from Italy. The majority of wine imported into the region came from Bordeaux, and along with it fine Saintonge pottery (Williams and Fairbank 1991: 23).

7.4.73 The NRHE documents losses of vessels voyaging during the 11th, 13th and 14th centuries within and across the MAREA Study Area. Documented losses were primarily of cargo ships carrying wool, cloth, herring and wheat across the North Sea between Germany, Norway, Netherlands, Scotland and England. Only four of the twenty losses are of named vessels.

7.4.74 By the late medieval period, purpose-built warships were constructed and the shipbuilding practices for both warships and merchant vessels were adapted to cope with an increase in tonnage and the increased threat of piracy. In order to facilitate the propulsion of these more substantial vessels, it became common practice to increase the single mast to three or four masts and extra rigging. The introduction of the carvel technique of flush planking also became a universal technique of construction for larger craft throughout Europe, although the clinker technique continued to be used on smaller vessels and to embellish the upper works of status craft. The development of reliable navigation techniques had further implications on medieval maritime activity, enabling long oceanic voyages and greater distances to be travelled (Kemp 2002).

7.5 COASTAL AND SEAFARING ACTIVITY: 1509-1815

7.5.1 Whilst global events during this period would see the mercantile communities of northern Europe make substantial economic endeavours to encompass a new transoceanic network link between the North Sea and the East and West Indies, the trade routes for Humber shipping changed very little between 1500 and 1700 (Davis 1978). The international transatlantic links would ultimately contribute to the beginning of a 'Golden Age' in Northern European fortunes (Glete 1999: 19), but for much of this period the sight of a Virginian tobacco ship was a rare occurrence in the Humber (Davis 1978: 27).

7.5.2 This period saw gradual increases in the overall tonnage of shipping into Hull, increasing from 4-500 (imperial) tons in 1567 to around 34,000 tons in 1765, resulting from both increasing number of ships but also the increase in size and capacity of those ships (Davis 1978: 6). Immediately before 1600 less than half of the Baltic traders in Hull were over 50 tons but by the end of the 1630's over half were over 150 tons, with a 300 ton ship built for Hull merchants in Ipswich (Davis 1978: 23).

7.5.3 The main changes in shipping in to and out of the Humber through this period were in the primary destinations and cargoes carried. During the late medieval period Hull was one of the major exporters of wool from England but by the late 17th century it was importing wool and exporting textiles. At the start of this period the majority of shipping in the Humber was involved in coastal trade between Newcastle, Hull and London, with some trade with the Baltic, Low Countries, northern France and Bordeaux.

7.5.4 After the 1651 Navigation Acts, the Dutch entrepôts declined and Hull traders developed significant trading links with Norway and the Baltic. By the end of the 17th century the goods being imported and exported had changed dramatically. The major tributaries of the Humber provided transport connections for the Nottinghamshire, Derbyshire and South Yorkshire coal fields, the Derbyshire lead mines, the textile producers of West Riding, corn, wheat, barley, cheese and butter from the Derbyshire, Staffordshire and Cheshire farms, iron and brass from the midlands and tools from Sheffield. All these goods were being exported from Hull by the end of the 17th century, much of it to London but also to the Low Countries and France (Davis 1978: 15). A very small percentage of recorded losses within the

MAREA Study Area date to the 16th and 17th centuries, and many have very little information regarding cargoes or voyages. The information available, however does indicate that much of the British owned shipping in the region was involved in transporting coal from Newcastle-upon-Tyne, whilst a smaller number of British and foreign ships were involved in transporting goods such as wine.

7.5.5 The development of manufacturing industries across the north of England increased the need for raw materials, particularly corn, timber, flax, iron, pitch and tar. The main source of timber was Norway with wood used in the ship building centres of the east coast and coal pits. The Norwegian timber merchants seem to have specialised in the export, seemingly not trading for English exports but for silver (Davis 1978: 18). The unequal nature of cargo trade by the later 17th century, with low value raw materials imported and high value finished product exported, required a substantial change in the exchange systems. Goods had previously been exchanged directly for other similar value goods, however the unequal value of cargos at the end of the period required the use of silver and bills of exchange, leading to significant developments in international economic systems (Davis 1978: 22)

7.5.6 In addition to trading ships, Hull ships were also involved in the early whaling industry, with trading recorded at Lapland, Archangel in northern Russia and Vardø in the Barents Sea from 1576 and whaling first recorded in 1598. Hull ships were also whaling off Bear Island and Spitsbergen by 1600 and by 1627-28 1 in 5 English whaling ships were Hull or York owned (Davis 1978: 12). Whaling continued in northern seas until the collapse of the industry shortly after 1660. The records of a Hull owned ship named *Greenland Adventurer* trading in the Mediterranean in 1680 suggests that ship owners had found other uses for their whaling ships (Davis 1978: 12).

7.5.7 By the 18th century a significant proportion of documented British or English shipwrecks within the MAREA Study Area were involved in transporting coal between Newcastle-upon-Tyne and London. A range of nationalities were involved in shipping within the Study Area, primarily from Scandinavia, the Baltic and Low Countries and France. The majority of voyages were across the North Sea and Baltic with raw materials such as coal, timber, salt, corn, wheat, rye, copper, lead, flax and finished goods including cheese, sailcloth, rope and glass. Some merchants were beginning to travel further afield with wrecked ships recorded en route to Jamaica, Philadelphia and Portuguese ports.

7.5.8 A wide range of ship types are recorded as having been lost within the Study Area, including smaller vessels such as pinks, snows, brigs, sloops and Flemish hoy's, and larger vessels such as schooners and brigantines. Just one vessel is recorded as a passenger ship.

7.5.9 The dangers of sailing in British waters were not only confined to the natural navigational hazards, or storms which resulting in the majority of wrecks in the Study Area. Records also include a small number of wrecks caused by the actions of both British and French Privateers.

7.5.10 Despite the continued importance of fish to the post-medieval diet, and the growth of the Grimsby and Yorkshire fishing fleet during the 18th century, only two fishing vessels are recorded as wrecking in the Study Area. Research into the Yorkshire fishing fleets at this time indicate that the fishing fleets based in the north-east of England were involved in seasonal fishing out on the Dogger Bank and off East Anglia. The large fish from the Dogger Bank were sold to the growing coalfield

populations at Newcastle and Sunderland, whilst herring from East Anglia was sold directly to Great Yarmouth merchants (Robinson 1987: 13). One of the vessels recorded as lost within the Study Area (**WA_9108**) was a traditional craft from the north-east, a coble. The coble is distinctive vernacular boat with a flat bottom and high bow, which enabled it to be launched from a beach but also cope with rough North Sea conditions. Cobles maintain aspects of the Nordic boat building tradition, being clinker built, but each boat varies according to fishing needs and launching environments.

7.5.11 The growth of industry and trade in the Humber basin during the post-medieval period led to the accumulation of wealth and specialist skills in the city of Hull, which would enable it to become one of the two great ports of the industrial revolution (Davis 1978: 29). By the end of the 18th century the port of Hull was so busy that the river had become so congested with ships, leading to the formation of the Hull Dock Company in 1774 and construction of the first dock, which opened in 1778 (Bellamy 1979:5).

7.5.12 The MAREA Study Area would have continued to be utilised and traversed by a wide range of sailing vessels heading into the Humber ports or across the region for ports to the north and south of England. Records of dock duties show that Hull was receiving approximately 5.8% of all overseas vessels entering UK ports in 1800, whilst a much larger percentage of all shipping in UK waters would have been passing through the Study Area. At the beginning of the 18th century the total of British owned shipping tonnage was approximately 323,000 tons. By 1788 this figure was over 1 million tons with the most important single contributor to the general nationwide expansion being the coal trade, essentially London's demand for the raw material. This was generally supplied from the north-east coast (Mathias 1983: 86) and the large number of colliers recorded as wrecking within the Study Area indicates it was on the main shipping route from Newcastle to London.

7.5.13 Trade and shipping at Hull was significantly affected by the blockage of continental ports during the Napoleonic War, however the town saw an expansion of the whaling fleet and growth in shipbuilding. The increased demand for naval and whaling ships during the War enabled the population to rise by around 25% between 1801 and 1811. The continued growth in shipping levels is indicated by the records of nearly 300 master mariners living in Hull in 1803, along with 25 timber importers and 40 mercantile agents. Much of the wood imports to Hull came from the Baltic and Scandinavia for use as flooring, barrel manufacture, ship and house building. It seems that the growth in trade with America by-passed Hull, however, trade did increase with ports in Russia, the Mediterranean, France and Spain and traditional routes to Scandinavia and the Baltic (Bellamy 1979: 7).

7.6 COASTAL AND SEAFARING ACTIVITY: 1816-1913

7.6.1 The technological developments of the Industrial Revolution were the cause of dramatic changes to the economy, lifestyle and landscape of Britain in the 19th century. The effect upon landscape use and the coastal communications network within the Humber basin, with its riverine links to the industrial centres of Yorkshire, Lincolnshire and Derbyshire, was integral to Britain's industrial transformation. Increases in volumes of cotton being shipped from Hull, and the expansion of overseas trade after the Napoleonic Wars saw shipping levels in Hull exceed the levels required by the Dock Act 1802 to enable the building of a third dock. In 1829 Junction Dock was opened, connecting Humber and Old Docks and increasing the dock areas of the port to nearly 23 acres (Bellamy 1979: 16).

7.6.2 By 1825 more than two and half times the tonnage of 1815 was entering Hull from overseas, almost 10% of the tonnage entering British ports. Imports at Hull continued from traditional ports, with timber from the Baltic and wheat from Russia, but traffic from British North America increased to 14% of all overseas trade by 1840 (Bellamy 1979: 18). Wool became an important import to Hull for the West Yorkshire based textile industry and by the 1830's one third of wool imports were coming into Hull. The textile industry also accounted for approximately 45% of Britain's exports in the 1830s, the vast majority of which was departing from Hull (Bellamy 1979: 21).

7.6.3 During the course of the 19th century the technological innovations of the Industrial Revolution brought fundamental changes in maritime technology, which amongst other advances in naval engineering, enabled the development of steam propulsion and iron and steel hull construction.

7.6.4 Despite the relatively swift adoption of technological advances amongst land based industries, the Industrial Revolution was a more gradual transition within the maritime sector. Although the Hull Steam Packet Co. established the first regular steam shipping service in 1821, NRHE casualty records in the MAREA Study Area reveal that common sailing vessels such as brigs, schooners, sloops, ketches and dandys continued to be in use from the early 19th century right through to WWI. It has been suggested that the continued use of 'old' technology was in part due to the restraint of cemented cultural traditions and the uneven economic spread of such progression (Breen and Forsythe 2004: 127-128) however this could also be a reflection of the costs involved in construction, maintenance and adaptation of boats and ships.

7.6.5 The advent of the steamboat, initially using paddle wheels and equipped with single cylinder engines and low pressure boilers, brought a new type of traffic to the MAREA Study Area. Although sail was still the dominate means of transport at sea at the beginning of the 19th century, the first Atlantic crossing in May 1819 of the *Savannah* paddle steamer (with collapsible paddle wheels) certainly encouraged support for the technology. Steamships were quickly put to use for coastal voyages and shorter cross-Channel passages, and by the 1820s steamboat transport formed an extensive network around the British Isles (Pearsall 1985: 195). The only downside was that paddle steamers were high in coal consumption, thus limiting their range and competitiveness, and as such they were largely confined to the passenger trade where reliable quick passages were more important than cost (MacRae and Waine 1990: 11). As sail power gave way to steam, Hull's trading links extended throughout the world. Docks such as Alexandra Dock were opened to serve the frozen meat trade of Australia, New Zealand and South America. Hull was also the centre a thriving inland and coastal trading network, serving the whole of the United Kingdom (www.hullcc.gov.uk).

7.6.6 Paddle steamers are poorly represented in the NRHE, with no examples recorded as wrecking within the MAREA Study Area. Despite this, documents demonstrate that many paddle steamers were based in Hull throughout the 19th century providing fast transport along the Humber and its tributaries to Selby, Goole, Leeds and Gainsborough. A number of Humber based paddle steamers were used for coastal passages to Great Yarmouth or London whilst others were involved in cross channel routes to Ghent, Antwerp, Rotterdam and Gothenberg (www.humberpacketboats.co.uk/packetboats.htm).

7.6.7 Paddle steamers were gradually superseded by screw propeller driven vessels, which provided an alternative and more efficient means of propulsion. Although the first screw propellers were introduced in the 1830's it was not until the development

of the compound engine in 1854 that vessels equipped with screw propulsion could truly compete with sail or paddle steamers. Many early steam engines were installed into wooden hulled vessels, which were often reinforced to take the extra weight. Records of shipping casualties in the Study Area shows this use of steam engines in wooden hulled ships continued right up to the 20th century.

7.6.8 Although the use of iron in shipbuilding can be dated back until at least the late 18th century, it did not displace wood as the primary construction material in shipbuilding until the 1860s and 1870s (Graham 1957: 77; Ville 1993: 52). Initially, iron was used to supplement structural elements in shipbuilding, although it was later used for angular joints or knees and the framing of vessels. Further advances in hull construction took place with the introduction of steel in shipbuilding practices. Steel was used periodically for ship construction from the late 1850s but did not supersede iron generally until the introduction of the Bessemer and Siemens processes in 1885 (Greenhill 1993: 89; Ville 1993: 52). The use of metal in shipbuilding enabled the construction of more durable vessels with a larger displacement and stowage capacity (Ville 1993: 73).

7.6.9 The earliest example of both an iron hulled and screw steamer wrecked within the MAREA Study Area is the *Marshall* (**WA_8060**). The *Marshall* was a 307 ton iron hulled German steamship, built in 1846 in South Shields, fitted with a single iron screw propeller powered by a 2 cylinder compound steam engine. The *Marshall* sank on 28th November 1853 whilst en route from Hamburg to Hull, after a collision with the wooden barque *Woodhouse* at the approaches to the Humber in thick fog (Young 2003: 159). The wreck is collapsed and well broken up, at a depth of 15m, with iron hull plates, frames and machinery identifiable on the seabed. The boiler and engine sit upright on the seabed, upstanding around 2.4m. The site is located 2km west of Area 102.

7.6.10 Further advances in the 1880s saw the construction of high pressure steel boilers at competitive costs and the consequent development of the triple expansion engine, leading to the production of vessels which could be operated with a much greater efficiency and were more economical than a sailing vessel.

7.6.11 The industrial and technological developments of the early 19th century did not only affect maritime technology, but also saw the development and expansion of the canal and rail network across Britain. Hull was linked with the national rail network in 1840 and in 1852 a line to the Royal Dock at Grimsby was opened. During this period shipping at Hull had remained fairly static whereas trade at Goole, Grimsby and Gainsborough had greatly increased. Many ships were leaving Hull in ballast heading for the coalfield ports at Newcastle and Sunderland to collect coal and coke for export elsewhere. Part of the blame for the relatively poor performance of trade at Hull was the lack of export goods and the lack of rail connection to the Yorkshire coalfields up until 1869 (Bellamy 1979: 30).

7.6.12 The Crimean War in the 1850s had only a small impact on shipping in the Humber, with slightly decreased volumes of trade, as most goods were able to travel via Prussian ports or overland via Germany. The American Civil war in the 1860s however had as significant impact on shipping as supplies of cotton became difficult to access. The lack of raw material had a knock on effect at the mills, with the closure of some Hull mills, and reduced textile exports from Hull (Bellamy 1979: 34).

7.6.13 The fishing industry had always been an important component of shipping in the Humber, with fluctuations in the whaling fleet and fishing for local and London consumption. Whaling was briefly resurrected with the use of larger steam powered

ships, able to combine whaling and sealing in one trip. Many of these ships were based in Scotland, at the expense of those in the Humber. The loss of the steam powered *Diana* in 1869; however, saw the end of whaling from Hull. In the meantime, trawl fishing in the North Sea was a growing industry for the Humber ports after the discovery of the fishing grounds at Silver Pits sometime between 1837 and 1850 (Robinson 1987: 47).

7.6.14 Interestingly, despite the increase in steam powered technology, the majority of North Sea trawlers were sailing smacks. Three sailing smacks are reported to have sunk within the MAREA Study Area, one within Area 439, and ranging in date from 1879 to 1915. However, all are reported by SeaZone to be DEAD indicating no wreckage has been identified on the seabed. The Humber based sailing smacks were small, around 23 to 36 tons and around 12m (40ft) long. They were usually lightly rigged to facilitate manoeuvring of trawl gear (www.hulltrawler.net).

7.6.15 At the turn of the century, around two thousand sailing smacks were trawling in the North Sea. In 1874 the fleet at Hull numbered 740 ships, of which 541 were fishing vessels, approximately 73% of the fleet. This intensity of fishing activity is reflected in the losses for this period in the MAREA Study Area, accounting for approximately 6% of NRHE casualty records and 22% of wrecks with a known function within the SeaZone data provided (and compiled into the maritime archaeology gazetteer; **Appendix VI**).

7.6.16 The dominance of the sailing smack at Hull and Grimsby began in 1885 with the construction of the first purpose built steam trawler *Irrawaddy*, and came to an end in 1900 when Hull became the first English port to completely dispense with white fish sailing vessels (Robinson 1987: 71). The LIVE wrecks of two Grimsby steam trawlers lie within the Study Area, *Crux* (1912) (**WA_8021**) and *Dayrian* (1913) (**WA_8024**). *Crux* was a 132 ton steel hulled steam trawler built at Govan in 1896, fitted with a triple expansion steam engine and single screw propeller. *Crux* ran ashore at Out Newton and the wreck site has been identified by divers. Visible features include the engine and boiler upstanding and recognisable propeller shaft surrounded by corroded plates and frames (Young 2003: 150). The *Dayrian* was a 234 ton steam trawler built in 1906 at Goole and lost south-east of Spurn Head in the approaches to the Humber after a collision in thick fog. The site is well broken up and has been wire swept to reduce its height and risk to navigation (Young 2003: 168).

7.6.17 In the late 1890's Hull and Grimsby steam trawlers were heading further afield and started to fish off the Icelandic coast, which lead to numerous disputes over the limits of Danish territorial waters and the arrests of fishermen in disputed waters. The dispute came to a head in 1899 when the Captain of the Grimsby steam trawler *Caspian* was arrested for allegedly fishing illegally inside Danish Icelandic waters. The captain boarded the patrolling Danish gunboat, where he was lashed to the mast, having instructed the mate to set off at full speed. The gunboat fired several shots at the unarmed fishing boat but could not catch the trawler, which returned to Grimsby heavily damaged and riddled with holes (www.hullwebs.co.uk/content/l-20c/industry/fishing/cod-war/cod-war-1893.htm).

7.6.18 The revenues from the Icelandic fisheries were, however, huge and the Humber fishing fleets and economies flourished at the turn of the century through their exploitation. It is estimated that approximately 10,000 people were employed in the fishing industry in Hull, as trawlermen, shipbuilders, in smoke houses, fish markets, ice manufacture and associated industries including rope, twine and net making. By the end of the 19th century, fishing had become the dominant sector of trade.

7.6.19 As the 19th century came to an end the Royal Navy was certainly outdated. Despite the Admiralty's prestige and experience an increasing threat was posed by Germany with the opening of the Kiel Canal in 1895 and the passing of Navy Laws in 1898 and 1900. By the beginning of the 20th century it became clear that an arms race would ensue, the focus of which would be the battleship. The Royal Navy underwent a rapid revolutionary change which effectively resulted in the total replacement of the frontline ships of the fleet with the Dreadnought class (Roberts 1997: 7).

7.6.20 The centralised recording of ship losses was greatly improved by the late post-medieval period, and as such, the available record of losses is both more complete and accurate. The incorporation of metal elements within vessel designs from the mid 18th century onwards also means that wrecks are often more evident on the seabed than their predecessors as their upstanding components are apparent to bathymetric and geophysical survey, and they generate strong magnetic anomalies.

7.7 COASTAL AND SEAFARING ACTIVITY: 1914-PRESENT

7.7.1 In 1907 Admiral Lord Charles Beresford recommended that steam trawlers be used in the role of minesweepers in the event of war, allowing warships to undertake other, more appropriate, duties. At the outbreak of the WWI in 1914, around 800 of the Humber based steam trawlers were requisitioned for minesweeping and anti-submarine duties and the a new rank, Skipper Royal Navy Reserve was introduced for skippers working in the Trawler Section of the Navy. With only around one quarter of the national fleet remaining on fishing duties and the North Sea fisheries out of bounds due to the dangers of enemy action, the national supply of fish dropped significantly. Despite, this, the proportion of fish caught by the Humber fleets actually increased during the war as they were able to maintain access the Barents and Icelandic fishing grounds (www.hullwebs.co.uk/content/l-20c/conflict/ww1/trawlers/default.htm).

7.7.2 Within hours of war being declared, German vessels were seen laying mines off the Suffolk coast, and it is thought around 600 mines were laid off the east coast of Britain within the first month. By the end of August 1914 a corridor inside the minefield had been swept and buoyed as safe. The minesweepers maintained a cleared area through the minefield one mile wide and over 540 miles long throughout the war. This safe channel, known as the War Channel, stretched from Dover to the Firth of Forth, and enabled British shipping and convoys to move safely around the east coast (www.hulltrawler.net/).

7.7.3 The maintenance of a relatively safe east coast shipping route facilitated the transport of cargos from the coalfields of north-eastern England, passing close to and directly through the MAREA Study Area. This route was the main supply line to London, which accounted for the single largest consumption of fuel in England (Hewitt 2008: 7).

7.7.4 During the WWI the British laid 116,000 mines in the North Sea and English Channel. In addition, the Americans laid 56,000 mines and the Germans 25,000 mines in over 1000 minefields in British waters. In total, mines in the North Sea and English Channel are thought to have caused the loss of 150 German ships including 35 U-boats, 46 Royal Navy warships, 269 merchant ships and 63 fishing ships. It is thought over 1 million tons of Allied shipping was lost as a result of the minefields in this period (Steffen 2005: 802).

7.7.5 In response to Royal Navy blockades of German ports, the Germans deployed submarines to create a blockade of British ports. The U-boats attacked British ships

without warning, often while submerged. The approach was successful, but a successful blockade would require action beyond the North Sea. Ships from America and the Mediterranean were sunk as they approached ports in the Channel, Irish Sea and North Sea in an attempt to prevent food and essential supplies entering Britain. Operations on the east coast were an important part of the strategy, focussing on Scandinavian merchant ships, coastal shipments and trade from the Humber and Tyne. Although U-boat operations on the east coast were sporadic and initially limited, the addition of torpedo boats and more powerful U-boats meant that by 1917 the Germans were inflicting significant damage on imports to Britain (Young 2003: 8).

7.7.6 To protect the maritime trade upon which Britain relied, the use of convoys was introduced, whereby merchant ships were escorted by naval patrol vessels and sometimes aircraft. By concentrating ships in a small area, roaming U-boats would struggle to find targets in open water (Steffen 2005: 802). The success of the convoy system enabled safe shipping between Norway and Britain, and for colliers heading from north-east England to London and France. Of the 16,000 ships that sailed in convoys along the east coast in 1918, only 35 were lost to U-boat attacks (Young 2003: 10).

7.7.7 Within the MAREA Study Area SeaZone reports a total of 52 wrecks lost during the WWI, concentrated in a section running roughly north-west to south-east in the central part of the Study Area. The NRHE records a total of 57 casualties within the Study Area at 21 defined Named Locations. Thirteen located wrecks within the Study Area were lost due to mines whilst others are recorded as lost due to torpedo or gunfire. Three located wrecks are recorded as scuttled by U-boats after capture. In addition to those lost as a direct result of military action, there are also a number which were lost due to navigational errors causing collisions and strandings.

7.7.8 The *Schieland* (**WA_8081, 8082**) was a 1,106 ton Dutch steamship which was sunk after hitting a German mine in April 1915, with the loss of all crew. The wreck lies within Area 105, but outside the F15EZ, and is described as totally collapsed, standing 3.5m above the seabed around the boilers and engine (Young 2003: 188). The *Onesta* (**WA_8115**) was a 2,674 ton Italian steamship which sank after being torpedoed by the German submarine SM UC63. The wreck is collapsed and broken up, standing 4m high amidships where the boilers are exposed and lies within the F15EZ for Area 106/3.

7.7.9 Despite the Treaty of Versailles, which forbade German construction or ownership of U-boats, Hitler ordered the construction over 1000 U-boats before the outbreak of the WWII. The German occupation of France, Holland and Norway provided the Germans with relatively free access to the North Sea, Channel and Atlantic, where U-boats targeted merchant convoys far from land (Young 2004: 9).

7.7.10 The impact of U-boat attacks on merchant shipping during the war was huge, with over half of all Allied shipping losses between 1939 and 1945 due to U-boats. In 1938 Great Britain was importing around 22 million tons of food and drink, 28.5 million tons of raw materials and 9.5 million tons of oil. In addition, electric power stations on the Thames relied on ships bringing coal from the north-east of England (Young 2004: 9).

7.7.11 The success of shipping convoys during WWI meant that Britain was well prepared when war broke out again in 1939. Three days after war was declared, the first east coast convoy sailed, with subsequent convoys heading north and south on alternate days. North bound convoys assembled at Southend and were designated FN, whilst

south bound convoys assembled at Methil on the Firth of Forth and designated FS. Vessels also joined and left the convoys at Hull, Middlesbrough, Sunderland, the Tyne or Blyth. The east coast shipping lanes were one mile wide and marked with red buoys to assist with navigation. The lanes were regularly swept by minesweepers (Young 2004: 9).

7.7.12 In addition to the use of fast E-boats and U-boats, the Germans used aircraft to sink ships. Aircraft were able to bomb and machine-gun ships or drop targeted torpedoes and mines, which resulted in at least twelve of the located wrecks within the Study Area. German airborne attacks targeted lone ships at sea, which were less likely to be able to mount any serious defence.

7.7.13 The success of the convoy system can be seen in the numbers. Of the 1,744 north bound convoys, totalling 50,257 ships, only 95 were lost. Southbound, 54,517 ships travelled in 1840 convoys of which 108 were lost. Four located wrecks within the MAREA Study Area were lost whilst part of an organised convoy and may be eligible for protection under the PMRA. The large majority of wrecks located by divers in the Study Area, however, were sunk by hitting mines, indicating that there was a large volume of shipping taking place beyond those in convoys.

7.7.14 Several wartime losses are recorded within the Licence and Application Areas, with a further five located within F15EZ Areas. HMS *Benvolio* (**WA_8197**) lies within the Area 102 F15EZ, HMS *Egret* (**WA_8127**) lies in the Area 448 F15EZ (Young, 2004: 178), *Onesta* (**WA_8115**) (discussed above) lies in the Area 106 F15EZ, *Freidig* (WA_8133) lies within the Area 107 F15EZ (Young 2004: 240) and the *Welsh Prince* (**WA_8267**) within the Area 440 F15EZ (Young, 2004: 217).

7.7.15 In addition to the obvious loss of life and cargo caused by enemy action, the vast number of shipwrecks off the east coast caused problems in themselves, becoming navigational hazards. At least three ships were lost in the Study Area after they struck submerged shipwrecks, including the *Georgios* (**WA_8187**) which struck the *Canada* (**WA_8182**) which had sunk after hitting a mine just six weeks earlier.

7.7.16 The wreck data for WWII is similar to that of WWI, however, there are significantly more shipwrecks located in the mouth of the Humber in the later period. The data for WWII seems to be more accurately recorded, with many more located wreck sites than in previous periods. This increase in located shipwrecks may be in part due to improved technology allowing vessels to be more accurately positioned at the time of loss, and therefore investigated by divers.

7.7.17 The coastline of the Study Area was well fortified during both World Wars, with many defence sites both recorded historically and still evident along the coast. Sites dating to this period include anti-tank cubes, search lights, pillboxes, anti-aircraft batteries and gun emplacements. Some of these coastal and beach sites have already been damaged by coastal erosion, and many are at risk of collapsing down beach cliffs.

7.7.18 Maritime activity within the MAREA Study Area region throughout the post-war era is multi-faceted. The area provided an arena for military, commerce and leisure activities and an environment enabling overseas, coastal and inland voyages. As such, a diverse array of boats and ships continued to enter the archaeological record after 1945. Over 60 wrecks are recorded in the gazetteer from the post-1946 period, half of which were fishing vessels. Accidents continue to happen, with three wrecks dating to the 21st century. Other types of ship wrecked in the Study Area include a ferry, light ship, yacht, pilot cutter and an oil and chemical tanker. Three

shipwrecks (**WA_8338, WA_8356 and WA_8358**) dating post-1946 are located within F15EZ areas.

7.7.19 Although the number of wrecks has steadily declined throughout the 20th century, with improvements in positioning technology, the overall volume of seafaring activity continues to be very high. Due to the intensity of activity within the MAREA Study Area during this period, the potential exists for the presence of currently uncharted wreck sites.

7.8 MARITIME ARCHAEOLOGY: SUMMARY

7.8.1 From the baseline assessment it is clear that there is the potential for the remains of vessels which date from at least the Mesolithic period to the present day within the MAREA Study Area. The density of marine traffic which has passed through the MAREA Study Area since the Mesolithic is immense. Furthermore, by its close proximity to Scandinavia and Low Countries and its position as a direct passage for shipping traffic passing from the north of Britain to London, there is the likelihood of significant wreckage still to be discovered within the MAREA Study Area, sunk either by accident or by war. Encompassing such a major stretch of the English coastline, the MAREA Study Area bears witness to some fundamental moments in British history. With this quantity of shipping activity within the region, the potential for the remains of vessels within the MAREA Study Area is clearly very high.

7.8.2 This potential is further enhanced by the nature of the seabed topography within the MAREA Study Area. The highly mobile and numerous sandbanks which characterise the shallow geology of the region are considerable navigation hazards but also have the ability to preserve shipwrecks of considerable size. Although in some cases the remains of vessels would not survive intact due to post-depositional processes, the debris field associated with a wrecking incident may also be sealed within the sandbanks.

7.8.3 Consideration must also be given to the potential for isolated finds that may have come to be on the seabed having been lost or discarded overboard. Such finds may not only be useful in defining the preferred sea routes within the MAREA Study Area throughout the centuries, but may also provide evidence for other maritime activities, such as overseas commerce and naval warfare. A number of finds reported through the TCE/BMAPA/EH Protocol for Reporting Finds of archaeological interest (http://www.wessexarch.co.uk/projects/marine/bmapa/discoveries.php) highlight the importance of isolated finds for enhancing our understanding of the past. Since the start of the Protocol in 2005, a number of cannon balls have been found in material dredged approximately 25km south-east of Southwold on the Suffolk coast, outside the MAREA Study Area. Assessment of their calibre indicated they were of 17th century date and and may have been associated with the Battle of Lowestoft 1665 and the Battle of Sole Bay 1672 during the Anglo-Dutch Wars. The cumulative knowledge gained through the discovery and assessment of isolated finds from the sea is important as it enables the correlation of objects to significant episodes in Britain's maritime history, but also in being indicative of the density of maritime activity within the region during the post-medieval period.

8 AVIATION ARCHAEOLOGY

8.1 INTRODUCTION

8.1.1 Since the advent of powered human flight in the early 20th century, thousands of military and civilian aircraft have been lost around the UK. Aircraft losses at sea span the entire period of aviation history, from the introduction of flight to the post-WWII period. However, although records of aircraft losses at sea are extensive, data regarding their location is limited.

8.1.2 A guidance note published by English Heritage (EH) entitled Military Aircraft Crash Sites (English Heritage 2002) outlined a case for recognising the importance of aircraft crash sites, specifically with regards to existing and planned development proposals which may have an impact on such sites. The guidance note argues that aircraft crash sites not only have significance for remembrance and commemoration, but they also have an implicit cultural value as historic artefacts, providing information on the aircraft itself and also the circumstances of its loss (English Heritage 2002: 2).

8.1.3 Although the extent of knowledge of air crash sites on the seabed is limited, Wessex Archaeology has broadly characterised the resource by drawing out a few generalisations on importance and special interest (Wessex Archaeology 2008b). It is with regards to the three broad chronological divisions outlined by Wessex Archaeology that aviation archaeology will be discussed here:

- **Pre-1939**: The period of intense and rapid development of a new technology, from the advent of powered flight to the outbreak of WWII. Although at least 119 different aircraft models were used by the military in the UK during this period, examples of only 24 survive today anywhere in the world. This, alongside the fragility of the airframes and the relative scarcity of flights over water deem any aircraft remains dating to this period of special interest;
- **1939-1945**: By the onset of WWII, advances in technology had greatly extended the reliability and range of aircraft. Such technological innovation enabled aircraft to increasingly undertake long-range flights, including many flights across the MAREA Study Area. The period can be split into three main phases; activity associated with the Battle of Britain and earlier; post Battle of Britain to 1943, where part of the British strategic bombing effort was based in the Study Area; and post 1943, where the deployment of the USAAF, predominantly to East Anglia, resulted in the shifting of significant numbers of British bombers to airfields in Lincolnshire and Yorkshire. In addition the assembly areas for large British and US raids were off Norfolk and Lincolnshire and collision risk was a real hazard. This period, unsurprisingly, saw the highest number of aircraft casualties - and human casualties - in the history of aviation and as such has special significance;
- **Post-1945**: A period characterised by the rapid development of jet propulsion technology and its use in both military and civilian aviation applications.

8.2 AVIATION ARCHAEOLOGY PRE-1939

8.2.1 Fixed wing aviation first began in the early 1900s, with the flight across the English Channel in 1909 (www.rafmuseum.org.uk/milestones-of-flight/british_civil/1909.cfm). All of the aviation wrecks and recorded aviation crashes within the MAREA Area, from this period, date to WWI.

8.2.2 Military association with aviation begins in Britain with the establishment of the Royal Flying Corps in 1912 and the later Royal Naval Air Service (RNAS), created in July 1914. During WWI, the potential of airpower as an independent sector of the armed forces became increasingly clear (Lake and Francis 1998: 13). The patrols of the RNAS had pioneered the role of airpower from purely reconnaissance motives to an increasingly strategic role, and by April 1918 the Royal Air Force (RAF) had been established as an independent force (English Heritage 2000a; Lake and Francis 1998: 13).

8.2.3 The Yorkshire and Lincolnshire coastline was home to a number of early RNAS stations including Atwick 1914-1918, North Coates 1915-1918 and Owthorne 1917. RNAS also established two stations specifically for seaplanes along the coast of the MAREA Study Area at Killingholme Haven 1914-1918 and Hornesa Mere in 1915-1919.

8.2.4 The primary role of RNAS planes and bases in the MAREA Study Area, at this period, was to undertake fleet reconnaissance, patrol of the coast and shipping lanes, attacking enemy coastal territory and defending Britain from enemy air-raids. Aircraft from Killingholme were used to intercept Zepplins during early raids on Lincolnshire in 1914, whilst planes from Killingholme and North Coats were primarily involved in the defence of shipping convoys against submarines. The NRHE has records of one German Zeppelin, L17, being shot down in 1918, 8 miles north of Wells-next-the-Sea, Norfolk, just to the south of the Study Area.

8.2.5 The Department of Transport's Air Accident Investigation Branch (AAIB) records 20 civil aircraft losses at sea between 1920 and 1939, though this is not regarded as being a comprehensive record (Wessex Archaeology 2009: 65). The vast majority of these losses were off the south coast of England, with just one recorded as lost in the North Sea, the only possibility for a loss within the MAREA Study Area.

8.2.6 Archaeological aircraft crash sites at sea dating pre-1939 are likely to be relatively rare, and the lightweight construction of the earlier airframes means they are less likely to survive within the marine environment unless buried within seabed sediments. Any early air crash sites from this period are, however, likely to be very important.

8.3 AVIATION ARCHAEOLOGY: 1939-1945

8.3.1 By WWII advances in aeroplane technology enabled flights over water to take place with a much lower level of risk and airpower became increasingly important at a military strategic and operational level. The English Channel and North Sea formed a frontier between the Allies and Axis Europe during this period, becoming a significant focus for this high volume of aviation activity (Wessex Archaeology 2008b: 16).

8.3.2 In the years immediately prior to WWII, the Royal Air Force, an amalgamation of the Royal Naval Air Service and Royal Flying Corps, increased dramatically in size. The Lincolnshire and Yorkshire coasts were of strategic importance for the patrolling of the North Sea shipping lanes, defence and undertaking a significant Air Sea Rescue role.

8.3.3 From the 7th September 1940, the Blitz saw the sustained bombing of Britain, with coastal towns around the edge of the MAREA Study Area, such as Hull and Grimsby, suffering significant damage. Hull was the second most severely bombed

town in England, after London, with 82 raids causing damage to 95% of houses in the city (www.hullwebs.co.uk/content/l-20c/conflict/ww2/bombs/bombs-info.htm).

8.3.4 The level of aviation activity in the Study Area is demonstrated on land by the location of airfields and training bases notably at North Cotes, Owthorne and Donna Nook. Aviation defence structures within the Study Area include eight Chain Home/Chain Home Low radar stations. The Study Area has a large number of anti-aircraft sites along the coast, including over 120 pillboxes, 50 anti-aircraft batteries, and 25 aircraft obstructions along the coast, indicating the level of concern about enemy aircraft activity int his region. Evidence of the protection provided for the local population from air raids comes in the form of a number of surviving air raid shelters.

8.3.5 In response to the apparent discrepancies between the known and potential aircraft crash sites, WA was funded by English Heritage through the Aggregates Levy Sustainability Fund to undertake a scoping study entitled Aircraft Crash Sites at Sea (Wessex Archaeology 2008b). The study aimed to identify current gaps in data and understanding relating to aircraft crash sites at sea.

8.3.6 One of the most complete sources of information reviewed by WA during the scoping study for the WWII and post-war period was provided by published aviation researcher Ross McNeill. McNeill has recorded 11,090 RAF aircraft losses in the North Atlantic, North Sea, English Channel, Irish Sea and Biscay areas between 1939 and 1990, the majority of which occurred during WWII (Wessex Archaeology 2008b: 18). Of these aircraft crash sites 118 are thought to be off the coast of Lincolnshire and 216 off Yorkshire. Although the accuracy of the data supplied by McNeill has not been verified, it was collated through a systematic study based on both primary and secondary sources and suggests a high volume of potential aircraft crash sites within the MAREA Study Area.

8.3.7 A review of maps showing the location of WWII Air/Sea Rescue Operations suggest that over 110 recorded Air/Sea Rescue Operations took place within the MAREA Study Area (**Figure 15**), of which 57 were recorded as unsuccessful (meaning no surviving crew were located or recovered from the water). There seems a fairly large disparity between the Air/Sea Rescue Operations and the estimated losses illustrated above. However, this may be due to limited reconnaissance of the Coastal Commands Air/Sea units. Although the mapped location of these operations is not necessarily reliable, the locations provide a useful guide to the general distribution and potential density of aircraft crash sites within the MAREA Study Area. A review of these operations alongside the recorded aircraft crash sites within the NRHE highlights the disparity between the known and potential resource with regards to aviation archaeology.

8.3.8 Commercial aircraft may also have been lost in this period, although none were recorded by the AAIB from 1939-1945 in the MAREA Study Area. This Figure is thought to be unlikely and is more a factor of the acknowledged incompleteness of the AAIB records, than real numbers of losses (Wessex Archaeology 2008b).

8.4 AVIATION ARCHAEOLOGY: 1945-PRESENT

8.4.1 Following WWII and until the early 1990s, military aviation activity was dominated by the Cold War. In response to threats posed by the Cold War, military aircraft research, design and development was further increased, much development of which was also applied to commercial aircraft (Wessex Archaeology 2009: 67). Technological innovation during this period saw the refinement of the jet engine,

which enabled the production of jet aircraft for both military and commercial purposes.

8.4.2 Throughout the periods prior to 1945, military activity provided the dominant impetus for aircraft design and development. However, following WWII there was a steady and rapid rise in commercial flights. Initially ex-military aircraft were used to transport people and cargo, with aircraft such as the American B-29 and the British Lancaster converted into commercial aircraft (Wessex Archaeology 2009: 68). The first purpose-built commercial jet airliner was the de Havilland Comet, which first flew in 1949 and entered service for the British Overseas Airways Corporation (BOAC) in 1952, between London and Johannesburg. Flights soon became an available means of travel within and around the UK for most people, and the volume of airliner activity across the MAREA Study Area is considerable.

8.4.3 Despite the volume of aviation activity across the UK, there have been very few major losses. The AAIB lists 120 civil aircraft losses at sea around the UK between 1946 and 1994, most of which comprise light aircraft or in more recent years helicopters associated with the North Sea oil and gas industry (Wessex Archaeology 2009: 68). Unlike in preceding years, the majority of military aircraft losses are due to training accidents rather than combat operations (Wessex Archaeology 2009: 66). Five of these civil aircraft losses are described as lost in the 'North Sea' with no further positional information, and could potentially lie within the MAREA Study Area.

8.5 AIRCRAFT CRASH SITES

Recorded Aircraft Crash Sites

8.5.1 There are five aviation wrecks located within the MAREA Study Area, however none of them lie within licence or application areas. The distribution of the sites is illustrated in **Figure 16** and summarised in **Appendix VIII**. Only one of the aircraft wrecks is dated (**WA_5571**) a USAF 5 15 which wrecked in April 1990. **WA_5573** is recorded as a German aircraft and could be a war casualty, but without further information this can not be clarified.

8.5.2 No aircraft remains have been recorded through the BMAPA protocol since 2005 (TCE, BMAPA and English Heritage 2005) within the MAREA Study Area. In the Anglian region, however, fragments of aircraft have been identified, along with of the possible remains of a German Airman. The fragments have been tentatively identified as from either a Heinkel He 111 or Junkers Ju 88 that may have gone down during the Battle of Britain around August 1940 (Wessex Archaeology 2007b). This example demonstrates the potential for the recovery of aircraft (and human) remains a relatively high state of preservation during the dredging process.

Recorded Losses of Aircraft

8.5.3 Of the 258 WWI and WWII recorded wreck sites listed in the NRHE data for the MAREA Study Area, 68 contained references to aircraft crash sites. The named locations of these aircraft wreck sites are illustrated in **Figure 16**, and a summary of the data is presented in **Appendix IX**.

8.5.4 Of the 68 reported aircraft losses, all but one was lost during WWII. From the data provided 12 are believed to be of German origin, with 4 Dorniers, 3 Junkers, 5 Heinkels. The remaining 56 losses were British and included 40 bombers and 14 fighters (the remaining 2 aircraft were not specified but could have been patrol,

reconnaissance or observation aircraft). Fourteen aircraft were lost in 1943 of which 6 were British bombers and four were fighters.

8.5.5 A Hampden MKI (**WA_5514**) was recorded as lost at the Inner Dowsing Falls, which is located within F15EZ Area 439, however the position is ascribed to an NRHE Named Location and is unlikely be an accurate location for any physical remains of the aircraft.

8.5.6 It should be highlighted that the locations associated with all these recorded losses are general, and are not specific identifiable locations. The 68 recorded aircraft casualties are recorded at just 24 NRHE Named Locations, one of which is 'Lincolnshire Coastal Waters'. Any military aircraft wreckage discovered would be immediately protected under the PMRA 1986.

8.6 AVIATION ARCHAEOLOGY: SUMMARY

8.6.1 Although recorded aircraft losses are predominantly concentrated within the period between 1939 and 1945, there is the potential for aircraft crash sites which span the entire period of aviation history.

8.6.2 The aircraft losses during WWII were considerable on both sides but despite the high levels of aircraft activity and losses over the MAREA Study Area, only five aircraft crash sites have been identified within the Study Area.

8.6.3 With the potential resource for aircraft crash sites large, and the number of known crash sites relatively small, the potential exists for the presence of a large number of unknown crash sites on the seabed within the MAREA Study Area. In providing favourable preservation, the seabed environment further enhances this potential, making the discovery of fairly intact aircraft on the seabed far more likely than for those discovered on land.

8.6.4 Despite this, due to the varied levels of preservation, and sometimes ephemeral nature of their remains, aircraft crash sites are not easily identifiable in marine geophysical survey. Furthermore, the remains of military aircraft which are found receive blanket protection under the Protection of Military Remains Act 1986, which prohibits the disturbance of a military aircraft wreck without a licence from the MoD.

8.6.5 Consequently, the potential for the remains of aircraft - especially military aircraft - to be present within the MAREA Study Area must be borne in mind during the assessment of any area ahead of seabed development.

8.6.6 Due to the uncertainty in positioning, some aircraft losses are included in the gazetteer of recorded losses (**Appendix IX**).

9 SITE SURVIVAL AND VISIBILITY

9.1 INTRODUCTION

9.1.1 In order to identify the impacts of existing and future dredging operations on the known and potential archaeological resource, the preservation of archaeological material and deposits within the MAREA Study Area is a prime consideration. Archaeological sites and material may be covered by metres of sediments which protect them or their preservation may be compromised by exposure. They may also be subject to human disturbance as a result of marine and seabed activities such as aggregate dredging.

9.2 PREHISTORIC ARCHAEOLOGY

9.2.1 The potential for prehistoric archaeological sites within the MAREA Study Area has already been discussed in this report (**Section 5 and 6**). However, the degree to which archaeological material can be expected to survive is a key consideration in the assessment of the submerged prehistoric archaeological potential within the MAREA Study Area. Since the earliest evidence for the occupation of the British mainland in *c*. 970,000 BP, artefacts may have been deposited in sediments on the Continental shelf whenever the glacial ice sheets caused the floor of the North Sea to be dry and beyond the limits of the ice (Flemming 2006: 6).

9.2.2 The critical period of survival for prehistoric archaeological material is the time when the surf zone starts to impact on the site, and the ensuing few hundred years as the sea level rises over the site (Flemming 2006: 12). Favourable factors for the survival of prehistoric archaeological material *in situ* in the southern North Sea, outlined by Flemming (2006: 12), are as follows:

- Very low beach gradient and offshore gradient so that wave action is attenuated and is constructional in the surf zone;
- Minimum fetch so that wave amplitude is minimum, wavelength is short, and wave action on the seabed is minimum;
- Original deposit to be embedded in peat or packed lagoonal deposits to give resistance and cohesion during marine transgression. Drowned forests and peat are good indicator environments;
- Where deposits are in a cave or rock shelter, roof falls, accumulated debris, concretions, breccia, conglomerate formation, indurated wind-blown sand, all help to secure archaeological strata;
- Local topography contains indentations, re-entrants, bays, rivers, estuaries, beach-bars, lagoons, near-shore islands, or other localised shelter from dominant wind fetch and currents at the time of transgression of the surf zone.

9.2.3 The factors listed above are those which promote the survival of the prehistoric archaeological resource *in situ*. The visibility of the archaeological resource is determined by further factors, outlined by Flemming (2006: 13) and listed below:

- Low net modern sediment accumulation rate so that the artefacts are not too deeply buried;
- No fields of sand waves or megaripples over the site;

- A slight change in oceanographic conditions so that the site is being gently eroded to expose deposits, permitting their discovery.

9.2.4 There are a number of prospective locations within the MAREA Study Area that may be considered to have favourable site survival and visibility for prehistoric archaeological material. Recorded sites of retrieved prehistoric artefacts in the North Sea are predominantly discovered in some form of depression or low ground, where scour has removed the overlying mobile marine sands (Flemming 2006: 18). The depressions and gullies between the sandbanks in the southern of the MAREA Study Area may provide an environment potentially favourable for prehistoric site survival and visibility.

9.2.5 Prehistoric site survival and *in situ* preservation of isolated artefacts is also expected to be higher within the relict channels (such as the Botney Cut Formation) within the MAREA Study Area and more widely within the Humber REC Study Area associated with the NSPP mapping of Holocene sedimentary environments (Gaffney *et al*, 2007, 2009). The majority of features of potential archaeological interest were associated with these types of sediments. The hand axes recovered from Area 240 to the south of the MAREA Study Area also indicate that there is the potential for survival even after many years of dredging activity.

9.2.6 The potential also exists for the survival of palaeoenvironmental remains within peat or alluvial deposits. These are mostly associated with nearshore/coastal areas, but as identified in the various assessments of geophysical and geotechnical data in the region during the Humber REC and NSPP, channel deposits and peats are also located in the region. The scope of the sub-bottom geophysical lines assessed here within the MAREA Study Area is not sufficient to exclude the presence of peats and coastal sediments associated with palaeolandscapes and are discussed within the impact assessment as a potential receptor (**Section 11**). The visibility of such remains may be considered in terms of the methods adopted by geophysical and geotechnical surveys in order to identify such deposits, outlined in **Section 5.1**.

9.2.7 Although this report is primarily concerned with marine and offshore areas, the coastal areas adjacent to the MAREA Study Area have a high potential for the survival and visibility of the prehistoric archaeological resource. There is the potential for artefacts to erode out of modern coastlines where the present-day coastline is continuously being extensively eroded revealing underlying deposits containing the earliest evidence of occupation in Britain. Coastal sediments adjacent to the MAREA Study Area, comprising mudflats, marshes and wetlands, also have a high potential for prehistoric site survival and visibility.

9.3 MARITIME ARCHAEOLOGY

9.3.1 The ALSF Navigational Hazards project (Bournemouth University 2007) attempted to identify areas where a high potential for ship loss coincided with a high potential for preservation of archaeological materials. These areas were referred to as Areas of Maritime Archaeological Potential (AMAPs), and it is with reference to these that the survival and visibility of maritime sites within the MAREA Study Area will be considered.

9.3.2 The results of the Navigational Hazards project showed a general higher potential for the loss and preservation of vessels on approaches to estuaries inshore and shallow fine-grained sandbanks offshore (Bournemouth University 2007: 33). The Humber Estuary and Lincolnshire coastline making up the western and south-west

of the MAREA Study Area were identified as AMAPs in which these trends coincided.

9.3.3 The coastal character of the south-west half of the MAREA Study Area is that of a partially sheltered shallow coastal area and the north-east half of exposed shallow coastal area. Inshore, the seabed shelves gently whilst the south and east of the MAREA Study Area is dominated by numerous sandbanks (Bournemouth University 2007). The entrance to the Humber Estuary has extensive mud flats, and the 10m contour extends over 15km offshore at Saltfleetby, a significant hazard to shipping entering the Humber. The offshore sandbanks mostly lie at a moderate depth of between 10-20m, causing little risk to smaller vessels, but representing a considerable risk to larger vessels, particularly in bad weather. (Bournemouth University 2007: 37).

9.3.4 The survival of shipwrecks or structures depends largely on whether they come to lie on or within the seabed sediments (Gregory 2006: 8). Wooden structures which lie exposed on the seabed are at risk of deterioration by wood boring organisms (*ibid*.: 8). Those which are engulfed or covered by sediments experience a much slower rate of deterioration due to the absence of dissolved oxygen and therefore biological activity (*ibid*.: 8).

9.3.5 The sediment types which contain a higher proportion of finer grained sediments and a lower proportion of coarser grains offer the best preservation for archaeological material on the seabed (Gregory 2006: 14-15). This is partly due to the fact that such sediments tend to have lower bearing capabilities and thus engulf archaeological material more readily (*ibid*.: 15). Finer grained sediments are also quite mobile and will more easily cover archaeological material, although the obvious drawback of this is that such sediments may be more easily transported away from a site leaving it exposed (*ibid*.: 15). The penetration of oxygen is much lower in finer grained deposits such as sand which also contributes to the preservation of archaeological material (Riedl and Ott 1982).

9.3.6 Whilst burial factors are relevant to iron or steel hulled shipwrecks, the primary factors in their survival are those which affect the rate of corrosion of the metal. Variables such as metal composition, thickness of metal, integrity of the wreck and construction technique can all affect the speed at which a shipwreck will deteriorate however the key factors are dissolved oxygen and salinity of the water (MacLeod 1997; Steyne and MacLeod in press). Burial will assist with the preservation of iron and steel hulled wrecks, to a certain degree, as it reduces the levels of dissolved oxygen around the wreck, however other situations can produce similar environments, such as deep water or enclosed bays, *e.g.* Scapa Flow. High energy environments, such as surf zones or high tidal streams, will usually have high levels of dissolved oxygen and are not conducive to good preservation of metal shipwreck material.

9.3.7 Human activity can also play a significant role in the preservation of both wooden and metal shipwrecks, through deliberate physical impacts such as salvage, both commercial and 'recreational' recovery of smaller items. There is evidence to suggest that divers can also indirectly impact shipwrecks through penetration of iron and steel hulled shipwrecks, where exhaust bubbles introduce higher levels of oxygen into the structure within a shipwreck (see http://www.dpcd.vic.gov.au/heritage/maritime/shipwrecks/faq ;or http://www.lcmm.org/shipwrecks_history/uhp/uhp.htm).

9.3.8 The seabed sediments within the offshore areas of the MAREA Study Area are predominantly characterised by gravel with sand, whilst inshore the seabed is mainly sand with gravel areas. The predominance of coarse grained sediments suggests that the MAREA Study Area thus has a medium potential for the preservation of archaeological material, although this may be counteracted to a degree by the mobile nature of the sandbanks (Bournemouth University 2007: 37), which, as an environment, are well known for excellent preservation of wooden shipwreck remains, such as the Goodwin Sands.

9.3.9 The visibility of the maritime archaeological resource predominantly relies on whether individual sites can be identified in geophysical and hydrographical surveys, primarily side scan sonar and magnetometer surveys. The visibility of shipwreck sites primarily depends on the degree of integrity of the wreck and associated material on the seabed, the degree to which it is buried beneath sediment and the construction material.

9.4 AVIATION ARCHAEOLOGY

9.4.1 With regards to aircraft crash sites within the MAREA Study Area, site survival and visibility is determined largely by the cause of loss of the aircraft. With a few exceptions, aircraft generally come to be on the seabed as a result of an in-flight accident, technical mafunction or enemy action. Those aircraft which are on the seabed as a result of controlled ditching are likely to be much better preserved than those which exploded in mid-air or hit the water at speed. The latter are likely to be highly fragmented and widely dispersed.

9.4.2 The factors which determine the survival of aircraft crash sites are not yet fully understood and the integrity of underwater aircraft wreck sites varies hugely. It is, however, recognised that factors affecting corrosion rates are relevant, including construction methods and materials, dissolved oxygen rates and salinity. It has been found that many aircraft sites survive surprisingly well in the marine environment, even if they are widely dispersed.

9.4.3 The seabed sediments within the MAREA Study Area, as discussed in **Section 9.3** with regards to the survival of the maritime resource (Bournemouth University 2007), would similarly promote the survival of aircraft crash sites in areas with more fine grained, sandy, sediments. As with wreck sites, the visibility of aircraft crash sites predominantly relies on their ability to be identified by geophysical survey. Where aircraft wrecks are broken up and dispersed they can be very difficult to identify in geophysical data, as they can often be covered by snagged fishing nets, rendering them indistinct shapes on the seabed (Wessex Archaeology 2008b).

10 UNCERTAINTY AND THE PRECAUTIONARY APPROACH

10.1 PALEAOLANDSCAPES AND ASSOCIATED ARTEFACTS

10.1.1 Palaeolandscapes can be inferred from the interpretation of sub-surface geology and modern bathymetry with reference to likely periods of exposure due to lower sea levels. The extent of particular landscapes can be mapped. The proportion of overall palaeolandscape lost to dredging in a licence area can be estimated; the proportion lost cumulatively to dredging and other activities can also be estimated. As a result there is some degree of certainty over value and magnitude of impact.

10.1.2 However, it should be noted that the extent of palaeolandscapes from various periods are largely unmapped and may be largely within a 'development area', but may equally extend beyond the bounds of a development scheme. It is also not known how much of the palaeolandscape remained after the last transgression. Furthermore, it is not known how much of the paleaolandscape in the region is influenced by different/multiple periods of sub-aerial exposure, as in Area 240 for example (Tizzard *et al*. 2011)[4].

10.1.3 There could conceivably be a small area of sediment in the area which is all that remains of the palaeolandscape, from a particular period, which could be completely removed by dredging. It would be a very difficult and resource hungry investigation to map and date all the units in the area to the level of detail that would be required to fully delineate the geological units that comprise the palaeolandscape, *e.g.*, that undertaken for the Area 240 project (*ibid*.). This would still only map potential and would not identify sites or artefacts.

10.1.4 On balance, taking into consideration the range of heritage assets that can reasonably be anticipated, there appears to be some certainty over value but less over magnitude of impact.

10.2 KNOWN CHARTED WRECKS

10.2.1 A charted or recorded wreck may be present but its 'history of build, use, loss, survival and investigation'[5] may be unknown, meaning value is unknown leading to an increased degree of uncertainty. The precautionary approach is to assign high value and, *if* it is impacted, magnitude and significance are relatively certain but possibly over-assessed. Mitigation is possible and the relative certainty (*e.g.* for exclusion zones) over how successful it will be in avoiding impacts means that the residual impact can potentially be reduced.

10.2.2 A charted wreck may be present, its history known, a value assigned (high, medium, low) and *if* it is impacted, magnitude and significance are certain. Mitigation is possible and the relative certainty (*e.g.* for exclusion zones) over how successful it will be in avoiding impacts means that the residual impact can be reduced.

10.3 ANOMALIES

10.3.1 Based on an interpretation of geophysical data only it may not be clear if an anomaly actually is archaeological/cultural heritage material. Therefore the

[4] Area 240 is an example of a site where there is evidence of remnant palaeolandscapes of multiple periods, where the full geographical extents are unknown.
[5] 'BULSI' system taken from *Assessing Boats and Ships 1860--1950: Methodology Report* Wessex Archaeology, 2011, Unpublished report 70861.04.

precautionary approach is to assume it is. The value is unknown so the precautionary approach is to assume it is high. *If* it is impacted, magnitude is assumed to be high (for damage, removal, and lower for indirect effects) and significance becomes major. Mitigation is possible and relative certainty (*e.g.* for exclusion zones) over how successful it will be in avoiding impacts means that the residual impact can be reduced.

10.4 POTENTIAL FEATURES

10.4.1 Based on certain characteristics of the area (*e.g.* present or historical sea lane, proximity to ports, maritime hazards, aircraft routes etc.) there is the potential for material to be present but as yet undiscovered.

- For a recorded loss with history established (therefore value known: high, medium, low) and location unknown: *If* it is present in the licence area, and *if* it is impacted, magnitude will be high (precautionary) and significance can be assessed. Mitigation is possible but there is less certainty over how successful it will be in avoiding impacts. The potential residual impact can possibly be reduced.
- For a recorded loss with no history established (therefore value unknown and assumed to be high on a precautionary basis) and location unknown: *If* it is present in the licence area and *if* it is impacted, magnitude will be high (precautionary) and significance will be assessed as Major. Mitigation is possible but with less certainty over how successful it will be in avoiding impacts. The potential residual impact can possibly be reduced.
- Complete unknowns (*i.e.* no history, no location) would translate to a complete precautionary approach.

11 IMPACT ASSESSMENT

11.1 INTRODUCTION

11.1.1 This section considers the source and nature of the effects of aggregate dredging and the degree to which archaeological receptors are exposed to and affected by dredging practices within the potential areas of impact and within the MAREA Study Area as a whole. Potential areas of impact are limited to the Future 15 year Extraction Zones (F15EZ) which have been identified as locations for renewal of dredging licences over the period covered by the MAREA. These areas were provided by ERM (**Figure 1**).

11.1.2 For the purposes of this assessment, the archaeological resource is divided into the three themes discussed above:

- prehistoric archaeology;
- maritime archaeology; and,
- aviation archaeology.

11.1.3 Eroded coastal archaeology is not covered in the Impact Assessment as the most inshore of the aggregate dredging areas, Application Area 448, is over 9km east of the closest coast line. It is thought that between 2 and 5km of coastline has been lost in the Holderness area, since the Roman period which would put Area 448 approximately 4km offshore. The predominant direction of sediment transport identified in the region is alongshore (ABPMer 2011). It is unlikely that isolated finds or collapsed structure from terrestrial sites would travel this far offshore once in the marine environment. Within each of the three themes to be assessed, a number of receptors have been identified. These are summarised in **Table 13**.

Prehistoric Archaeology	Maritime Archaeology	Aviation Archaeology
Late Pleistocene glacio-fluvial gravels	Known, charted wreck sites	Known, charted aircraft crash sites
Estuarine alluvium	Shipping casualties / Recorded losses	Recorded aircraft losses
Peat	Unknown, uncharted wreck sites	Isolated aircraft finds
Isolated prehistoric finds	Isolated maritime finds	

Table 13: Identified cultural heritage receptors within the MAREA Study Area.

11.1.4 The process of assessing the effects of dredging on these archaeological receptors involves examining the magnitude of the effect, identifying the sensitivity of each receptor to that effect and evaluating the significance of the likely impacts of that effect at a regional scale. Each stage of this process is detailed in turn below.

11.1.5 An ‘impact’ is considered to be a change (positive or negative) in the existing baseline for a given receptor that occurs as a consequence of an activity associated

with dredging in the Study Area. This impact may be significant in its own right or when added to existing impacts.

11.1.6 It is important to note that this assessment considers all potential impacts to archaeological receptors prior to the implementation of any mitigation measures to negate, reduce or offset the effects of the potential impacts. Mitigation will be assessed for each individual licence area at EIA stage and the residual impact is expected to fall within the operational capabilities of the Marine Aggregate Industry Protocol.

11.2 DREDGING PRODUCTION, PROCESSING AND EFFECTS

Marine Aggregate Production and Processing

11.2.1 Deposits suitable for exploitation as marine aggregate comprise well-defined bodies, more than 0.5m thick, of well-sorted hard rock gravels mainly in the size-range *c*. 2-40mm, without a covering of clay, silt or organic-rich sediments (Wenban-Smith 2002: 1). In the Humber Aggregate area, gravel deposits originate from the products of glacial erosion transported away from the ice masses by glacial meltwater rivers. Deposition occurred when the force of the river dropped and the river was no longer able to carry its load, and eventually river valleys became infilled or partly infilled. (www.goodmarine.com/article.aspx?id=4&navid=2).

11.2.2 Two types of dredging technique are employed to extract marine aggregate. The first is known as anchor dredging, and involves a vessel anchoring over a deposit. This technique is often employed when working in thick, localised reserves. The second technique, known as trailer dredging, is employed when working with more widely distributed deposits. Trailer dredging is the technique most commonly used around the UK.

11.2.3 Dredging vessels position themselves relative to the aggregate resource using a satellite navigation system. When in position, the dredge pipe is lowered to the seabed and as the vessel trails it slowly across the seabed powerful pumps are used to extract the aggregate. On large vessels, these pumps are capable of drawing up to 2,600 tonnes of material an hour from water depths of up to 50m (BMAPA 2006: 6). The sand and gravel is discharged into the vessel's hold, displacing the seawater which was previously taken in as ballast.

11.2.4 Once fully loaded with aggregate, the vessel returns to a wharf to discharge the sand and gravel. The process of discharging involves bucket wheels, scrapers or wire-hoisted grabs which place the aggregate onto a conveyor system for delivery to the wharf or processing plant (BMAPA 2006: 7).

11.2.5 Onshore processing of marine aggregate generally comprises screening, sieving by size and crushing, though the exact process varies from wharf to wharf.

Dredging Effects

11.2.6 A number of existing and potential effects of aggregate extraction have been identified including substrate removal, bathymetry changes, sediment transport, elevated turbidity/sediment plume, the mobilisation of contaminants and noise.

11.2.7 Substrate removal, bathymetry changes, sediment transport and elevated turbidity/sediment plume are most likely to lead to an impact on the archaeological record. The degree of impact will vary according to the magnitude of the effect and

according to the sensitivity of the receptor. Mobilisation of contaminants and noise will not affect the archaeological record and are therefore not considered further in this assessment.

11.2.8 **N.B. Assessment by ABPMer in the MAREA Study Area concludes that there are likely to be no changes to sediment transport regimes (ABPMer 2011). As such this effect has been scoped out from the following impact assessment.**

11.2.9 Bathymetric change is in practice an effect deriving from substrate removal. Following substrate removal sediments and possibly archaeological features and structures such as wrecks may be destabilised and become at risk of erosion and other damage.

11.2.10 As bathymetric change derives from the primary impact of substrate removal, the interactions between dredging activity and subsequent 'effects' is in the first instance likely to be in the close proximity to primary substrate removal. As noted above sediment transport has been assessed elsewhere to be not significant. Therefore with the available modelling results, more distant effects of bathymetric change are not thought to be significant at this time. Therefore the intereraction of substrate removal and bathymetric change are thought to be closely linked and discussed together in the following sections.

11.2.11 The sediment plume effect is caused by the suspension of fine sediment in the water during aggregate extraction, resulting from the action at the drag-head and 'overflow' from the hopper. In this case there is considered to be little effect of the density plume falling rapidly back to the seabed, and the finer sediment remaining in suspension for longer and falling gradually to the seabed over a larger area; in general a minor positive impact can be anticipated.

Dredging Impacts

11.2.12 The process of marine aggregate extraction and the effects of substrate removal, bathymetric changes, sediment transport and elevated turbidity/sediment plume may result in the following impacts upon prehistoric, maritime and aviation archaeology:

- **Impact 1**: Direct damage to both *in situ* and derived archaeological material;
- **Impact 2**: Dispersal of *in situ* material resulting in the disturbance of relationships between structures, artefacts and their surroundings or contexts;
- **Impact 3**: Loss of derived prehistoric artefacts and isolated wreck and aircraft artefacts and debris within the volume of aggregate;
- **Impact 4**: Destabilisation of sites through the loss of overlying or adjacent sediments prompting physical instability, erosion, corrosion and biological or chemical decay;
- **Impact 5**: Burial of sites, potentially protecting and promoting favourable preservation.

11.2.13 Error! Reference source not found. below summarises the nature and type of impacts discussed above across all archaeological themes.

Impact	Effect	Nature of Impact	Type of Impact

Impact	Effect	Nature of Impact	Type of Impact
1	Substrate Removal	Negative	Primary
2	Substrate Removal	Negative	Primary
3	Substrate Removal	Negative	Primary
4	Substrate Removal Bathymetric Changes	Negative Negative	PrimarySecondary
5	Sediment Plume	Potentially Positive	Secondary

Table 14: Summary of the nature and type of impacts.

11.2.14 Impacts 1-4 result in adverse changes to the archaeological baseline conditions and are thus considered to be **negative** impacts. Due to the finite, non-renewable nature of the archaeological record, archaeological receptors affected by these impacts will by unable to return to their pre-impact state and as such there is no degree of reversibility to these impacts.

11.2.15 Impact 5 may result in the creation of a potentially favourable environment for the preservation of archaeological remains and is consequently regarded as a **positive** impact.

11.3 SIGNIFICANCE OF LIKELY IMPACTS: OVERVIEW

11.3.1 The significance of impact is guided by the matrix in **Table 24** below. Through the assessment of the magnitude of effect and the value and sensitivity of the receptors to the effects of substrate removal, bathymetric change and sediment plume a statement of the significance of these effects is made. This is tempered by the extent to which these effects are likely to interact with the receptors. In cases where industry practice avoids seabed hazards and wrecks during aggregates dredging, the significance of the impacts may be amended.

Magnitude of Effect	**High**	Moderate	Moderate/Major	Major
	Medium	Minor/Moderate	Moderate	Moderate/Major
	Low	Not significant	Moderate	Moderate
		Low	**Medium**	**High**
		Value / Sensitivity of Receptor		

Table 15: Matrix of magnitude of effect and value/sensitivity of receptor used to derive the significance of impact.

11.3.2 The significance of likely impacts arises from the combination of several variables, including the magnitude of the effect in terms of the extent, duration and frequency of the impact, the sensitivity of the receptor to the effect of impact and the degree to which the receptor and the impact interact. Impacts may be either positive or negative (**Table 25**). The significance of impacts are defined as:

- **not significant**;
- **minor**;
- **moderate**; or,

- **major significance**.

Significance	Definition
Not significant	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation.
Minor Negative	The impact is undesirable but of limited concern.
Moderate Negative	The impact gives rise to some concern but it is likely to be tolerable (depending on its scale and duration).
Major Negative	The impact gives rise to serious concern and is judged unacceptable
Minor Positive	The impact is of minor significance but has some environmental benefits.
Moderate Positive	The impact provides some gain to the environment.
Major Positive	The impact provides a significant positive gain to the environment.

Table 16: Definitions of the terms of significance (based upon industry guidance (COWRIE 2007, 2008).

11.3.3 The significance of impacts relating to the effect of sediment plume on the downstream archaeological baseline is defined as 'positive'. Sediment plume will produce either no change to the existing baseline, or may produce potentially positive changes by burying exposed archaeological material, thereby promoting its preservation. Due to the potential variability of sediment plumes across the area, a quantification of the magnitude of these impacts is not included.

11.4 MAGNITUDE OF EFFECTS

11.4.1 In order to determine the magnitude of the effects of dredging on the archaeological receptors, the predicted impacts are defined in terms of their elevation above background or baseline conditions and assessed against the following variables:

- Extent of effect;
- Duration of effect;
- Frequency of effect.

Extent of Effect

11.4.2 Because both the primary and secondary impacts (Impacts 1-4) (see **section 11.8**) of substrate removal relevant to archaeology arise as the result of marine aggregate extraction, it is reasonable to propose that the extent of the effect is largely limited to the footprint of dredging (ie the F15EZs).

11.4.3 Bathymetric changes (associated with Impact 4) as a result of the removal of aggregate will be limited to the the footprint of dredging (ie the F15EZs), however secondary effects of bathymetric changes, such as changes to sediment transport patterns or slumping of excavated vertical faces of dredging scars (Impacts 4 and 5), could occur outwith the initial area of dredging, in the case of hydrodynamic changes in currents and sediment transport, some distance from the areas of extraction. Assessment by ABPMer in the MAREA Study Area concludes that there is likely to be no changes to sediment transport regimes (ABPMer 2011).

11.4.4 The impact of the sediment plume (Impact 5) is likely to be largely confined to the dredging areas, although the re-deposition of sediment may extend downstream, beyond the boundaries of the areas. The extent of this effect can therefore be considered to be **local**, extending up to one tidal excursion beyond the licence areas.

Duration of Effect

11.4.5 Although substrate removal only occurs during active dredging, the removal of substrate has a permanent effect on archaeological receptors and is thus **long-term** in duration. Archaeological receptors have no ability to recover and as such these impacts are non-reversible and their effects upon the archaeological record are permanent.

11.4.6 The effects of the secondary impacts of site destabilisation (Impact 4) due to substrate removal and bathymetric change are potentially **medium to long term** in duration. Once a site becomes exposed chemical deterioration will begin immediately, whilst it may take longer for biological organisms to colonise the site. Physical instability can occur shortly after the loss of surrounding/supporting sediment. The loss of archaeological material through these impacts is non-reversible and their effects upon the archaeological record are permanent.

11.4.7 The effects of secondary impacts of site burial (Impact 5) due to sediment deposition on archaeological receptors are likely to be **short to medium term** in duration. This is based on the concealment of archaeological material which results from the process of marine aggregate extraction. Any damage sustained to archaeological material which is exposed on the seabed, however, is non-reversible and permanent.

Frequency of Effect

11.4.8 Substrate removal, bathymetry change and sediment plume will occur during all normal dredging operations and are thus **routine**. However, these effects will not necessarily, impact upon the archaeological resource each time they occur.

Elevation above Baseline

11.4.9 Within this context, general statements of Magnitude are made below.

11.4.10 The effect of substrate removal upon the existing archaeological baseline will be negative, due to the potential physical damage or removal of archaeological structures and objects. The archaeological record is non-renewable and any negative impacts will result in permanent and non-reversible changes to the existing baseline.

11.4.11 The bathymetric changes to baseline have been modelled for expected changes in bathymetry from the present day until 2030, the end of the next licencing period. In areas where dredging is likely to occur, increases in seabed depths up to 7m below current seabed levels has been modelled (ABPMer 2011). Where sub-seabed marine archaeology receptors such as Late Pleistocene glacio-fluvial gravels or potential receptors such as Isolated Prehistoric Finds are encountered by dredging activity, at this level of substrate removal bathymetric lowering is likely to be a **medium to high** magnitude impact over the licence period.

11.4.12 Impacts to Maritime and Aviation receptors are likely to be a less pronounced change relative to the current baseline as previous dredging activity has already removed receptors from the seabed or they are known about and avoided as an inherent mitigation strategy of the industry. Therefore the magnitude of effect is assessed to be **low/medium** for seabed receptors

11.4.13 The present day to future difference bathymetry plot suggests that the seabed within F15EZs may be lowered by between 0.2m and 7m. The northern areas (102, 105, 448 and 449) will be targeted for the deepest excavations, with bathymetry changes modelled at depths up to 7m. Some areas of eastern F15EZs (441/1 and 441/2) will be dredged to depths of 7m, although most excavations will be shallower than this. The western areas will not have such deep changes in bathymetry, with most changes modelled to around 5m below current seabed depth (ABPMer 2011). Regardless of dredging depth, any archaeological sites and material within areas of substrate removal will be damaged, destroyed, scattered or destabilised.

11.4.14 The impact of sediment transport can be broadly estimated based on hydrodynamic modelling. In general terms, seabed bathymetry affects water flow rates across the surface of the seabed, creating localised areas of faster and slower flowing water. Sand waves, for example can create both areas of faster flowing water, in the channels between sand banks, and slower flowing water, on the lee side of the sandbank. Areas of faster flowing water can not only carry sediment, but also create new areas of scour. Slower flowing water will deposit sediment. Changes in seabed bathymetry by dredging are likely to change the hydrodynamic regime by creating new channels for higher velocity water flow and potentially also barriers which slow the water velocity.

11.4.15 The effects of sediment plume on the downstream archaeological baseline are assessed as **low** and potentially favourable, or positive. Sediment plume will produce either no change to the existing baseline, or may produce potentially positive changes by depositing sediment onto and around exposed archaeological material, thereby potentially creating an environment more favourable for its preservation.

Summary

11.4.16 Error! Reference source not found. summarises the extent, duration, frequency and thus, the magnitude of the impact of substrate removal, bathymetry change and sediment plume on archaeological sites.

Effect	Extent	Duration	Frequency	Magnitude
Substrate Removal	F15EZs	Long-term	Routine	Low/Medium to High for sub-seabed receptors
Bathymetry Change	F15EZs	Medium-Long term	Routine	Medium/High
Sediment Transport	**Screened from assessment as no changes are identified in the Study Area (ABPMer 2011)**			

Effect	Extent	Duration	Frequency	Magnitude
Sediment Plume	Local (max 1 tidal excursion beyond F15EZs)	Short-Medium-Term	Routine	Low/Medium

Table 17: Magnitude of the impacts of substrate removal and sediment plume on archaeology.

11.4.17 Based on a combination of elevation above baseline and the extent, duration and frequency of the effects of marine aggregate extraction, it is proposed that the regional impacts of substrate removal, bathymetry change and sediment plume range from **low to high magnitude**.

11.5 RECEPTOR VALUE AND SENSITIVITY: OVERVIEW

11.5.1 In addition to considering the magnitude of the effect the value and sensitivity of each archaeological receptor must be considered, in order to asses the significance of impacts of marine aggregate extraction at a regional scale. This assessment of value considers whether the receptor is rare, protected or threatened. The sensitivity of each receptor is assessed against the following three criteria:

- **Adaptability**: The ability of the receptor to avoid adverse impacts that arise from a particular effect of dredging;
- **Tolerance**: The extent to which the receptor (at a regional scale) is adversely affected by a particular effect of dredging;
- **Recoverability**. The measure of a receptor's ability to return to a state close to that which existed before the effect caused a change.

11.5.2 The sensitivity of each receptor is determined through a combination of these variables.

11.6 RECEPTOR VALUE AND SENSITIVITY: PREHISTORIC ARCHAEOLOGY

11.6.1 On the basis of their age and the rarity of finds in a marine context, finds of Palaeolithic and Mesolithic sites and material within the Study Area would be of high national and possibly international archaeological importance.

11.6.2 *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers* (English Heritage 1998) notes sites containing certain forms of Palaeolithic material are so rare in Britain that they should be regarded as of national importance and whenever possible should remain undisturbed (see **Appendix I**).

11.6.3 Late Pleistocene glacio-fluvial gravels, which are widespread within the Study Area, are the primary target of aggregate dredging. However the archaeological value of these sediments is based on their potential to preserve *in situ* or derived Palaeolithic artefacts and other archaeological material. The glacio-fluvial origin of these gravels indicates that the presence of such material is likely to be extremely rare.

Late Pleistocene glacio-fluvial sediments

11.6.4 The Study Area lies at the southern margin of the ice front during the Wolstonian and Devensian glaciations and was subject to fluctuations in ice cover and paraglacial landscapes and erosion from ice and meltwater respectively. The direct effects of the ice on sediments and topography are likely to have removed some sediment units from earlier inter-glacial periods limiting the archaeological potential of pre-Devensian time. However, the analysis of geophysical survey lines suggests that some Late Pleistocene sediments of archaeological interest may exist associated with channel features of the Botney Cut Formation. The survival of pre-Anglian landforms suggested by the Humber REC extends the potential for archaeological material within the Study Area even further back in time to the Middle and Lower Palaeolithic (Late and Middle Pleistocene) but the authors state this likely to be restricted to reworked artefacts in secondary contexts outside higher-potential areas such as the Yarmouth Roads outside the MAREA Study Area (Tappin *et al*. 2011: Table 5.2.1-p127). In general, any *in situ* archaeological material relating to the Lower and Middle Palaeolithic period within the region must be regarded to be of potential national and international importance in understanding Europe's earliest human populations (Austin 1997: 5-7), and even confirmed material in secondary contexts would be nationally or regionally significant (Hosfield and Chambers 2004). If present in the Study Area such material may be expected to found within Unit 3 sediments, *i.e.* Late Pleistocene glacio-fluvial gravels identified in vibrocores from the Northern and Central areas of the Study Area (**Table 21**), which should therefore be regarded as **high value** receptors where archaeological materials and artefacts occur.

11.6.5 As they are the principal deposits targeted by the marine aggregate industry, Late Pleistocene glacio-fluvial sediments and archaeological material within them will be unable to tolerate the any negative effects. Impacts from substrate removal, will result in a permanent change to the receptor. Secondary negative effects from erosion and exposure caused by bathymetric change may also occur. The adaptability and tolerance of the receptor to these effects is **low**.

11.6.6 Similarly, the receptor's recoverability or ability to return to its pre-impact state after substrate removal is **low** and Late Pleistocene glacio-fluvial gravels must therefore be regarded as a receptor of **high sensitivity** to the effects of substrate removal.

11.6.7 With regard to the effects of the sediment plume, Late Pleistocene glacio-fluvial sediments are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Estuarine Alluvium and Peat

11.6.8 The fluvial processes of the Holocene have resulted in the deposition of alluvial sediments and the formation of peat (in marshy areas associated with fluvial margins), within the Humber region (Gaffney *et al*. 2007, 2009; Tappin *et al*. 2011). With the gradual rise in sea level which led to the inundation of the Study Area in the Late Mesolithic, some of these sediments will have sealed and buried deposits or landscape features in which Late Devensian and early Holocene *in situ* archaeological material may be present; these deposits are also principal palaeoenvironmental archives of past landscapes, environments and climate. Estuarine alluvium and peat should thus be regarded as a **high value** receptor.

11.6.9 Alluvial and peat deposits will be unable to tolerate the primary effects of substrate removal and secondary effects of bathymetric change, resulting in a permanent change to the receptors. The adaptability and tolerance of the receptors are **low**.

11.6.10 Similarly, the measure of the receptors' ability to return to their pre-impact state is **low.** With regard to substrate removal, alluvium and peat are therefore receptors of **high sensitivity**. However, on the assumption that alluvial and peat deposits are not targeted by the marine aggregate industry the degree of interaction will be minimal.

11.6.11 With regard to the effects of sediment plume, estuarine alluvium and peat are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Isolated Prehistoric Finds

11.6.12 Although archaeological material from secondary contexts is by its nature not from *in situ* contexts, recent discoveries have shown that it nevertheless has the potential to provide valuable information on patterns of human land use and demography in a field of study which is still little understood and rapidly evolving (Hosfield and Chambers 2004). Isolated prehistoric finds should thus be regarded as **medium value** receptors.

11.6.13 The adaptability and tolerance of isolated prehistoric finds to substrate removal is **low**. This is because while derived material is still susceptible to direct damage and the potential for the loss of artefacts within the volume of aggregate remains, damage and dispersal resulting in the loss of the relationship between the artefact and its archaeological context has already occurred to artefacts that are in a secondary context.

11.6.14 For the same reasons, the exposure of derived material is not of the same degree of concern as *in situ*, primary context archaeological deposits. However, isolated archaeological material will be unable to tolerate the effects of substrate removal, resulting in a permanent change to the receptor.

11.6.15 The receptor's ability to return to its pre-impact state after substrate removal is **low**. Given their moderate archaeological value, however, isolated prehistoric finds can be regarded as receptors of **medium sensitivity** to the effects of substrate removal.

11.6.16 With regards to the effects of sediment plume changes, isolated prehistoric finds are likely to be unaffected or positively affected, and are thus regarded as a receptor of **low sensitivity**.

Summary

11.6.17 Error! Reference source not found. summarises the value and sensitivity for each prehistoric receptor with regards to substrate removal, bathymetry change and sediment plume.

Receptor	Value	Sensitivity		
		Substrate Removal	Bathymetric Change	Sediment Plume
Late Pleistocene Glacio-fluvial sediments	High	High	High	Low
Alluvium	High	High	High	Low
Peat	High	High	High	Low
Isolated Prehistoric Finds	Medium	Medium	Medium	Low

Table 18: Summary of the value and sensitivity for each prehistoric receptor.

11.7 RECEPTOR VALUE AND SENSITIVITY: MARITIME ARCHAEOLOGY

11.7.1 The value assigned to a wreck site is to a large degree case specific. A vessel may have historical importance at a local, national or international level as a result of its association with a historical event or figure. Wartime losses or a vessel whose sinking was associated with a loss of life may have a level of importance directly associated with that loss of life. Vessels which are key to or representative of specific periods of maritime development may also be regarded as technologically important. Alternatively a vessel may have a level of archaeological importance based on the rarity of its representation within the maritime archaeological record and/or its cargo. Wrecks which are regarded to be of 'special interest' may be designated under the Protection of Wrecks Act 1973 or the Protection of Military Remains Act 1986.

11.7.2 Wrecks protected under the Protection of Military Remains Act 1986 are designated because they have been lost whilst in military service. Designation is also primarily to protect the last resting place of servicemen. Military remains can be protected on the basis of historic significance, but with *controlled sites* having to have sunk in the last 200 years and protected places since 4th August 1914.

11.7.3 The differing levels of importance assigned to wrecks are not necessarily dictated by age. However, in an attempt to provide a few generalisations regarding the age and special interest of vessels, a composite timeline (Wessex Archaeology 2008c) was consulted throughout this assessment which takes into account the broad chronology of shipbuilding and employment (**Section 7**). The known and potential maritime archaeological resource in the Study Area was queried by the periods presented in this timeline, the results of which were presented in **Section 7.3**.

Known, Charted Wrecks

11.7.4 The relative potential importance of the various periods into which the known, charted wrecks within the Study Area fall has been discussed already. Although this will vary from wreck to wreck, all of the known wrecks in the Study Area will have a greater or lesser degree of archaeological potential and value. Due to this variability

at a regional scale, known charted wreck sites must be regarded as a **high value** receptor.

11.7.5 Where substrate removal results in a direct impact to the archaeological record, known charted wreck sites will be unable to tolerate the effects, resulting in a permanent change in the receptor. The adaptability and tolerance of the receptor is **low** and it is therefore a **high sensitivity** receptor.

11.7.6 However, because the extent and distribution of this receptor is fairly accurately known and the marine aggregate industry avoids seabed structures and obstructions such as wrecks, the interaction between known charted wrecks and substrate removal should be small and able to be avoided under most circumstances.

11.7.7 With regard to the effects of bathymetry change on the archaeological record, charted wreck sites will generally be unable to tolerate the effects of destabilisation listed above, resulting in permanent change in the receptor. The adaptability and tolerance of the receptor is **low** and it is therefore a **high sensitivity** receptor.

11.7.8 Despite the fact that the distribution and extent of this receptor is fairly accurately known, the effects of bathymetry change, particularly patterns of erosion, are often difficult to predict, particularly at some distance from the modelled change. There is, therefore, some potential for interaction between known charged wrecks and the effects of bathymetry change.

11.7.9 With regard to the effects of sediment plume, known charted wrecks are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Shipping Casualties / Recorded Losses

11.7.10 The relative potential importance of the various periods into which the recorded shipping casualties within the Study Area fall has been discussed already. The recorded losses in the Study Area will each have a greater or lesser degree of archaeological potential and value should they be located on the seabed. Due to this variability at a regional scale, recorded shipping casualties must be regarded as a **high value** receptor.

11.7.11 Where substrate removal results in an impact to the archaeological record the physical remains of recorded shipping casualties, but previously unlocated/unknown wreck sites, will be unable to tolerate the effects, resulting in a permanent change in the receptor. The adaptability, tolerance and the measure of the receptor's ability to return to its pre-impact state is **low**.

11.7.12 Due to the uncertainty of their location and therefore their potential for impact from substrate removal, recorded shipping casualties should be regarded as a receptor of **high sensitivity**.

11.7.13 With regard to the effects of bathymetry change on recorded shipping casualties/previously unlocated wreck sites, they will generally be unable to tolerate the effects of destabilisation listed above, resulting in permanent change in the receptor. These sites should be regarded as a receptor of **high sensitivity**.

11.7.14 With regard to the effects of sediment plume the remains of recorded shipping casualties are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Unknown, Uncharted Wreck Sites

11.7.15 The bias of the records of both charted wrecks and documented shipping casualties towards vessels lost from the mid-18th century onwards has already been discussed, as has the potential for the presence within the Study Area of unknown watercraft and vessels dating from the Mesolithic period to the modern day. A significant proportion of unknown, uncharted wreck sites will pre-date the consistent keeping of casualty records and on that basis (i.e. their age and rarity) unknown, uncharted wrecks as a group can be considered to be of special archaeological interest and should be regarded as a **high value** receptor.

11.7.16 Particularly where substrate removal results in an impact to the archaeological record the remains of unknown, uncharted wrecks would be unable to tolerate the effects, resulting in a permanent change in the receptor. As such, the adaptability, tolerance and the measure of the receptor's ability to return to its pre-impact state is **low**.

11.7.17 Due to a lack of any certainty as to their numbers and location, and the consequent potential for them to be impacted by substrate removal and bathymetry change, unknown and uncharted wrecks should be regarded as a receptor of **high sensitivity**.

11.7.18 With regard to the effects of sediment plume the remains of shipping casualties are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Isolated Maritime Finds

11.7.19 Isolated maritime finds are isolated or derived artefacts which are likely to be of limited archaeological importance. However the occurrence of a number of seemingly isolated artefacts within a particular area can indicate historical shipping routes or maritime battlegrounds, for example, or may suggest the presence of a hitherto unknown wreck site. On this basis, isolated maritime finds are regarded as a **medium value** receptor.

11.7.20 The adaptability and tolerance of isolated maritime finds to substrate removal is **low**. Although this receptor is scattered and ephemeral in nature if adversely affected by substrate removal, it will be unable to recover, resulting in permanent change. As such the measure of the receptor's ability to return to its pre-impact state is **low**. It is suggested that isolated maritime finds be regarded as a receptor of **medium sensitivity**.

11.7.21 Isolated maritime finds may become exposed as a result of bathymetry change, and smaller less dense objects may be moved by tidal flow and localised currents. Although this receptor is scattered and ephemeral in nature if adversely affected by bathymetry changes, it may be unable to recover, resulting in permanent change. As such the measure of the receptor's ability to return to its pre-impact state is **low**. It is suggested that isolated maritime finds be regarded as a receptor of **medium sensitivity**.

11.7.22 With regard to the effects of sediment plume isolated maritime finds are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Summary

11.7.23 Error! Reference source not found. summarises the value and sensitivity for each maritime receptor with regards to substrate removal, bathymetry change and sediment plume.

Receptor	Value	Sensitivity		
		Substrate Removal	Bathymetry change	Sediment Plume
Known Charted Wreck Sites	High	High	High	Low
Shipping Casualties / Recorded Losses	High	High	High	Low
Unknown Uncharted Wreck Sites	High	High	High	Low
Isolated Maritime Finds	Medium	Medium	Medium	Low

Table 19: Summary of the value and sensitivity for each maritime receptor.

11.8 RECEPTOR VALUE AND SENSITIVITY: AVIATION ARCHAEOLOGY

11.8.1 The importance of aircraft crash sites is outlined in *Military Aircraft Crash Sites* (English Heritage 2002) as discussed above. They not only have significance for remembrance and commemoration, but also have an implicit heritage value as historic artefacts, providing information on the aircraft itself and also the circumstances of its use and loss (English Heritage 2002: 2).

Known, Charted Aircraft Crash Sites

11.8.2 Within the Study Area there are five charted sites known to be aircraft wrecks, all of which are automatically protected by the Protection of Military Remains Act 1986. On this basis, known, charted aircraft crash sites are considered to be **high value** receptors.

11.8.3 Known, charted aircraft crash sites will be unable to tolerate negative effects deriving from substrate removal or bathymetry change resulting in a permanent change in the receptor. As such, the adaptability, tolerance and the measure of the receptor's ability to return to its pre-impact state is **low** and it is therefore a **high sensitivity** receptor.

11.8.4 However, because the extent and distribution of this receptor is fairly accurately known and the marine aggregate industry avoids seabed structures and obstructions such as wrecks, the direct interaction between known aircraft crash sites and substrate removal should be **small** and able to be avoided under most circumstances (see **Section 9.5**). There are no known aircraft crash sites within the current licence areas with the MAREA study area.

11.8.5 With regard to the indirect effects of bathymetry change on the archaeological record, charted aircraft crash sites will be unable to tolerate the effects of destabilisation listed above, resulting in permanent change in the receptor. The

adaptability and tolerance of the receptor is **low** and it is therefore a **high sensitivity** receptor.

11.8.6 Sediment plume effects upon known aircraft crash sites are likely to result in a positive,or no change, and are thus regarded as a receptor of **low sensitivity**.

Recorded Aircraft Losses

11.8.7 There are 68 recorded losses listed by the NRHE within the Study Area. The sites date predominantly to the period between 1939 and 1945. One dates to 1946. In addition, over 200 WWII Air/Sea Rescue Operations are recorded to have taken place in the Study Area.

11.8.8 The location, distribution of the physical remains of these recorded aircraft losses on the seabed is poorly understood. However, these sites are likely to be of special archaeological interest, and would be automatically protected by the Protection of Military Remains Act 1986 should they be located. Consequently at a regional scale recorded aircraft losses must be considered as a **high value** receptor.

11.8.9 Particularly where substrate removal results in a primary impact, or bathymetric change results in a secondary impact to the archaeological record, the physical remains of recorded aircraft losses would be unable to tolerate the effects, resulting in a permanent change in the receptor. As such, the adaptability, tolerance and the measure of the receptor's ability to return to its pre-impact state is **low**. Although the positions of these sites are not known, the relatively short span of time since they were deposited on the seabed suggests that wreckage should be expected to survive in some form within the Study Area. Due to the uncertainty regarding their precise location and the potential, therefore, for impact from aggregate dredging recorded aircraft losses should be regarded as a receptor of **high sensitivity**.

11.8.10 With regard to the effects of sediment plume, the remains of recorded aircraft losses are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Isolated Aircraft Finds

11.8.11 Isolated aircraft finds will consist of derived, aircraft-related artefacts which may be of limited archaeological importance as isolated objects. However the occurrence of a number of seemingly isolated artefacts within a particular area can give insights into patterns of historical aviation across the Study Area or may indicate the presence of a recorded but uncharted aircraft crash site. On this basis, isolated aircraft finds are regarded as a **medium value** receptor.

11.8.12 The adaptability and tolerance of isolated aircraft finds to substrate removal is **low**. Although this receptor is scattered and ephemeral in nature if adversely affected by substrate removal, it will be unable to recover, resulting in permanent change. As such the measure of the receptor's ability to return to its pre-impact state is **low**. It is thus that isolated maritime finds be regarded as a receptor of **medium sensitivity**.

11.8.13 With regard to the effects of sediment plume, isolated aircraft finds are likely to be unaffected or positively affected and are thus regarded as a receptor of **low sensitivity**.

Summary

11.8.14 Error! Reference source not found. summarises the value and sensitivity for each maritime receptor with regards to substrate removal, bathymetry change and sediment plume.

Receptor	Value	Sensitivity		
		Substrate Removal	Bathymetry change	Sediment Plume
Known Charted Aircraft Crash Sites	High	High	High	Low
Recorded Aircraft Losses	High	High	High	Low
Isolated Aircraft Finds	Medium	Medium	Medium	Low

Table 20: Summary of the value and sensitivity for each aviation receptor.

11.9 INTERACTION BETWEEN RECEPTORS AND EFFECTS: PREHISTORIC ARCHAEOLOGY

11.9.1 The known archaeological record for submerged prehistoric archaeology and palaeo-landsurfaces in the MAREA Study Area is limited, but areas examined during the REC overlap with the eastern portion of the Study Area. In order to highlight areas of prehistoric archaeological potential in the Study Area deposits which have the potential to contain *in situ* prehistoric archaeological material have been identified from the results of the geotechnical and geophysical investigations (see **Sections 4.5** to **4.6**). In assessing prehistoric archaeology in the context of aggregate dredging this report considers it more meaningful to concentrate on the deposit types in which the archaeological material may be found than to concentrate on archaeological periods to assess potential and impacts. For the purposes of this assessment, therefore, these deposits have been broadly categorised as Late Pleistocene glacio-fluvial gravels, estuarine alluvium and peat. It must be noted, however, that the available geophysical and geotechnical data are limited by their area of survey and cannot be regarded as providing a conclusive understanding of the full extents of these various deposits within the Study Area.

11.9.2 It must also be noted that this assessment has assumed that where alluvium and/or peat overlie a gravel deposit this gravel will not be targeted for extraction. If this assumption should prove not to be correct, the effects and impact on the overlying alluvium and/or peat must be assumed to be the same as those suggested below for Pleistocene fluvial gravel.

Late Pleistocene Glacio-fluvial Sediments (Unit 3a)

11.9.3 Late Pleistocene glacio-fluvial sediments were discussed as sedimentary Unit 3a in the geotechnical assessment of the MAREA. The unit was observed in 83 vibrocores (out of 628 assessed) within current aggregate licence areas within the Study Area (**Table 21**):

Area	Licence Areas	Total Source Vibrocores
Northern	102 and 105	29
Central	106, 197, 400, 480, 493	54
Southern West	481	0

Southern East	-	0

Table 21: Areas of geophysical assessment with vibrocores containing Unit 3a sediments.

11.9.4 These late Pleistocene glacio-fluvial sediments, which are widespread within the Study Area, are the primary target of aggregate dredging. However, the archaeological value of these sediments is based on their potential to preserve *in situ* or derived Palaeolithic artefacts and other archaeological material. The glacio-fluvial origin of these sediments indicates that the presence of such archaeological material is likely to be extremely rare. Therefore, the interaction with dredging activity and archaeological material within this receptor is likely to be a **small degree of regional interaction** between impacts and receptor in this case.

Estuarine Alluvium (Unit 3b)

11.9.5 Estuarine alluvium, which overlies the Pleistocene gravels, was identified as sedimentary Unit 3b in the MAREA geotechnical assessment. As a sediment type of archaeological interest due to the preferential conditions for preserving palaeoenvironmental proxy indicator macro and microfossils and potentially *in situ* archaeological materials, this receptor has archaeological value in itself. The age and distribution of this receptor may be of special interest for its potential to contain Mesolithic archaeology. Sixty-two vibrocores containing Unit 3b deposits were observed within current aggregate licence areas within the Study Area, with a further vibrocore containing Unit 3b immediately adjacent to another licence area:

Area	Licence Areas	Total Source Vibrocores
Northern	102 and 105	6
Central	106, 197, 400, 480, 493	54
Southern West	481	1
Southern East	-	1

Table 22: Areas of geophysical assessment with vibrocores containing Unit 3b sediments.

11.9.6 The extent of estuarine alluvium within the Study Area is not fully known and the degree to which the impacts overlap with the location and distribution of the receptor is thus unknown. Given this uncertainty, a precautionary approach has been adopted. However, based on the assumption that the aggregate industry will avoid areas in which estuarine alluvium is present or overlies gravels for operational purposes, it is postulated that there is likely to be a **small degree of regional interaction** between the impact and receptor in this case.

Peat

11.9.7 The occurrence of peat deposits within the Study Area is not fully understood and the degree to which the spatial extent of the impact overlaps with the location and distribution of the receptor is thus unknown. Regionally there are important peat formations that were investigated during the Humber REC (Bournemouth University 2010). The coverage of geophysical and geotechnical survey datasets and sediment logs is not sufficient to exclude the presence of peat from the MAREA region. Similarly due to the high preservation potential for palaeoenvironmental remains and *in situ* archaeological material this receptor has archaeological value in itself.

11.9.8 In view of this uncertainty, a precautionary approach has been adopted here and peat is included as a potential receptor within the assessment of impacts. As with alluvium above, however, and based on the assumption that, for operational purposes, the aggregate industry will avoid areas in which peat is present or overlies gravels, it is likely that there is a **small degree of regional interaction** between the impact and receptor in this case.

Isolated Prehistoric Finds

11.9.9 Marine and glacial transgressions and regressions across the southern North Sea have shaped the sediments of the Study Area over time. These processes will also have resulted in the disturbance, movement and re-distribution of prehistoric artefacts and assemblages from their primary context. There is thus a high potential for derived finds to be present within the potential areas of impact and the MAREA Study Area as whole. However, whilst this potential exists, it is not possible to quantify or predict the volume or distribution of such artefacts. Inconclusively dated finds reported under the TCE/BMAPA/EH protocol (2005) of bone may be prehistoric or more recent. Due to the uncertainty regarding their location, isolated prehistoric finds must be viewed with caution, and as such a **medium degree of regional interaction** between the impact and the receptor is suggested in this case.

11.10 INTERACTION BETWEEN RECEPTORS AND EFFECTS: MARITIME ARCHAEOLOGY

Known, Charted Wreck Sites

11.10.1 There are 923 known or charted maritime features in the Study Area comprising shipwrecks (*n*=626) and seabed obstructions (*n*=297). These sites have been charted and their positions are relatively secure. It must be borne in mind that these recorded wrecks show a clear bias towards large iron or steel vessels dating from within the last 150 years. This is largely due to their longevity as intact structures, compared to wooden shipwrecks, and the higher potential for structures of ferrous material to be identified on the seabed through hydrographic and geophysical survey.

11.10.2 Although the distribution of charted wreck sites (**Figure 13**) shows some areas with higher concentrations there is a fairly widespread and general distribution of wrecks across the Study Area. **Figure 13** demonstrates that most of the F15EZs include at least one charted maritime site within its boundaries.

11.10.3 Although most of the F15EZs include charted maritime sites, **Figure 13** also shows that the vast majority of charted sites within the Study Area lie outside the current Licence Areas and Application Areas. Due to the widespread distribution but small number of sites within dredging areas, a **medium degree of regional interaction** between dredging impacts and the known, charted wreck sites receptor is suggested. It should be noted, however, that the aggregates industry aims to avoid shipwrecks due to the potential damage they can cause to dredging equipment. As such, precautionary exclusion zones are usually emplaced around known shipwreck sites.

Shipping Casualties / Recorded Losses

11.10.4 There are 1166 recorded shipping casualties or losses listed within the Study Area. Of this total, 15 are placed at Named Locations within F15EZs 439, 448, and 105. Although these losses are not currently tied to known positions on the seabed there is potential for remains to survive in some form within the region. Similarly, the

potential exists for the remains of shipping casualties at Named Locations which are located outside Licence or Application Areas to be present within these potential areas of impact.

11.10.5 The shipping casualties ascribed to a Named Location within a F15EZ are far outnumbered by the total of documented losses listed within the Study Area. However, due to the lack of positional data this receptor must be regarded with a degree of uncertainty and a precautionary approach is adopted accordingly. On this basis, a **medium degree of regional interaction** is suggested between the dredging impacts and shipping casualties as a receptor.

Unknown, Uncharted Wreck Sites

11.10.6 Unknown and uncharted wreck sites are those for which there is no record of loss or position, but whose existence is inferred or likely on the basis of the maritime history of the Study Area. It is not possible to quantify the extent of unknown and uncharted sites within the impact areas.

11.10.7 As an AMAP (See **Section 9.3**), the Humber offshore region has a high potential for ship loss coinciding with a high potential for the preservation of archaeological materials (Bournemouth University 2007). However, it must be noted that the conditions favourable for preservation of archaeological material within the Study Area will be predominantly provided by finer-grained sediments rather than by the coarse gravel deposits targeted by the aggregate industry.

11.10.8 There is a great deal of uncertainty regarding the distribution and extent of unknown, uncharted wreck sites within the potential impact areas and across the Study Area as a whole. Consequently a precautionary approach is adopted and a **medium degree of regional interaction** between the impact and the receptor is anticipated. By the time F15EZs are dredged, they will have been subject to detailed geophysical survey and review. As such, the potential for encountering unknown, uncharted wrecks within the F15EZs will have been significantly reduced.

Isolated Maritime Finds

11.10.9 Maritime sites comprise not only wrecks of vessels, but also debris which is associated with maritime activities. This can include, for example, artefacts which were accidentally lost or material deliberately thrown overboard from a vessel. While there is the potential for isolated finds of this nature within the F15EZs and across the Study Area as whole, it is not possible to quantify the volume or distribution of such artefacts. However, the number of known wrecks and documented losses and the inferred potential for unknown and uncharted wreck sites suggests a high potential for such finds to be present on the seabed. Due to the uncertainty regarding their location, isolated maritime finds must be approached with caution, and as such a **medium degree of regional interaction** between the impact and the receptor is suggested in this case.

11.11 INTERACTION BETWEEN RECEPTORS AND EFFECTS: AVIATION ARCHAEOLOGY

Known, Charted Aircraft Crash Sites

11.11.1 Data regarding the physical location of aircraft remains on the seabed are extremely limited. Consequently, the known aviation resource alone must not be viewed as indicative of the total number of aircraft crash sites within the Study Area.

11.11.2 The known resource lists only five aircraft crash sites within the Study Area, none of which lie within a Licence or Application Area. On the basis of the known resource, therefore, **no regional interaction** is expected between the known, charted aircraft receptor and the aggregate extraction impacts.

Recorded Aircraft Losses

11.11.3 In contrast to the small known resource, records of aircraft losses at sea are extensive. For the purpose of this report, recorded aircraft losses are those documented losses listed by the NRHE at Named Locations and the records of WWII Air/Sea Rescue Operations. There are a total of 69 documented aircraft losses listed by the NRHE within the Study Area. The total number of WWII Air/Sea Rescue Operations within the Study Area was extracted from contemporary maps which are sometimes ambiguous and unclear and thus must be considered with caution. The maps imply, however, that somewhere in the region of 110 Air/Sea Rescue Operations took place within the Study Area.

11.11.4 Of the 69 documented losses, one is recorded as being within an F15EZ. This site is linked to a Named Location (described as 'Inner Dowsing Overfalls, Lincolnshire') which is located within F15EZ Area 439. Although this record is not currently tied to known aircraft remains on the seabed, such remains should be expected to survive in some form within F15EZ Area 439 or its vicinity. Similarly, there is the potential for the physical remains of aircraft losses listed in other Named Locations to be present within these licence areas.

11.11.5 Most of the Licence and Application Areas had WWII Air/Sea Rescue Operations either within them or in reasonably close proximity. Nonetheless, it is clear that the majority of recorded aircraft losses and WWII Air/Sea Rescue Operations in the Study Area lie outside Licence and Application Areas.

11.11.6 There is no single comprehensive list of aircraft losses in UK territorial waters and thus the numbers presented above must not be considered definitive. Additionally, the positional data for the NRHE recorded aircraft losses and WWII Air/Sea Rescue Operations is poor. Given these factors, and the automatic protection afforded military aircraft under the Protection of Military Remains Act (1986), a **medium degree of regional interaction** may be suggested between the impacts and the location and distribution of the receptor. Geophysical survey of the F15EZs may identify a proportion of the as yet unlocated aircraft losses, but aircraft wrecks can be difficult to identify in geophysical survey data and some sites may not be identified in this way.

Isolated Aircraft Finds

11.11.7 Isolated finds relating to aviation activity may also be present within the potential areas of impact and the Study Area as a whole. Most aircraft came to be on the seabed as a result of in-flight accident, technical malfunction or enemy action. The remains of aircraft that exploded in mid-air or hit the water at speed are likely to be represented by fragmented and widely dispersed artefacts rather than a coherent aircraft wreck. It is not possible to predict the volume and distribution of such artefacts across the Study Area. However, a consideration of the known aircraft crash sites and the documented aircraft losses suggests a high potential for such material in or on the seabed. Due to the uncertainty regarding their location, isolated aircraft finds must be approached with caution and, as such, a **medium degree of regional interaction** between the impact and the receptor is suggested in this case.

11.12 INTERACTION BETWEEN RECEPTORS AND EFFECTS: SUMMARY

11.12.1 **Table 23** presents a summary of the interaction between the various receptors and the potential areas of impact within the Study Area.

Theme	Receptor	Degree of Interaction
Prehistoric Archaeology	Late Pleistocene Glacio-fluvial Sediments	Small
	Estuarine Alluvium	Small
	Peat	Small
	Isolated Prehistoric Finds	Medium
Maritime Archaeology	Known Charted Wreck Sites	Medium
	Shipping Casualties	Medium
	Unknown Uncharted Wreck Sites	Medium
	Isolated Maritime Finds	Medium
Aviation Archaeology	Known Charted Aircraft Crash Sites	None
	Recorded Aircraft Losses	Medium
	Isolated Aircraft Finds	Medium

Table 23: Summary of the interaction between the receptors and impacts.

11.13 SIGNIFICANCE OF LIKELY IMPACTS: OVERVIEW

11.13.1 The significance of impact is guided by the matrix in **Table 24** below. Through the assessment of the magnitude of effect and the value and sensitivity of the receptors to the effects of substrate removal, bathymetric change and sediment plume a statement of the significance of these effects is made. This is tempered by the extent to which these effects are likely to interact with the receptors. In cases where industry practice avoids seabed hazards and wrecks during aggregates dredging, the significance of the impacts may be amended.

Magnitude of Effect	**High**	Moderate	Moderate/Major	Major
	Medium	Minor/Moderate	Moderate	Moderate/Major
	Low	Not significant	Moderate	Moderate
		Low	**Medium**	**High**
		Value / Sensitivity of Receptor		

Table 24: Matrix of magnitude of effect and value/sensitivity of receptor used to derive the significance of impact.

11.13.2 The significance of likely impacts arises from the combination of several variables, including the degree to which the receptor and the impact interact, the magnitude of the effect in terms of the extent, duration and frequency of the impact and the

sensitivity of the receptor to the effect of impact. Impacts may be either positive or negative (**Table 25**). The significance of impacts are defined as:

- **not significant**;
- **minor**;
- **moderate**; or,
- **major significance**.

Significance	Definition
Not significant	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation.
Minor Negative	The impact is undesirable but of limited concern.
Moderate Negative	The impact gives rise to some concern but it is likely to be tolerable (depending on its scale and duration).
Major Negative	The impact gives rise to serious concern and is judged unacceptable
Minor Positive	The impact is of minor significance but has some environmental benefits.
Moderate Positive	The impact provides some gain to the environment.
Major Positive	The impact provides a significant positive gain to the environment.

Table 25: Definitions of the terms of significance (based upon industry guidance (COWRIE 2007, 2008).

11.13.3 The significance of impacts relating to the effect of sediment plume on the downstream archaeological baseline is defined as 'positive'. Sediment plume will produce either no change to the existing baseline, or may produce potentially positive changes by burying exposed archaeological material, thereby promoting its preservation. Due to the potential variability of sediment plumes across the area, a quantification of the magnitude of these impacts is not included.

11.14 SIGNIFICANCE OF LIKELY IMPACTS: PREHISTORIC ARCHAEOLOGY

11.14.1 **Table 26**, **Table 27** and **Table 28** provide summaries of the results of the impact assessment for prehistoric archaeology receptors against the effects of substrate removal, bathymetric change and sediment plume, respectively. **Note that for the receptor late Pleistocene glacio-fluvial gravels**; **if Palaeolithic artefacts and materials *are* present the significance of Impact will automatically be Major Negative due to the rarity of such archaeology**.

Substrate Removal				
Impact Assessment Criteria	**Prehistoric Archaeology Receptors**			
	Late Pleistocene glacio-fluvial sediments	**Estuarine Alluvium**	**Peat**	**Isolated Prehistoric Finds**
Interaction between Effects and Receptors	Small	Small	Small	Medium
Magnitude of Effect	Medium/High	Low / Medium	Low / Medium	Low / Medium
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	High	High	High	Medium
Significance of Impact	**Moderate Negative**	**Minor / Moderate Negative**	**Minor / Moderate Negative**	**Moderate Negative**

Table 26: Summary of variables assessed with regards to substrate removal and prehistoric archaeology.

Bathymetry Change				
Impact Assessment Criteria	**Prehistoric Archaeology Receptors**			
	Late Pleistocene glacio-fluvial sediments	**Estuarine Alluvium**	**Peat**	**Isolated Prehistoric Finds**
Interaction between Effects and Receptors	Small	Small	Small	Medium
Magnitude of Effect	Medium/High	Medium	Medium	Medium
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	High	High	High	Medium
Significance of Impact	**Moderate Negative**	**Minor / Moderate Negative**	**Minor / Moderate Negative**	**Moderate Negative**

Table 27: Summary of variables assessed with regards to bathymetric change on prehistoric archaeology.

Sediment Plume				
Impact Assessment Criteria	**Prehistoric Archaeology Receptors**			
	Late Pleistocene glacio-fluvial sediments	**Estuarine Alluvium**	**Peat**	**Isolated Prehistoric Finds**
Interaction between Effects and Receptors	Large	Small	Small	Medium
Magnitude of Effect	Low	Low	Low	Low
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	Low	Low	Low	Low
Significance of Impact	**Positive**	**Positive**	**Positive**	**Positive**

Table 28: Summary of variables assessed with regards to sediment plume and prehistoric archaeology.

11.15 SIGNIFICANCE OF LIKELY IMPACTS: MARITIME ARCHAEOLOGY

11.15.1 **Table 29**, **Table 30** and **Table 31** provide a summary of the results of the impact assessment for maritime archaeology receptors against the effects of substrate removal, bathymetric change and sediment plume accordingly, respectively.

Substrate Removal				
Impact Assessment Criteria	**Maritime Archaeology Receptors**			
	Known Charted Wreck Sites	**Shipping Casualties / Recorded Losses**	**Unknown Uncharted Wreck Sites**	**Isolated Maritime Finds**
Interaction between Effects and Receptors	Medium	Medium	Medium	Medium
Magnitude of Effect	Medium	Medium	Medium	Medium
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	High	High	High	Medium
Significance of Impact	**Moderate / Major Negative**	**Moderate / Major Negative**	**Moderate / Major Negative**	**Moderate Negative**

Table 29: Summary of variables assessed with regards to substrate removal and maritime archaeology.

Bathymetry Change				
Impact Assessment Criteria	**Maritime Archaeology Receptors**			
	Known Charted Wreck Sites	**Shipping Casualties / Recorded Losses**	**Unknown Uncharted Wreck Sites**	**Isolated Maritime Finds**
Interaction between Effects and Receptors	Medium	Medium	Medium	Medium
Magnitude of Effect	Medium	Medium	Medium	Medium
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	High	High	High	Medium
Significance of Impact	**Moderate / Major Negative**	**Moderate / Major Negative**	**Moderate / Major Negative**	**Moderate Negative**

Table 30: Summary of variables assessed with regards to bathymetric change on prehistoric archaeology.

Sediment Plume				
Impact Assessment Criteria	**Maritime Archaeology Receptors**			
	Known Charted Wreck Sites	**Shipping Casualties / Recorded Losses**	**Unknown Uncharted Wreck Sites**	**Isolated Maritime Finds**
Interaction between Effects and Receptors	Medium	Medium	Medium	Medium
Magnitude of Effect	Low / Medium	Low / Medium	Low / Medium	Low / Medium
Value of Receptor	High	High	High	Medium
Sensitivity of Receptor	Low	Low	Low	Low
Significance of Impact	**Positive**	**Positive**	**Positive**	**Positive**

Table 31: Summary of variables assessed with regards to sediment plume and maritime archaeology.

11.16 SIGNIFICANCE OF LIKELY IMPACTS: AVIATION ARCHAEOLOGY

11.16.1 **Table 32**, **Table 33** and **Table 34** provide a summary of the results of the impact assessment for aviation archaeology receptors against the effects of substrate removal, bathymetric change and sediment plume accordingly carried out above.

Substrate Removal			
Impact Assessment Criteria	**Aviation Archaeology Receptors**		
	Known Charted Aircraft Crash Sites	**Recorded Aircraft Losses**	**Isolated Aircraft Finds**
Interaction between Effects and Receptors	None	Medium	Medium
Magnitude of Effect	Low / Medium	Low / Medium	Low / Medium
Value of Receptor	High	High	Medium
Sensitivity of Receptor	High	High	Medium
Significance of Impact	**Minor / Negligible Negative**	**Moderate / Major Negative**	**Moderate Negative**

Table 32: Summary of variables assessed with regards to substrate removal and aviation archaeology.

Bathymetry Change			
Impact Assessment Criteria	**Aviation Archaeology Receptors**		
	Known Charted Aircraft Crash Sites	**Recorded Aircraft Losses**	**Isolated Aircraft Finds**
Interaction between Effects and Receptors	Small / None	Medium	Medium
Magnitude of Effect	Medium	Medium	Medium
Value of Receptor	High	High	Medium
Sensitivity of Receptor	High	High	Medium
Significance of Impact	**Minor / Negligible Negative**	**Moderate / Major Negative**	**Moderate Negative**

Table 33: Summary of variables assessed with regards to bathymetric change on prehistoric archaeology.

Sediment Plume			
Impact Assessment Criteria	**Aviation Archaeology Receptors**		
	Known Charted Aircraft Crash Sites	**Recorded Aircraft Losses**	**Isolated Aircraft Finds**
Interaction between Effects and Receptors	Small	Medium	Medium
Magnitude of Effect	Small	Small	Small
Value of Receptor	High	High	Medium
Sensitivity of Receptor	Low	Low	Low
Significance of Impact	**Positive**	**Positive**	**Positive**

Table 34: Summary of variables assessed with regards to sediment plume and aviation archaeology.

11.17 SENSITIVITY OF INDIVIDUAL LICENCE AREAS AND IMPLICATIONS FOR FUTURE LICENCE APPLICATIONS

Introduction

11.17.1 The coincidence of individual Licence Areas and historic environment receptors has been summarised in **Table 26**. The actual presence of evidence within or in close proximity to Licence Areas has been noted; absence of evidence does not necessarily mean that the receptor is not present, not least because of the regional–scale of the datasets used and acknowledged biases in third-party records. Equally, the presence of receptor types such as isolated finds or unknown uncharted wrecks is, by definition, not knowable until they are encountered.

11.17.2 The coincidence of Licence Areas and receptors summarised in **Table 35** is such that none of the Licence Areas can be regarded as 'clear' of interactions with any of the historic environment receptors that have been assessed.

Prehistoric Archaeology

11.17.3 There are 31 palaeolandscape features of archaeological interest that intersect with licenced dredging areas across the entire HADA region. In addition, sedimentary units of archaeological interest are observed in the northern and central areas of the Study Area. In general, where dredging activity targets these sediment units-3a (Late Pleistocene glacio-fluvial sediments receptor) and 3b (estuarine alluvium) (and 3/4 where geophysical data cannot be distinguished further) - there is increased potential for encountering material of Upper Palaeolithic and Mesolithic interest as well as the inherent direct impact upon these sediment units of palaeoenvironmental and palaeolandscapes importance. The full extent of these sedimentary units across the region cannot be evaluated from the geophysical and geotechnical datasets examined for this MAREA but they are likely to extend outwith the studied extent into the wider region. Finds reported under the BMAPA protocol are inconclusive for defining the potential for prehistoric archaeological material in the region. There are instances of bone being reported from Area 107 in the south but it is not clear how old the material is. Generally there is potential for encountering either sediment units of archaeological interest and/or palaeolandscape features in all areas of the Study Area that have been geophysically assessed.

Maritime Archaeology

11.17.4 There are known charted wrecks in most of the Licence Areas, except Areas 449, 480, 441/2, 441/3, 481/1 and 481/2. Licence Areas 448, 105, 400 and 107 have the highest concentration of known wrecks. The potential for the remains of shipping casualties to be present in each Licence Area is highlighted by the identification of the Humber region as an Area of Marine Archaeological Potential (AMAP) by the ALSF Navigational Hazards Project (Bournemouth University 2007). Both the presence in each Licence Area of known charted wrecks and the overall potential for shipping casualties suggest that each Licence Area has the potential to contain as yet unknown, uncharted wrecks. This potential extends to include isolated maritime finds in each Licence Area, though as several have been found in the region, concentrated in the southern licence areas. These have, in most instances, been reported through the Marine Aggregate Industry Protocol.

Aviation Archaeology

11.17.5 None of the Licence Areas contain known, charted air crash sites. However, Area 439 contains a reported aircraft loss. Again, difficulties in identifying and recording air crash sites and aircraft losses-combined with the high level of aviation activity in the region during WWII-suggest that the entire region has the potential to contain isolated aircraft finds, and possibly entire crash sites.

Table 35: Summary of sensitivity of Individual Licence Areas and F15EZs.

			Prehistoric Archaeology			**Maritime Archaeology**				**Aviation Archaeology**		
Licence Area	Associated Geophysical Zone	Geophysical Features	Late Pleistocene Glacio-fluvial Sediments (Unit 3a)	Estuarine Alluvium and Peat (Unit 3b)	Isolated Prehistoric Finds	Known Charted Wrecks◊	Shipping Casualties / Recorded Losses	Unknown Uncharted Wrecks	Isolated Maritime Finds	Known Charted Air Crash Sites◊	Recorded Aircraft Losses	Isolated Aircraft Finds
Significance of Impact (most significant impact)			Moderate Negative	Minor / Moderate Negative	Moderate Negative	Moderate / Major Negative	Moderate / Major Negative	Moderate / Major Negative	Moderate Negative	Minor / Negligible Negative	Moderate / Major Negative	Moderate Negative
102	Northern	**Y**	**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
102 F15EZ	Northern		**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
105	Northern		**Y**	**Y**	**N**	**Y**	**Y**	**?**	**N**	**N**	**N**	**N**
105 F15EZ	Northern		**Y**	**Y**	**N**	**Y**	**Y**	**?**	**N**	**N**	**N**	**N**
448	-	**-**	**-**	**-**	**N**	**Y**	**Y**	**?**	**N**	**N**	**N**	**N**
449	-	**-**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
106/1	Central	**Y**	**N**	**N**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
106/2	Central		**Y**	**N**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
106/3	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	**Y**	**N**	**N**	**N**
106/3 F15EZ	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	‡	**N**	**N**	**N**
197	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
197 F15EZ	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**

400	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
480	Central		**Y**	**Y**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
480 F15EZ	Central		**Y**	**Y**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
493	Central		**Y**	**Y**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
440	-	**-**	**-**	**-**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
440 F15EZ	-	**-**	**-**	**-**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
441/1	-	**-**	**-**	**-**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
441/1 F15EZ	-	**-**	**-**	**-**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
441/2	-	**-**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
441/2 F15EZ	-	**-**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
441/3	-	**-**	**-**	**-**	**N**	**Y**	**N**	**?**	**N**	**N**	**N**	**N**
441/3 F15EZ	-	**-**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
439	-	**-**	**-**	**-**	**N**	**Y**	**Y**	**?**	**N**	**N**	**Y**	**N**
481/1	Southern West	**Y**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
481/2		**-**	**-**	**-**	**N**	**N**	**N**	**?**	**N**	**N**	**N**	**N**
107	-	**-**	**-**	**-**	**Y**	**Y**	**N**	**?**	**Y**	**N**	**N**	**N**
107 F15EZ	-	**-**	**-**	**-**	*****	**Y**	**N**	**?**	***,**,†, ⌐, ≡**	**N**	**N**	**N**

* Unidentified bone (CEMEX_0015); ** Wrought iron (CEMEX_0015); † Roman mortarium sherd (CEMEX_0301); ‡ Refractory brick (Hanson_0190); ⌐ Modern Leather Shoe Sole (CEMEX_0300); ≡ Ships timber from a carvel vessel (CEMEX_0294); Values denoted as '-' indicate data is not available for that area/receptor.

N.B. No mitigation measures are considered here although ordinarily, where the position of receptors such as ship and aviation wrecks is known, they are avoided to prevent damage to dredging equipment and contamination of the aggregate. Equally aggregate dredgers will avoid known areas of alluvium and peat because they present a contamination risk.

Implications for Future Licence Applications

11.17.6 This report has addressed the general baseline for the historic environment of the Humber region in considerable detail, combining both desk-based sources and regional geophysical and geotechnical data. The regional overview provided here is sufficient to inform each future licence application in the region. That is to say, this report obviates the need to provide additional regional context in the baseline for each Licence Area EIA, except insofar as significant additional regional data becomes available. EIA for future licence applications can, therefore, concentrate directly on the historic environment baseline for the individual Licence Area and its immediate environs, referring back to this report for regional context as necessary.

11.17.7 This regional assessment has demonstrated that each of the historic environment themes may be present for each Licence Area to varying degrees, with each Licence Area containing known material of archaeological interest and demonstrable potential for as yet unknown material. None of the licence areas is likely to be clear of interactions. The unmitigated Significance of Impact on historic environment receptors is generally Moderate or Major. However, the Significance of Impact is Minor when such receptors can be avoided because their presence, position and extent have been established. Prehistoric archaeology is likely to be present in every Licence Area, though industry will itself avoid Estuarine Alluvium and Peat because of its potential to contaminate aggregate cargoes.

11.17.8 Maritime Archaeology is also likely to be present in each Licence Area, with some Licence Areas lying in areas characterised as having higher densities of known wrecks, in conjunction with the regional high potential for the presence of other unknown shipping casualties and isolated finds.

11.17.9 Whilst known charted air crash sites are located outwith Licence Areas, evidence of aircraft losses is present across the region. Military aircraft crash sites are automatically protected from interference by the Protection of Military Remains Act 1986.

11.17.10 In conducting EIAs for individual Licence Areas, it will continue to be necessary for historic environment data to be sought for the Licence Area and its immediate vicinity from the principal third-party records. Specifically, it will be necessary to check if any existing records have been altered or new records added as these third-party records are continually being updated. The third-party sources of most direct relevance are the UKHO (known sites of maritime and aviation archaeology interest, plus obstructions etc. that may represent as yet unrecognised sites) and NRHE (known prehistoric, maritime and aviation sites; shipping casualties; and aircraft losses). Local Historic Environment Records (HERs) should also be consulted where a Licence Area falls within a HERs territorial extent, predominantly for known prehistoric, maritime and aviation sites within the Licence Area. Reports received through the Marine Aggregate Industry Protocol are passed to third-party records including the NRHE and HERs, but as there may be a lag in such reports being incorporated into records it may be advisable to consult such reports directly.

11.17.11 Previous practice has been to search the NRHE and/or HERs for records of known prehistoric sites from coastlines adjacent to Licence Areas as a means of gauging potential. This MAREA - drawing on such records and on the direct evidence of geophysical and geotechnical data - has already established this potential at a regional scale. Consequently, the general practice of searching records of adjacent coastlines is no longer advocated for Licence Areas in the Study Area.

11.17.12 Notwithstanding, consultation of NRHE/HERs for adjacent coastlines may be warranted where geophysical/geotechnical data from the Licence Area itself suggests the presence of palaeo-channels that can be correlated with rivers onshore. In such cases, inferences about prehistoric archaeological potential in the Licence Area might be obtained by considering palaeo-catchments as a whole. Consultation of NRHE/HERs may also indicate event records that point to relevant published or grey literature reports.

11.17.13 Insofar as EIAs informed by the Humber MAREA can focus on the Licence Areas and their immediate environs rather than regional context, then geophysical and geotechnical data from the Licence Area itself will continue to grow as the most important sources for assessing the historic environment. As already recognised in HADA members' best practice, adequate EIA can be achieved through the archaeological assessment of existing geophysical and geotechnical data. Where additional geophysical/geotechnical surveying is planned, it is advantageous to incorporate archaeological advice arising out of the regional geoarchaeological characterisation presented in this MAREA to inform the survey specification. Specifically, the provision for duplicate conserving core material for archaeological purposes has been advocated by The Crown Estate (Gribble and Leather 2011), to facilitate archaeological logging and sub-sampling if subsequently required. As with existing geophysical/geotechnical data, provision should be made for archaeological assessment of survey results.

11.17.14 This MAREA has not included a review of regional-scale sidescan and magnetometer datasets. Consequently, no comment has been made on the relation between recorded maritime/aviation sites and the actual presence of features and anomalies on the seabed, or on regional patterning in the visibility of features/anomalies (whether attributable to seabed sediments, bedform movement or other factors). In the absence of field data to temper conclusions, there appears to be high potential for as yet unknown maritime/aviation sites and isolated finds. As already recognised in HADA members' best practice, adequate EIA requires archaeological assessment of high resolution sidescan survey from the Licence Area. Evaluation of archaeological features and anomalies from sidescan data will be enhanced by the availability of magnetometer and/or multibeam data.

11.17.15 Looking at the levels of effort required for individual Licence Area EIAs, the work relating to searches of third party records is likely to be common for each Licence Area. Variations in the overall level of effort in respect of the historic environment will largely be related to the acquisition (where necessary) of geophysical/geotechnical data, and the archaeological interpretation of existing/new geophysics and geotechnical results. The level of effort in conducting EIAs will be less for Licence Areas where appropriate geophysical and geotechnical data are already available and can be incorporated archaeologically at the start of the assessment. A greater level of effort will be required in conducting EIAs if existing data are inadequate. Where new surveys are to be carried out it will be advisable to obtain advice to ensure that the results are capable of addressing archaeological issues.

11.17.16 For individual EIAs, this MAREA has removed the need for preparing regional overviews and (generally) for conducting searches of records of adjacent coastlines. This should facilitate EIAs that are more tightly focussed on specific historic environment issues in the Licence Area itself, resulting in more succinct documents that can be prepared more rapidly. As acknowledged above, the MAREA places considerable emphasis on the detailed consideration of geophysical and geotechnical data for each Licence Area EIA. In turn, archaeological interpretation of geophysical and geotechnical data can be expected to reduce uncertainty and - by

allowing features or anomalies to be avoided - reduce thereby the significance of impacts, which will ease the licensing process, reassure stakeholders, and facilitate the drafting of conditions. Geophysical and geotechnical surveys that are informed by this MAREA will have the effect of increasing what is known, and decreasing the scope within which previously unknown sites might potentially be found. Impacts on known sites and features can be mitigated through the existing practice of establishing Archaeological Exclusion Zones to enforce avoidance. This reduced, residual potential can be expected to fall within the operational capabilities of the Marine Aggregate Industry Protocol, which has already been demonstrated to be effective in the Humber Region.

11.17.17 This MAREA has increased certainty and provided a clearer focus on specific historic environment issues within Licence Areas. This MAREA can equally be expected to facilitate the development of more tightly-focussed monitoring programmes with respect to historic environment, so that monitoring is limited only to those areas/issues that are likely to be sensitive to aggregate dredging. Smarter monitoring of the historic environment is likely to be more efficient, whilst continuing to provide an effective safeguard.

11.17.18 The historic environment sections of the Humber MAREA will warrant review in due course, especially in the light of the current pace of marine archaeological research arising from ALSF projects and development-led investigations in the region. The Marine Aggregate Industry Protocol is likely to continue to provide directly relevant data, which should also be used to update the MAREA in the course of review.

In-combination Impacts

11.17.19 The impacts of marine aggregate dredging in combination with other forms of marine development have been assessed in the light of known or proposed schemes for channel dredging and offshore wind farm construction, including installation of export cables.

11.17.20 Like marine aggregate licensing, consents for these other forms of marine development are normally accompanied by EIA. As well as requiring an adequate level of assessment of effects on the archaeological heritage, EIAs for these other schemes include mitigation measures that can be enforced through conditions on consent. As with marine aggregates, mitigation generally comprises avoidance (through the use of exclusion zones), protocols for archaeological discoveries, and offsetting impacts on deposits of prehistoric interest by providing for assessment, scientific dating and analysis of significant horizons.

11.17.21 For the Study Area's archaeological heritage, with adequate assessment informing consent, the in-combination residual ('with mitigation') impact of marine aggregates and other schemes is likely to be **low**.

11.17.22 The low level of in-combination impact is also attributable to the fact that marine aggregate dredging and other forms of development have different implications for the main archaeological receptors.

11.17.23 Channel dredging for navigation is intense but localised, especially where the majority of the channel is already at depth and no further excavation is required. Whilst some sites are avoided by changing channel design and navigational infrastructure, other sites can require demolition ('clearance') and are subject to specific mitigation measures. Aggregate dredging tends to be more extensive and diffuse and there is greater scope for sites to be avoided. Consequently the in-

combination impact of marine aggregate dredging and navigational channel dredging on the archaeological heritage is considered to be **low**.

11.17.24 Offshore wind farms generally have two main physical impacts relevant to the archaeological heritage: installation (and protection) of turbine foundations; and installation of inter-array and export cabling. Foundation impacts tend to be restricted horizontally but they may be very deep - which is a concern for buried deposits of prehistoric interest - in contrast to generally shallow aggregate dredging. Vertical impacts from wind farms arising from turbine foundations have tended to be offset by carrying out detailed assessment, scientific dating and analysis of suitable recovered material. The impact of turbines offset by geoarchaeological investigation of deep sequences, together with geophysics-based results for marine aggregates that are extensive, is probably resulting in a positive in-combination impact on the prehistoric archaeological heritage through the research dividend being created for future management.

11.17.25 Wind farm cables are laterally extensive but physical impacts are limited in width and depth. Moreover, cables are routed around known sites to avoid jeopardising both the cables and the installation gear. As the physical impacts of cabling are limited and in both sectors developers seek to avoid known sites, the in-combination impact of wind farm cabling and marine aggregates in the Study Area is considered to be **low**.

11.17.26 SeaZone data shows a large number of offshore cables throughout the Humber MAREA region (outside the aggregates dredging areas); however, negative impacts to cultural heritage receptors will have already occurred. The cumulative impact from future aggregates dredging is likely to be **low**.

11.17.27 In conclusion, due to the different characteristics of impacts on the archaeological heritage arising from marine aggregates compared with other scheme types, and subject to the archaeological heritage being adequately assessed and appropriately mitigated across all scheme types, in-combination impacts in the Study Area are unlikely to compromise the historic environment at a regional scale.

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13 APPENDICES

13.1 APPENDIX I - LEGISLATION, PLANNING DOCUMENTS AND POLICY (ON CD-ROM ONLY

Protection of Wrecks Act 1973

13.1.1 The Study Area lies within UK territorial waters, in which the Protection of Wrecks Act 1973 may be applied. The Protection of Wrecks Act, 1973, enables the Secretary of State to make orders to protect certain wreck sites in United Kingdom waters from unauthorised interference on account of either their historic, archaeological or artistic importance or their potentially dangerous condition.

13.1.2 In England, the Protection of Wrecks Act 1973 is administered by the Department for Culture, Media and Sport (DCMS); specialist advice is sought from English Heritage and a team of professional diving archaeologists employed on contract. Licences can be obtained to carry out survey, excavation and other activities that would be otherwise prohibited. Generally, the relevant Secretary of State must consult appropriate advisors prior to designation, though it is also possible to designate a wreck in an emergency without first seeking advice.

Ancient Monuments and Archaeological Areas Act 1979

13.1.3 Monuments that are of national importance can be protected under the Ancient Monuments and Archaeological Areas Act 1979. It is an offence to damage a monument scheduled under this Act or to carry out a range of specified activities, unless a licence for these activities has been obtained. The term monument covers many types of heritage assets, including buildings, structures, caves and archaeological sites. Monument can also mean the site of any vehicle, vessel, aircraft or other movable structure. The Ancient Monuments and Archaeological Areas Act 1979 is administered in England by English Heritage.

Merchant Shipping Act 1995

13.1.4 This Act states that any material brought to the surface must be declared to the Receiver of the Wreck. Finders of objects from the sea should assume that all wreck material has an owner. The Receiver of Wreck aims for material considered to be of historic or archaeological importance, to be placed in a suitable museum.

Protection of Military Remains Act 1986

13.1.5 This Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft or designated vessel without a licence. All crashed military aircraft receive automatic protection, but the Ministry of Defence (MOD) must individually designate vessels.

UK High Level Marine Objectives

13.1.6 The UK government high level marine objectives outline the government wide objectives to achieve sustainable development in the marine environment. The objectives state that the marine historic environment includes ‘Individual sites and assets of historic, archaeological, architectural or artistic interest, whether or not they are afforded statutory protection by heritage protection legislation’. The objectives also promote the use of spatial planning which ‘recognises the protection and management needs of marine cultural heritage according to its significance.’

Marine and Coastal Access Act 2009

13.1.7 This Act introduced a new system of marine planning across the UK, supported by a Marine Policy Statement adopted in March 2011 and Marine Plans, which are currently in development. The new system for marine planning dovetails with terrestrial Planning Policy Statements (see below). The Marine Policy Statement requires the consideration of seascapes and the historic environment based on the following principles:

- The historic environment should be conserved in a manner appropriate and proportionate to its significance.
- Opportunities should be taken to contribute to our knowledge and understanding of our past from the historic environment and making this publicly available, particularly if a heritage asset is to be lost.
- The absence of designation for heritage assets does not necessarily indicate lower significance and non-designated assets should be considered subject to the same policy principles as designated heritage assets.
- Developments proposals should avoid or minimise conflict with the conservation of an asset's significance.
- Developments should adopt a general presumption in favour of the conservation of designated heritage assets within an appropriate setting proportionate to its significance.
- Substantial loss or harm to designated assets should be exceptional.
- Where the loss of the whole or a material part of a heritage asset's significance is justified, suitable mitigating actions should be required to record and advance understanding of the significance of the heritage asset before it is lost.

Planning Policy Statement 5 (PPS5)

13.1.8 Planning Policy Statement 5 sets out the Government's national planning policy in relation to the historic environment, and is supported by a Practice Guide (*http://www.communities.gov.uk/publications/planningandbuilding/pps5*). PPS5 replaces PPG15 and PPG16 and covers 'all aspects of the environment … that have been shaped through human activity' to the low water mark.

13.1.9 In relation to intertidal and marine sites PPS5 largely echoes the approach of the MCAA set out above, and highlights that where there is overlap, local Marine Plans should be consulted.

13.1.10 The key principles of PPS5 are:

- That heritage assets are a non-renewable resource.
- That heritage assets are managed according to their significance.
- That planning objectives contribute to our knowledge of the past by ensuring that opportunities are taken to capture information from the historic environment, particularly when a heritage asset is to be lost.

- That information gained through the planning process about the historic environment is made publicly available.

13.1.11 In effect, these principles mean that the historic environment must be a material consideration in development control, that preservation *in situ* is the preferred approach for heritage assets, that developers are responsible for the recording, publication and dissemination of investigations of heritage assets that cannot be preserved *in situ*, and that consents are issued subject to sufficient information on archaeological impacts and mitigation.

JNAPC Code of Practice for Seabed Developers

13.1.12 The Code of Practice for Seabed Developers, which was prepared by the Joint Nautical Archaeology Policy Committee (JNAPC), extends the principles of development-led archaeology on land to development at sea. It was endorsed by the Department of National Heritage (now DCMS) following discussion between archaeologists and many industry groups, including the British Marine Aggregates Producers Association (BMAPA). The provisions of the Code are set out in Appendix II.

Identifying and Protecting Palaeolithic Remains

13.1.13 Identifying and Protecting Palaeolithic Remains; archaeological guidance for planning authorities and developers (English Heritage May 1998) draws attention to the importance of Palaeolithic remains and states that they must be considered in line with PPG 16 (superseded by PPS5) when potentially affected by development proposals. Palaeolithic archaeological sites are defined as any land where artefacts or traces of a human presence of Pleistocene date have been found.

13.1.14 The guidance provides the following advice:

- It is advisable for prospective developers to research the archaeological potential of their sites (including that for Palaeolithic remains) at an early stage;
- It is the responsibility of developers to supply the relevant planning authority on the archaeology of their sites, with proposals for the way in which this will be accommodated within the development scheme, so that an informed planning decision can be reached. Information on the Palaeolithic remains or the potential for such remains within a certain site may be acquired from a desk-based assessment but when this is inadequate it may be necessary to obtain further information from a limited field evaluation by suitably qualified archaeologists;
- Planning authorities may apply a condition to a consent which prohibits the start of development until the applicant has ensured appropriate provision has been made for an adequate record of the site's archaeological remains.

Other Guidance

13.1.15 In addition to the policy framework set out above, the preparation of this assessment also considers guidance set out in the following;

- (English Heritage 2006) Ports: the impact of development on the maritime historic environment. London.
- (English Heritage 2007) Wind Energy and the Historic Environment-Guidance for developers of wind energy projects. London.
- (English Heritage 2008) Conservation Principles, Policies and Guidance for the sustainable management of the historic environment. London.
- (English Heritage 2010a) The setting of heritage assets-English Heritage guidance Consultation draft. London.
- (English Heritage 2010b) Planning Policy Statement (PPS) 5: Historic Environment Planning Practice Guide.
- (BMAPA (British Marine Aggregates Producers Association)/English Heritage 2005) Protocol for Reporting Finds of Archaeological Interest. http://www.wessexarch.co.uk/files/projects/BMAPA-Protocol/protocol_text.pdf.
- (COWRIE (Collaborative Offshore Wind Research into the Environment) 2007) Historic Environment Guidance for the Offshore Renewable Energy Sector.; http://www.offshorewind.co.uk/Assets/archaeo_guidance.pdf.
- (COWRIE 2011) Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. http://www.offshorewind.co.uk/Assets/final%20GEORARCH-09%20Offshore%20Geotech%20Guidance%20web.pdf.
- (The Crown Estate 2010) Model Clauses for Archaeological Written Schemes of Investigation. http://www.thecrownestate.co.uk/wsi_renewables.pdf.
- (The Crown Estate 2010) Protocol for Archaeological Discoveries: Offshore Renewables Projects. http://www.thecrownestate.co.uk/pad_offshore_renewables.pdf.

13.2 APPENDIX II - GEOPHYSICAL DATASET TECHNICAL SPECIFICATIONS (ON CD-ROM ONLY)

2011 dataset

13.2.1 The principal dataset used for the geophysical data assessment was acquired by Osiris Projects and comprised nine survey lines extending approximately perpendicular to the coast, totalling 206.5 line km. Data acquired included sidescan sonar, sub-bottom profiler (sparker) and multibeam echosounder data. The data were acquired from the SV Lia between 24th January and 1st February 2011.

13.2.2 For the purpose of the archaeological assessment only the sparker data were assessed. A Geo-Spark 200 system was used at 100J power fired at 4Hz with a sweep time of 70ms (Osiris Projects 2011). The raw data were recorded with a CODA DA2000 digital acquisition system. Data were provided to WA as digital .cod (coda) data files.

Humber Estuary (1989)

13.2.3 Data for this survey area were acquired by Gardline Surveys on behalf of CEMEX in May 1989. Sub-bottom profiler data were acquired by a boomer system. No further technical specifications were supplied. Data were provided to WA as paper rolls and a vessel trackchart plot in OSGB 36 Britiah National Grid Co-ordinates. The trackchart plots were scanned and georeferenced to WGS84 UTM31.

13.2.4 The data were principally reviewed in conjunction with the geotechnical data acquired in 1989. However, where the vibrocore locations were situated within 100m of the geophysics data the vibrocore logs were reviewed (1994, 1999, 2004 and 2009).

Area 197 (1991)

13.2.5 Data for this survey area were acquired by Geoteam on behalf of United Marine Dredging Limited (UMD) in June 1991. Sub-bottom profiler data were acquired by a boomer system. No further technical specifications were supplied. Data were provided to WA as paper rolls and a vessel trackchart plot in OSGB 36 Britiah National Grid Co-ordinates. The trackchart plots were scanned and georeferenced to WGS84 UTM31.

13.2.6 The data were reviewed in conjunction with the geotechnical data acquired on behalf of UMD in 2002.

Humber Overfalls Areas 493 and 197 (2007)

13.2.7 Data for this area were acquired by Gardline Lankelma on behalf of United Marine Dredging Limited (UMD) between 23rd and 26th October 2007. The data were acquired from the small work vessel Sea Otter. The sub-bottom profiler data were acquired using a EG and G Uniboom boomer system. The vessel trackplot was supplied as a paper plot and as a digital DWG file. The data were provided as a series of paper rolls.

13.2.8 The data were reviewed in conjunction with the geotechnical data acquired in 2008.

Area 481 (Inner Dowsing) and East Dudgeon (1999)

13.2.9 Data for the two areas were acquired by Andrews Survey on behalf of United Marine Dredging Limited (UMD) between 5th August and 12th August 1999. Sub-bottom profiler data were acquired using a EG and G Uniboom Model 230 boomer system and data were recorded on a marine graphic recorder.

13.2.10 Data were provided to WA as paper rolls and a vessel trackchart plot in OSGB 36 Britiah National Grid Co-ordinates. The trackchart plots were scanned and georeferenced to WGS84 UTM31.

13.2.11 The data were reviewed in conjunction with the geotechnical data acquired in 2000 and 2001.

Geophysical Data Processing

13.2.12 The 2011 sub-bottom profiler data were processed by WA using Coda Seismic+ software. This software allows the data to be replayed with user selected filters and gain settings in order to optimise the appearance of the data for interpretation. The software then allows an interpretation to be applied to the data by identifying and selecting a sedimentary boundary that might be of archaeological interest.

13.2.13 The sub-bottom profiler data were interpreted with two-way travel time (TWTT) along the z-axis. In order to convert from TWTT to depth the velocity of the seismic waves was estimated to be 1,650 m/s, as was used for the geological interpretation (Osiris Projects 2011). This is a standard estimate for shallow, unconsolidated sediments.

Anomaly Grouping and Discrimination

13.2.14 The previous section describes the initial interpretation of the sub-bottom profiler dataset. The tagged features were exported from Coda GeoSurvey software. The individual tagged layers were then grouped into features. Each feature may comprise one or more tagged layers. Relevant geotechnical data were also integrated into the geophysical data interpretation.

13.2.15 Once the geophysical anomalies have been grouped a discrimination flag is added to the record in order discriminate against those which are not thought to be of an archaeological concern. These flags were ascribed as follows:

Non-Archaeological	U2	Sediment layer, that on review, is not of archaeological interest or there is not enough data to class the feature as of archaeological interest
Archaeological	A1	Feature of probable archaeological interest either because of its palaeogeography or likelihood for producing palaeoenvironmental material *e.g.* palaeochannel, cut and fill, gravel terraces
	A2	Feature of possible archaeological interest *e.g.* gas blanking, fine-grained infills, ravinement surface

Table II.1: Criteria for discriminating relevance of sub-seabed features

13.2.16 The grouping and discrimination of information at this stage is based on all available information and is not definitive. It allows for all features thought to be of archaeological interest to be highlighted while retaining all the information produced during the course of the geophysical interpretation for further evaluation should more information become available.

13.3 APPENDIX III - REC VIBROCORE LOCATIONS AND ASSESSMENT (ON CD-ROM ONLY)

Northern Area

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
CEM _2009a_VC1	Cemex 2009a	102	324396	5945140	0	?						0.41	Up to 2m sediment deposited on the edge of Sand Hole feature.
CEM _2009a_VC1a	Cemex 2009a	102	324761	5944571	0	?					0.6	4.01	Within Sand Hole Feature. Veneer of seabed sediments overlying bedrock (Unit 1).
CEM _2009a_VC2	Cemex 2009a	102	324158	5944237	0	?	0.57					2.5	Associated with **7012**. Depression from seabed to 8.3m sub-seabed. Infilled with up to 5.5m layered sediments and overlain by up to 2.8m Holocene sediments.
CEM _2009a_VC3	Cemex 2009a	102	323599	5944568		0						3.36	Western edge of Sand Hole feature and edge of Botney Cut Formation (Unit 3).
CEM _2009a_VC4	Cemex 2009a	102	323737	5945117		0						2.32	Up to 6m sediment (Unit 3/4) on the western edge of Sand Hole feature.
CEM _2009a_VC5	Cemex 2009a	102	323664	5945569		0						3.34	Up to 6m sediment (Unit 3/4) on the western edge of Sand Hole feature.
CEM _2009a_VC6	Cemex 2009a	102	324396	5945140		0						2.62	Up to 6m sediment (Unit 3/4) on the western edge of Sand Hole feature.
CEM _2009a_VC7	Cemex 2009a	102	324761	5944571	0		?	?		0.5		2.07	Within Sand Hole feature. Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
CEM _2009a_VC8	Cemex 2009a	102	324982	5945050	0	?					1.18	3.41	Veneer (Unit 4) overlying bedrock in the base of Sand Hole feature.
CEM _2009a_VC9	Cemex 2009a	102	324788	5945352	0	0.38			2.95			3.33	Up to 1m channel infill sediments (Unit 3) overlying till (Unit 2)
CEM _2009a_VC10	Cemex 2009a	102	326553	5945579	0	?			1.88			2.44	Up to 2m sediments infilling undulations in till (Unit 2). Infill sediment probably modern (Unit 4).

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
CEM _2009a_VC11	Cemex 2009a	102	326006	5945417	0	?		0.84				1.25	2.5m channel infill sediments (Unit 3) with veneer of seabed sediments (Unit 4). Edge of channel feature with maximum depth of 4m sub-seabed.
CEM _2009a_VC12	Cemex 2009a	102	324533	5945922	0			0.12	0.32			1.7	Probable veneer of sediment (Unit 3/4) overlying till (Unit 2)
CEM _2009a_VC13	Cemex 2009a	102	324695	5946898	0			?	0.07			1.07	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
CEM _2009a_VC14	Cemex 2009a	102	324915	5946731	0				0.17			2.16	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
CEM _2009a_VC15	Cemex 2009a	102	326693	5948480	0			?		0.35		1.17	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
CEM _2009a_VC16	Cemex 2009a	102	325689	5950312	0			?		0.08		1.17	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
CEM _2009a_VC17	Cemex 2009a	102	326204	5949985	0			?	0.2			0.64	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
CEM _2009a_VC17a	Cemex 2009a	102	326199	5949983	0			?		0.14		1.05	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT64	RMC 1999	102	327497	5946480	0	?				0.51		3.19	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT65	RMC 1999	102	327238	5946192	0					0.26		1.64	No geophysics coverage
RMC_1999_VCT66	RMC 1999	102	326366	5946873	0			0.36		1.33		1.52	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT67	RMC 1999	102	326392	5946554	0					0.2		1.82	Veneer of seabed sediments (Unit 4) overlying by till (Unit 2).
RMC_1999_VCT68	RMC 1999	102	326261	5946084	0				1.43	2.08		2.73	Veneer of seabed sediments (Unit 4) overlying by till (Unit 2).
RMC_1999_VCT69	RMC 1999	102	324177	5945715	0	?		3.17		3.75		3.84	Up to 3m sediments (Unit 3) infilling cut feature into till (Unit 2). Unit 3 overlain by veneer of seabed sediment (Unit 4).
RMC_1999_VCT70	RMC 1999	102	324183	5946102	0			0.22		0.39		1.23	Up to 1m sediment (Unit 3) infilling an undulating cut into till (Unit 2).
RMC_1999_VCT71	RMC 1999	102	323723	5945768	0					0.78		3.14	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT72	RMC 1999	102	324152	5946484	0				0.53	2.44		3.75	Up to 1m sediment (Unit 3) infilling an undulating cut into till (Unit 2). Infill is possibly Unit 3 and 4 reworked.

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
RMC_1999_VCT73	RMC 1999	102	324116	5947083	0			2.36				2.93	Up to 2m bank structure of sands and gravels (Unit 3) overlying till (Unit 2).
RMC_1999_VCT74	RMC 1999	102	324329	5947449	0					0.34		1.74	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT75	RMC 1999	102	324594	5947773	0	?						0.99	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT76	RMC 1999	102	325274	5950627	0			0.7		0.87		2.45	Up to 1m bank structure of sands and gravels (Unit 3) overlying till (Unit 2).
RMC_1999_VCT77	RMC 1999	102	325773	5950690	0					0.2		2.45	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT78	RMC 1999	102	325776	5950469	0			?		0.19		1.89	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1999_VCT79	RMC 1999	102	325439	5950320	0					0.88		2.41	1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1999_VCT80	RMC 1999	102	325560	5949805						0		0.74	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004a_VC061	RMC Marine 2004a	102	324134	5947363	0					1.65		2.62	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004a_VC062	RMC Marine 2004a	102	324139	5946786	0			0.47		1.17		3.9	Up to 3m sediment (probable Unit 3) draping on edge of geological high overlying till (Unit 2).
RMC_2004a_VC063	RMC Marine 2004a	102	324016	5946089	0			3.24		3.3		4.96	2m sediments (Unit 3) overlying till (Unit 2). As RMC_2004a_VC062
RMC_2004a_VC064	RMC Marine 2004a	102	324868	5946954					0	?		3.81	No geophysics coverage
RMC_2004a_VC065	RMC Marine 2004a	102	324835	5946348	0			?		0.05		2.89	2m seabed sediments (Unit 4) in the form of sandwaves overlying till (Unit 2).
RMC_2004a_VC066	RMC Marine 2004a	102	324502	5945120	0	?						3.56	Up to 5m seabed sediments (Unit 4; sandwave) overlying Unit 3.
RMC_2004a_VC067	RMC Marine 2004a	102	324207	5944611	0	?	?					4.3	Up to 3m sediment on western edge of Sand Hole feature. Probably Unit 3
RMC_2004a_VC068	RMC Marine 2004a	102	325200	5945120	0						1.03	2.24	Up to 1m seabed sediment (Unit 4) overlying bedrock (Unit 1) in the base of Sand Hole feature.
RMC_2004a_VC069	RMC Marine 2004a	102	326038	5945564	0					1.63		2.71	Up to 2m sediments (Unit 3) infilling a depression overlying till (Unit 2).

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
RMC_2004a_VC070	RMC Marine 2004a	102	326400	5946237	0					2.82		4.72	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004a_VC071	RMC Marine 2004a	102	327237	5945941	0				2.43	0.25		3.3	No geophysics coverage
RMC_2004b_VC072	RMC Marine 2004b	105	332691	5948758						0		1.6	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004b_VC073	RMC Marine 2004b	105	333410	5948344	0					0.35		1.24	No geophysics coverage
RMC_2004b_VC074	RMC Marine 2004b	105	333726	5947987	0					0.45		2.01	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004b_VC075	RMC Marine 2004b	105	334703	5948155	0					0.24		2.06	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004b_VC076	RMC Marine 2004b	105	335035	5946676	0.17					0.17		2.95	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004b_VC077	RMC Marine 2004b	105	335200	5945871	0					0.4		2.99	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_2004b_VC078	RMC Marine 2004b	105	335993	5943583	0					0.39		2.59	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_2004b_VC079	RMC Marine 2004b	105	335926	5943205	0					0.77		3.5	No geophysics coverage
RMC_2004b_VC080	RMC Marine 2004b	105	334980	5945068	0	?		0.11		1.38		3.98	Up to 1.5m coarse sediments (Unit 3) draping a natural high overlying till (Unit 2)
RMC_2004b_VC081	RMC Marine 2004b	105	333624	5945429	0	?				1.34		3.44	Veneer of seabed sediments (Unit 4) overlain by till (Unit 2).
RMC_2004b_VC082	RMC Marine 2004b	105	332652	5945639	0					0.33		3.11	Bank of till (unit 4). Same feature as CEM_2009b_VC11 and 12
RMC_2004b_VC083A	RMC Marine 2004b	105	331977	5945532			0					2.48	Same feature as RMC_1994b_VC-60. Channel cut feature. Channel 310m wide and 5m deep. Infill comprises well-layered, westerly dipping reflectors (Unit 3)
RMC_2004b_VC084	RMC Marine 2004b	105	331525	5944983		0	?					4.4	Edge of bank feature. Up to 3m Unit 3/4 overlying till (Unit 2).
RMC_2004b_VC085	RMC Marine 2004b	105	331404	5945559		0		?				1.02	No geophysics coverage
RMC_2004b_VC086A	RMC Marine 2004b	105	330601	5945194	0			0.41				0.87	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
CEM_2009b_VC1	Cemex_2009b	105	330250	5945305	0	?						1.68	Broad, shallow cut and fill feature infilled with up to 1.5m sediment. Fill either seabed sediment (Unit 4) or Unit 3.
CEM_2009b_VC2	Cemex_2009b	105	330230	5944744	0	?						3.24	No geophysics coverage
CEM_2009b_VC3	Cemex_2009b	105	330665	5945297	0					0.25		0.92	Veneer of seabed sediments (unit 4) overlying till (Unit 2).
CEM_2009b_VC3a	Cemex_2009b	105	330655	5945299	0							0.2	Veneer of seabed sediments (unit 4) overlying till (Unit 2).
CEM_2009b_VC4	Cemex_2009b	105	331770	5945075		0						3.91	No geophysics coverage
CEM_2009b_VC5	Cemex_2009b	105	330863	5944957		0	?	?				3.46	No geophysics coverage
CEM_2009b_VC6	Cemex_2009b	105	330904	5944622		0	?	?				2.8	No geophysics coverage
CEM_2009b_VC7	Cemex_2009b	105	331309	5945299	0			0.57				2.01	No geophysics coverage
CEM_2009b_VC8	Cemex_2009b	105	331239	5944921	0		1	?				1.62	No geophysics coverage
CEM_2009b_VC9	Cemex_2009b	105	331321	5944593	0			0.3		0.65		1.61	No geophysics coverage
CEM_2009b_VC10	Cemex_2009b	105	331800	5945567			0			2.76		3.1	No geophysics coverage
CEM_2009b_VC11	Cemex_2009b	105	332557	5945677	0					0.84		1.63	Bank of till (Unit 2). Same feature as CEM_2009b_VC12
CEM_2009b_VC12	Cemex_2009b	105	332533	5945138		0		?				3.71	Bank of till (Unit 2). Same feature as CEM_2009b_VC11. Possible build up of seabed sediment between 1989 and 2009 accounting for difference in geophysics and vibrocore interpretation
CEM_2009b_VC13	Cemex_2009b	105	335754	5946699	0					0.25		2.14	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
CEM_2009b_VC14	Cemex_2009b	105	335985	5945700	0					0.1		0.66	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
CEM_2009b_VC14a	Cemex_2009b	105	335999	5945695	0					0.1		0.83	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
CEM_2009b_VC15	Cemex_2009b	105	336691	5945906	0					0.44		1.92	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
CEM_2009b_VC16	Cemex_2009b	105	337251	5945070	0		1.25					2.34	No geophysics coverage
CEM_2009b_VC17	Cemex_2009b	105	336896	5944728	0			0.32				0.65	Edge of channel feature infilled with 3m Unit 3 infill sediments overlying till (Unit 2)

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CEM_2009b_VC17a	Cemex_2009b	105	336897	5944743				0				1.09	Edge of channel feature infilled with 3m Unit 3 infill sediments overlying till (Unit 2)
CEM_2009b_VC18	Cemex_2009b	105	336639	5944326	0			0.4				3.09	Broadscale shallow depression with up to 2m well-layered sediments (Unit 3) overlying till (Unit 2).
CEM_2009b_VC19	Cemex_2009b	105	336406	5943775		0		?				0.52	Small bank structure up to 2m high comprising probable sands and gravels. Possible seabed sediment mound or erosive feature of Unit 3.
CEM_2009b_VC19a	Cemex_2009b	105	336399	5943779		0		?	0.93			1.5	Small bank structure up to 2m high comprising probable sands and gravels. Possible seabed sediment mound or erosive feature of Unit 3.
CEM_2009b_VC20	Cemex_2009b	105	336559	5943141			?			0		0.62	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
CEM_2009b_VC20a	Cemex_2009b	105	336560	5943143	0					0.09		0.64	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
CEM_2009b_VC21	Cemex_2009b	105	339862	5944353									No geophysics coverage
CEM_2009b_VC22	Cemex_2009b	105	334787	5944429	0			1.71				3.75	Extensive layer of sediment overlying till (Unit 2). Sediments probable sands and gravels relating to Unit 3.
CEM_2009b_VC23	Cemex_2009b	105	335752	5944294		0		?				1.03	Probable veneer of sediments over till (Unit 2).
RMC_1989a_VC63	RMC_1989a	102	324821	5950103		0		?				0.44	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1989a_VC64	RMC_1989a	102	328479	5951744	0					0.42		1.3	Edge of bank feature. Seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1989a_VC65	RMC_1989a	102	329222	5950878	0					0.33		1	Veneer of seabed sediments overlying till (Unit 2)
RMC_1989a_VC90	RMC_1989a	102	328217	5945650	0							1.3	Edge of broadscale shallow cut. Infill sediments layered and up to 2m thick at this location. Probable Unit 3.
RMC_1989a_VC91	RMC_1989a	102	327041	5945741	0			1.77		2.13		3.02	Up to 2m channel infill sediments (Unit 3) overlying till (Unit 2)
RMC_1989a_VC92	RMC_1989a	102	326586	5946132	0				1.58			1.99	Up to 2m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1989a_VC93	RMC_1989a	102	327110	5946821	0			?		0.92		1.46	Up to 1m seabed sediments (Unit 4)

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													overlying till (Unit 2).
RMC_1989a_VC94	RMC_1989a	102	326558	5946712		0		?		0.14		1.45	Till (Unit 2) overlain by veneer of seabed sediment (Unit 4)
RMC_1989a_VC95	RMC_1989a	102	325531	5945259	0	0.41	0.87	?				1.15	Small isolated cut and fill feature with up to 2m fill (Unit 3) overlying till (Unit 2).
RMC_1989a_VC96	RMC_1989a	102	325573	5945988	0					0.22		1.07	Till (Unit 2) with a veneer of seabed sediment (Unit 4).
RMC_1989a_VC97	RMC_1989a	102	324609	5947348	0					0.15		0.2	Till (Unit 2) with a veneer of seabed sediment (Unit 4).
RMC_1989a_VC98	RMC_1989a	102	324276	5946871	0	?						2.18	Up to 5m sediment in bank structure. Probably modern feature (Unit 4)
RMC_1989a_VC99	RMC_1989a	102	324321	5945466	0							1.31	Modern sandwave feature. Up to 2m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1989a_VC100	RMC_1989a	102	324562	5944824	0							1.36	Till (Unit 2) with a veneer of seabed sediment (Unit 4).
RMC_1989a_VC101	RMC_1989a	102	323559	5945251		0		?				2.92	Probable Botney Cut Formation (Unit 3) on side of Sand Hole feature.
RMC_1989a_VC102	RMC_1989a	102	323757	5944764		0		?				3.22	Up to 3m sediment on flank of Sand Hole Feature. Probably Unit 3.
RMC_1989a_VC103	RMC_1989a	102	323546	5944124	0							1.71	Edge of Sand Hole feature. Till (Unit 2) overlain by veneer of sediments (Unit 4)
RMC_1989a_VC104	RMC_1989a	102	323560	5944262		0		?				1.15	Edge of Sand Hole feature. Till (Unit 2) overlain by veneer of sediments (Unit 4)
RMC_1989b_VC 66	RMC_1989b	105	330692	5951020	0			0.32		1.38		1.7	Edge of small, isolated shallow cut and fill feature . Fill up to 2m thick overlying till
RMC_1989b_VC 67	RMC_1989b	105	335644	5945410	0							0.36	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
RMC_1989b_VC 68	RMC_1989b	105	335678	5945351	0					0.21		2.04	Veneer of seabed sediment (Unit 4) overlying till (Unit 2).
RMC_1989b_VC 69	RMC_1989b	105	335672	5944465	0			0.21				1.12	Possible bank of fill (Unit 3) overlying till.
RMC_1989b_VC 71	RMC_1989b	105	336550	5944528	0			0.2				1.66	Possible edge of shallow cut and fill feature. Coarse sediments at seabed.

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RMC_1989b_VC 72	RMC_1989b	105	336526	5945021	0			0.1				0.63	Possible edge of shallow cut and fill feature. Coarse sediments at seabed.
RMC_1989b_VC 73	RMC_1989b	105	339631	5945025	0							0.91	Probable deep-incised channel feature to 7m sub-seabed. Fill probable Unit 3 (possible Unit 2) overlain by veneer of seabed sediemnts (Unit 4).
RMC_1989b_VC 74	RMC_1989b	105	342747	5950326	0					0.16		0.95	Till (Unit 2) overlain by seabed sediment (Unit 4).
RMC_1989b_VC 75	RMC_1989b	105	344688	5949026	0					0.18		0.9	Probable till (Unit 2) overlain by veneer of seabed sediments (Unit 4).
RMC_1989b_VC 76	RMC_1989b	105	342706	5948061	0					0.23		0.41	Channel feature. Vibrocore indicates till. Channel is probably within the till.
RMC_1989b_VC 77	RMC_1989b	105	342681	5947259		0		?		0.12		0.74	Probable till (Unit 2) overlain by veneer of seabed sediments (Unit 4).
RMC_1989b_VC 78	RMC_1989b	105	341549	5944507	0							0.7	Probable seabed sediments (Unit 4) over till (Unit 2).
RMC_1989b_VC 79	RMC_1989b	105	344276	5936020		0				0.03		0.99	Shallow (3m) cut and fill feature. Vibrocore indicates till (Unit 2). Probable internal till cut and fill feature.
RMC_1989b_VC 80	RMC_1989b	105	341441	5940678	0		?					1.13	Deep (>10m) channel, possibly a channel feature within the till.
RMC_1989b_VC 81	RMC_1989b	105	338794	5950155	0					0.21		0.73	Shallow cut and fill with infill up to 3m thick overlain by veneer of seabed sediment. Cut is probably within the till unit (Unit 2).
RMC_1989b_VC 82	RMC_1989b	105	336760	5949917	0					0.12		0.45	Till (Unit 2) overlain by seabed sediment (Unit 4).
RMC_1989b_VC 83	RMC_1989b	105	334680	5947500	0					0.98		2.04	Till (Unit 2) overlain by 1m seabed sediments (Unit 4).
RMC_1989b_VC 84	RMC_1989b	105	336537	5944114	0			?				0.15	Less than 1m seabed sediment (Unit 4) overlying till (Unit 2)
RMC_1989b_VC 85	RMC_1989b	105	334596	5944495	0			0.1				3	Fill of cut feature in excess of 10m thick. Possible Unit 3 infill.
RMC_1989b_VC 86	RMC_1989b	105	331546	5944765	0							0.58	2m seabed sediment (Unit 4) draping edge of natural rise overlying till (Unit 2).

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RMC_1989b_VC 87	RMC_1989b	105	330503	5944595		0		?				1.91	Shallow depression up to 1.5m deep infilled with layered sediments (Unit 3). Depression cuts into underlying till (Unit 2). Same feature as RMC_1989b_VC 88
RMC_1989b_VC 88	RMC_1989b	105	330498	5944919	0	0.23		?		?		1.28	Shallow depression up to 3m deep infilled with layered sediments (Unit 3). Depression cuts into underlying till (Unit 2). Same feature as RMC_1989b_VC 87
RMC_1989b_VC 89	RMC_1989b	105	329835	5945281		0		?				0.15	Edge of broad shallow feature with well-layered fill up to 1.5m thick. Fill either seabed sediment (Unit 4) or Unit 3. Same feature as CEM_2009b_VC1
RMC_1994a_VC1A	RMC_1994a	102	325359	5950739		0						0.24	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC2	RMC_1994a	102	325857	5950870	0			?	0.67			0.73	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC3	RMC_1994a	102	325054	5950467		0				0.06		1.6	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC4	RMC_1994a	102	325472	5950463	0				0.9	?		0.96	Up to 1m seabed sediments (Unit 4) overlyinh till (Unit 2).
RMC_1994a_VC5	RMC_1994a	102	326065	5950524	0				0.47			0.72	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC6	RMC_1994a	102	326702	5950506	0.19		?		0.46			0.51	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC7	RMC_1994a	102	326048	5950286	0					0.14		1.58	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC8A	RMC_1994a	102	325611	5950083	0					0.32		0.7	No geophysics coverage
RMC_1994a_VC9	RMC_1994a	102	324905	5949809	0							0.21	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC9A	RMC_1994a	102	324908	5949818	0			?		0.5		2.14	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC10	RMC_1994a	102	325882	5949756	0					0.12		1.5	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC11	RMC_1994a	102	326307	5949850	0			?		0.26		1.18	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC12	RMC_1994a	102	324890	5949560	0					0.15		1.95	Veneer of seabed sediments (Unit 4)

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													overlying till (Unit 2).
RMC_1994a_VC13	RMC_1994a	102	325738	5949358	0							0.44	1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994a_VC13A	RMC_1994a	102	325734	5949334	0					0.4		1.15	1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994a_VC14	RMC_1994a	102	326264	5948992	0							0.22	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC15	RMC_1994a	102	326658	5948574	0					0.89		1.1	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC16	RMC_1994a	102	326790	5948182	0	0.09				0.3		0.63	No geophysics coverage
RMC_1994a_VC17	RMC_1994a	102	327215	5949511	0				0.93	?		1.03	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC18	RMC_1994a	102	325329	5947689	0							0.25	No geophysics coverage
RMC_1994a_VC19	RMC_1994a	102	324966	5947607		0				0.65		2.4	No geophysics coverage
RMC_1994a_VC20	RMC_1994a	102	325055	5947245	0					0.43		2.73	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC21	RMC_1994a	102	324149	5946700	0							2.14	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC22	RMC_1994a	102	324219	5947217	0					1.03		1.71	Up to 1m infill sediments (Unit 3) overlying till (Unit 2).
RMC_1994a_VC23	RMC_1994a	102	323708	5946272	0					1.59		1.74	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC24	RMC_1994a	102	324836	5946191	0					0.14		3.33	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC25	RMC_1994a	102	324856	5945860	0							0.38	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC25A	RMC_1994a	102	324859	5945862	0					0.39		1.75	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC26	RMC_1994a	102	323947	5945434	0							2.01	Up to 4m sediments comprising Unit 3 overlain by Unit 4.
RMC_1994a_VC27	RMC_1994a	102	324972	5945552	0				1.57	2.35		3	Small cut within till unit (Unit 2). Veneer of seabed sediments (Unit 4).
RMC_1994a_VC28	RMC_1994a	102	326241	5945841	0					1.45		1.63	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994a_VC29	RMC_1994a	102	327955	5946208	0					0.36		0.48	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).

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RMC_1994a_VC30	RMC_1994a	102	328876	5950912	0							0.86	Veneer of sediments (Unit 3/4) overlying till (Unit 2). Slight thickening of sediment. No featureof archaeological interest.
RMC_1994a_VC30A	RMC_1994a	102	328882	5950914	0			0.38				0.48	Veneer of sediments (Unit 3/4) overlying till (Unit 2). Slight thickening of sediment.
RMC_1994b_VC-31	RMC_1994b	105	332321	5948889	0					0.41		0.65	No geophysics coverage
RMC_1994b_VC-32	RMC_1994b	105	333013	5948629		0						1.25	No geophysics coverage
RMC_1994b_VC-33	RMC_1994b	105	333575	5948171	0					1		1.24	No geophysics coverage
RMC_1994b_VC-35	RMC_1994b	105	334118	5947791	0					1.2		1.45	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-36	RMC_1994b	105	334393	5947411	0					0.72		1.52	No geophysics coverage
RMC_1994b_VC-37A	RMC_1994b	105	334865	5947845	0					0.29		1.02	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-38	RMC_1994b	105	335876	5946655	0					1.01		1.91	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-39A	RMC_1994b	105	335156	5946555	0							0.3	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-41	RMC_1994b	105	335841	5946062	0					0.89		2.02	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-42	RMC_1994b	105	336158	5945724	0	0.53				0.73		1.35	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-42A	RMC_1994b	105	335385	5945997	0							0.82	Up to 1.5m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-42B	RMC_1994b	105	324414	5946781	0							0.44	Up to 5m sediment in bank structure. Probably modern feature (Unit 4)
RMC_1994b_VC-43	RMC_1994b	105	337073	5945140		0						3.12	Cut and fill feature up to 6m deep. At vc location 1.5m fill (probably fine-grained) overlain by up to 5m coarse-grained sediment fill (Unit 3).
RMC_1994b_VC-44	RMC_1994b	105	337035	5944752	0							0.43	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-44A	RMC_1994b	105	337080	5944760	0							1.7	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-45	RMC_1994b	105	337172	5944409	0							0.89	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).

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RMC_1994b_VC-45A	RMC_1994b	105	337178	5944394	0							1.18	Veneer of seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-46	RMC_1994b	105	335919	5944153	0			0.83				2.09	Possible channel cut with Unit 3 infill. Fill in excess of 5m.
RMC_1994b_VC-47	RMC_1994b	105	335473	5944203	0			0.99				3.08	No geophysics coverage
RMC_1994b_VC-48	RMC_1994b	105	337387	5947290	0							0.27	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-48A	RMC_1994b	105	337380	5947300	0					0.7		1.08	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-49	RMC_1994b	105	338020	5946970	0							0.48	No geophysics coverage
RMC_1994b_VC-49A	RMC_1994b	105	337996	5946991	0	1.03						1.35	No geophysics coverage
RMC_1994b_VC-50	RMC_1994b	105	338257	5946630	0							0.4	Edge of infilled depression up to 1m sub-seabed overlying till (Unit 2).
RMC_1994b_VC-50A	RMC_1994b	105	338252	5946663	0					0.7		1.07	Edge of infilled depression up to 1m sub-seabed overlying till (Unit 2).
RMC_1994b_VC-51	RMC_1994b	105	338455	5944966	0					0.88		1.28	No geophysics coverage
RMC_1994b_VC-52	RMC_1994b	105	339614	5944588						0		1.46	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-53	RMC_1994b	105	340409	5945056		0				0.02		2.1	No geophysics coverage
RMC_1994b_VC-54	RMC_1994b	105	340969	5944671	0							0.58	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-54A	RMC_1994b	105	340993	5944675	0							1.33	Veneer of seabed sediments (Unit 4) overlying till (Unit 2)
RMC_1994b_VC-55	RMC_1994b	105	336276	5943687	0			0.89				1.55	Bank feature up to 2m high comprising coarse grained sediments (probable Unit 3) overlying till (Unit 2).
RMC_1994b_VC-56	RMC_1994b	105	336374	5943172	0					0.82		0.9	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-57	RMC_1994b	105	336574	5942707	0							1	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-57A	RMC_1994b	105	336572	5942708	0							0.83	Up to 1m seabed sediments (Unit 4) overlying till (Unit 2).
RMC_1994b_VC-58a	RMC_1994b	105	333487	5944882	0							0.26	No geophysics coverage
RMC_1994b_VC-59	RMC_1994b	105	333053	5944916	0		0.34					1.36	Possible channel cut with in excess of 6m fill (Unit 3). Co-incides with REC Botney Cut channel

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
RMC_1994b_VC-60	RMC_1994b	105	332209	5945479	0			0.4				1.34	Channel cut feature. Channel 310m wide and 5m deep. Infill comprises well-layered, westerly dipping reflectors (Unit 3)

Central Area

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
ARC_1997_VC1	ARC_1997	106	339788	5917843		?		0				2.635	No geophysics coverage
ARC_1997_VC2	ARC_1997	106	339766	5917473			0	1.25				1.65	No geophysics coverage
ARC_1997_VC3	ARC_1997	106	339666	5916579				0				2.1	No geophysics coverage
ARC_1997_VC5	ARC_1997	106	340232	5919957					1.5			2.24	No geophysics coverage
ARC_1997_VC6	ARC_1997	106	340275	5920687	?				0			3	No geophysics coverage
ARC_1997_VC7	ARC_1997	106	340352	5921140						0		3	No geophysics coverage
ARC_1997_VC8	ARC_1997	106	340351	5921709						0		0.95	No geophysics coverage
ARC_1997_VC9	ARC_1997	106	340463	5923041	0			0.45		0.85		1.89	No geophysics coverage
ARC_1997_VC10	ARC_1997	106	340473	5923491				0		0.24		0.96	No geophysics coverage
ARC_1997_VC11	ARC_1997	106	341145	5923788				0	0.15			0.94	No geophysics coverage
ARC_1997_VC12	ARC_1997	106	340835	5920236		0						1.58	No geophysics coverage
ARC_1997_VC13	ARC_1997	106	340842	5919905	0			0.42				1.89	No geophysics coverage
ARC_1997_VC14	ARC_1997	106	341219	5921327				0		0.5		1.54	No geophysics coverage
ARC_1997_VCI5	ARC_1997	106	341350	5923104				0		1.5		2.19	No geophysics coverage
ARC_1997_VC16	ARC_1997	106	339552	5923758						0		1.7	No geophysics coverage
ARC_1997_VCI7	ARC_1997	106	339400	5921035						0		2.54	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
ARC_1997_VCI8	ARC_1997	106	339320	5919876	0							2	No geophysics coverage
ARC_1997_VC19	ARC_1997	106	339057	5916473	0			1				2.78	No geophysics coverage
ARC_1997_VC20	ARC_1997	106	339053	5916127		0						1.82	No geophysics coverage
ARC_1997_VC21	ARC_1997	106	338852	5917082				0				1.43	No geophysics coverage
ARC_1997_VC22	ARC_1997	106	339228	5922658						0		1.85	No geophysics coverage
ARC_1997_VC23	ARC_1997	106	338948	5923582						0		1.73	No geophysics coverage
ARC_1997_VC24	ARC_1997	106	338868	5921789				0		0.1			No geophysics coverage
ARC_1997_VC25	ARC_1997	106	338740	5919962				0				1.79	No geophysics coverage
ARC_1997_VCB26	ARC_1997	106	338656	5918591	0							0.78	No geophysics coverage
ARC_1997_VC26A	ARC_1997	106	338644	5918607	0			0.7				0.98	No geophysics coverage
ARC_1997_VC27	ARC_1997	106	338497	5916358	0		0.15			1.9		2.44	No geophysics coverage
ARC_1997_VC28	ARC_1997	106	338161	5916537	0							1.72	No geophysics coverage
ARC_1997_VC29	ARC_1997	106	338256	5917433	0							1.72	No geophysics coverage
ARC_1997_VC30	ARC_1997	106	338402	5919594	0							2	No geophysics coverage
ARC_1997_VC31A	ARC_1997	106	338473	5920862		0				0.15		2.89	No geophysics coverage
ARC_1997_VC32	ARC_1997	106	338621	5922274		0				0.2		1.61	No geophysics coverage
ARC_1997_VC33	ARC_1997	106	338266	5922436						0		0.47	No geophysics coverage
ARC_1997_VC34	ARC_1997	106	337923	5917106		0						1.57	No geophysics coverage
ARC_1997_VC35	ARC_1997	106	337858	5916764	0							1.63	No geophysics coverage
ARC_1997_VC36	ARC_1997	106	337717	5918222		0						1.24	No geophysics coverage
ARC_1997_VC37	ARC_1997	106	338075	5923482		0				0.45		0.52	No geophysics coverage
ARC_1997_VC38	ARC_1997	106	337280	5917510	0							0.37	No geophysics coverage
ARC_1997_VC39	ARC_1997	106	337265	5916481		0						1.44	No geophysics coverage
ARC_1997_VC40	ARC_1997	106	336984	5917103	0							1.69	No geophysics coverage
ARC_1997_VC41	ARC_1997	106	337118	5918445		0						2.75	No geophysics coverage
ARC_1997_VC42	ARC_1997	106	337303	5921444					0.35	0		1.75	No geophysics coverage
ARC_1997_VC43	ARC_1997	106	336844	5919154			0					2.49	No geophysics coverage
ARC_1997_VCB44	ARC_1997	106	336802	5918407	0							0.59	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
ARC_1997_VC44A	ARC_1997	106	336811	5918367			0					2.32	No geophysics coverage
ARC_1997_VC45	ARC_1997	106	336733	5917438			0					2.34	No geophysics coverage
ARC_1997_VC46	ARC_1997	106	336659	5916836		0						2.24	No geophysics coverage
ARC_1997_VC47	ARC_1997	106	336354	5916428	0		1					1.56	No geophysics coverage
ARC_1997_VC48	ARC_1997	106	336513	5918100	0	0.55						1.69	No geophysics coverage
ARC_1997_VC49	ARC_1997	106	336587	5920029		0	?					2.26	No geophysics coverage
ARC_1997_VC50	ARC_1997	106	336438	5921909						0		1.2	No geophysics coverage
ARC_1997_VC51	ARC_1997	106	336248	5918849			1					1	No geophysics coverage
ARC_1997_VC52	ARC_1997	106	336207	5918281	0							2.75	No geophysics coverage
ARC_1997_VC53	ARC_1997	106	336107	5917387	0							1.59	No geophysics coverage
ARC_1997_VC54	ARC_1997	106	336011	5916236	0	0.75						2.18	No geophysics coverage
ARC_1997_VC54B	ARC_1997	106	336021	5916245	0		0.7					2.39	No geophysics coverage
ARC_1997_VC55	ARC_1997	106	335763	5917253	0		1.15					2	No geophysics coverage
ARC_1997_VC56	ARC_1997	106	335816	5918061	0							1.76	No geophysics coverage
ARC_1997_VC57	ARC_1997	106	336078	5921014		0				1.2		2.57	No geophysics coverage
ARC_1997_VC58	ARC_1997	106	336221	5923432	0	0.25				0.9		1.49	No geophysics coverage
ARC_1997_VC59	ARC_1997	106	335887	5923024						0		1.26	No geophysics coverage
ARC_1997_VC60	ARC_1997	106	335707	5919977			0					2.55	No geophysics coverage
ARC_1997_VC61	ARC_1997	106	335600	5918591	0							1.45	No geophysics coverage
ARC_1997_VC62	ARC_1997	106	335492	5917538	0							2	No geophysics coverage
ARC_1997_VC63	ARC_1997	106	335464	5916450			0					2	No geophysics coverage
ARC_1997_VC64	ARC_1997	106	335172	5917060	0							1.59	No geophysics coverage
ARC_1997_VC65	ARC_1997	106	335269	5918091	0							1.65	No geophysics coverage
ARC_1997_VC66	ARC_1997	106	335435	5920485	0		0.8					1.16	No geophysics coverage
ARC_1997_VC67	ARC_1997	106	335335	5923139	0					0.25		3	No geophysics coverage
ARC_1997_VCB68	ARC_1997	106	335101	5919807	0							0.6	No geophysics coverage
ARC_1997_VC68A	ARC_1997	106	335098	5919810	0							1.51	No geophysics coverage
ARC_1997_VC69	ARC_1997	106	334985	5918265	0							1.54	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
ARC_1997_VC70	ARC_1997	106	334942	5917606		0				2.05		2.82	No geophysics coverage
ARC_1997_VC71	ARC_1997	106	334819	5916389	0		0.75					2.49	No geophysics coverage
ARC_1997_VC72	ARC_1997	106	334547	5916775	0							1.35	No geophysics coverage
ARC_1997_VC73	ARC_1997	106	334632	5917894	0		0.4					2.9	No geophysics coverage
ARC_1997_VC74	ARC_1997	106	334676	5919020	0							1.03	No geophysics coverage
ARC_1997_VC75	ARC_1997	106	334902	5921322	0					1.65		2.38	No geophysics coverage
ARC_1997_VC76	ARC_1997	106	335052	5923642					0			3	No geophysics coverage
ARC_1997_VC77	ARC_1997	106	334659	5921956						0		1.51	No geophysics coverage
ARC_1997_VC78	ARC_1997	106	334500	5919694	0							1.46	No geophysics coverage
ARC_1997_VC79	ARC_1997	106	334378	5918130	0							1.51	No geophysics coverage
ARC_1997_VC80	ARC_1997	106	334273	5920754	0							1.69	No geophysics coverage
ARC_1997_VC81	ARC_1997	106	334356	5921746	0							1.4	No geophysics coverage
ARC_1997_VC82	ARC_1997	106	334444	5923280	0					0.1		1.5	No geophysics coverage
ARC_1997_VC83	ARC_1997	106	334505	5924024	0							1.62	No geophysics coverage
ARC_1997_VC84	ARC_1997	106	334121	5922950	0					0.15		1.85	No geophysics coverage
ARC_1997_VC85	ARC_1997	106	333995	5921029	0	1.45						2	No geophysics coverage
ARC_1997_VC86	ARC_1997	106	333949	5919293	0		0.4					1.67	No geophysics coverage
ARC_1997_VC87	ARC_1997	106	333674	5920969	0							2.15	No geophysics coverage
ARC_1997_VC88	ARC_1997	106	333784	5922301		0				0.2		1.78	No geophysics coverage
ARC_1997_VC89	ARC_1997	106	333557	5923330	0					0.5		2.25	No geophysics coverage
ARC_1997_VC90	ARC_1997	106	333435	5922045		0				0.85		2	No geophysics coverage
ARC_1997_VC91	ARC_1997	106	333627	5924038	0							0.97	No geophysics coverage
ARC_1997_VC92	ARC_1997	106	341620	5922666	0					0.5		1.29	No geophysics coverage
ARC_1997_VC93	ARC_1997	106	340210	5919400	0		0.75					1.61	No geophysics coverage
ARC_1997_VC94	ARC_1997	106	339161	5917805			0					1.61	No geophysics coverage
ARC_1997_VC95A	ARC_1997	106	339266	5919130	0							0.3	No geophysics coverage
ARC_1997_VC96	ARC_1997	106	339028	5919431	0		0.5					2.59	No geophysics coverage
ARC_1997_VC97	ARC_1997	106	338029	5919141	0		0.1					1.39	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
ARC_1997_VC98	ARC_1997	106	337459	5918945		0						1.53	No geophysics coverage
ARC_1997_VC99	ARC_1997	106	337187	5919728		0						2.37	No geophysics coverage
ARC_1997_VCB100	ARC_1997	106	335368	5919248		0						0.78	No geophysics coverage
ARC_1997_VC100A	ARC_1997	106	335377	5919248	0							0.57	No geophysics coverage
ARC_1997_VC101	ARC_1997	106	333908	5924045	0					1		1.29	No geophysics coverage
ARC_1997_VC102	ARC_1997	106	334229	5923992	0					2.1		2.33	No geophysics coverage
ARC_1997_VC103	ARC_1997	106	334223	5919850	0							1.06	No geophysics coverage
ARC_1997_VC104	ARC_1997	106	334309	5917625	0		0.4					2	No geophysics coverage
ARC_1997_VCI05	ARC_1997	106	336285	5919556		0	0.25					1.56	No geophysics coverage
ARC_1997_VC106	ARC_1997	106	337761	5919623		0	0.7					1.16	No geophysics coverage
ARC_1997_VCI07	ARC_1997	106	337583	5917023	0							1.59	No geophysics coverage
ARC_1997_VCI08	ARC_1997	106	338000	5918595			0					1.95	No geophysics coverage
ARC_1997_VC109	ARC_1997	106	338303	5918179	0							2.9	No geophysics coverage
ARC_1997_VCB110	ARC_1997	106	338588	5917733	0							0.4	No geophysics coverage
ARC_1997_VC110A	ARC_1997	106	338586	5917732	0							2.61	No geophysics coverage
ARC_1997_VC111	ARC_1997	106	338684	5919017	0		0.8					2	No geophysics coverage
ARC_1997_VC112	ARC_1997	106	339525	5918126	0		0.9					1.87	No geophysics coverage
ARC_1997_VC1I3	ARC_1997	106	339637	5919582		0	0.45					2.54	No geophysics coverage
ARC_1997_VC114	ARC_1997	106	339856	5918961	0		0.25					2.55	No geophysics coverage
ARC_1997_VC115	ARC_1997	106	339985	5920336		0				0.25		1.88	No geophysics coverage
ARC_1997_VC116	ARC_1997	106	340162	5918659		0	?	?				1.85	No geophysics coverage
ARC_1997_VC117	ARC_1997	106	341288	5921643		0		?		1.1		2.24	No geophysics coverage
ARC_1997_VC118	ARC_1997	106	341342	5922184		0						1.78	No geophysics coverage
ARC_1997_VC119	ARC_1997	106	341656	5923028		0				0.35		2.46	No geophysics coverage
ARC_1997_VC120	ARC_1997	106	341695	5923538						0		1.14	No geophysics coverage
HAN_2001a_VC1	Hanson 2001A	480	340332	5916477	0	0.12		?				0.83	No geophysics coverage
HAN_2001a_VC2	Hanson 2001A	480	340426	5917768	0	?						2.62	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
HAN_2001a_VC3	Hanson 2001A	480	339968	5917178	0	?						2.82	No geophysics coverage
HAN_2001a_VC4	Hanson 2001A	480	339686	5915931	0	?				0.53		1.46	No geophysics coverage
HAN_2001a_VC5	Hanson 2001A	480	341579	5919753		0		?				2.29	No geophysics coverage
HAN_2001a_VC6	Hanson 2001A	480	341635	5920631		0		?				2.68	No geophysics coverage
HAN_2001a_VC7	Hanson 2001A	480	342333	5922157		0						3.12	No geophysics coverage
HAN_2001a_VC8	Hanson 2001A	480	342392	5922962	0	?						1.78	No geophysics coverage
HAN_2001a_VC9	Hanson 2001A	480	342874	5918268	0	?	1.11					1.2	No geophysics coverage
HAN_2001a_VC10	Hanson 2001A	480	344627	5917747	0				0.1			1.52	No geophysics coverage
HAN_2001a_VC11	Hanson 2001A	480	343507	5918966	0							0.96	No geophysics coverage
HAN_2001a_VC12	Hanson 2001A	480	342282	5921198		0						2.46	No geophysics coverage
HAN_2001a_VC13	Hanson 2001A	480	341883	5921443		0						2.86	No geophysics coverage
HAN_2001a_VC14	Hanson 2001A	480	341392	5920126		0						2.1	No geophysics coverage
HAN_2001a_VC15	Hanson 2001A	480	340932	5919112		0						2.15	No geophysics coverage
HAN_2001a_VC16	Hanson 2001A	480	340909	5918800		0						2.62	No geophysics coverage
HAN_2001a_VC17A	Hanson 2001A	480	343967	5919063		0					0.73	1.16	No geophysics coverage
HAN_2001a_VC18A	Hanson 2001A	480	340780	5916976						0		0.68	No geophysics coverage
HAN_2001a_VC19	Hanson 2001A	480	340824	5917526	0	?	0.19	2.45				3.13	No geophysics coverage
HAN_2001a_VC21	Hanson	480	343203	5917259	0					0.36		0.71	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
	2001A												
HAN_2001a_VC22	Hanson 2001A	480	342367	5916870	0				0.2			1.03	No geophysics coverage
HAN_2001a_VC23	Hanson 2001A	480	341987	5917232	0		0.18					0.43	No geophysics coverage
HAN_2001a_VC25	Hanson 2001A	480	341182	5919750		0		?				2.53	No geophysics coverage
HAN_2001a_VC26	Hanson 2001A	480	341714	5921663		0		?				2.69	No geophysics coverage
HAN_2001a_VC27	Hanson 2001A	480	341461	5920999		0	1.56					2.51	No geophysics coverage
HAN_2001a_VC28	Hanson 2001A	480	342008	5920467		0						2.9	No geophysics coverage
HAN_2001a_VC29	Hanson 2001A	480	340484	5918471	0	?	1.12					2.24	No geophysics coverage
HAN_2001a_VC30	Hanson 2001A	480	342434	5917906		0	?	?				2.93	No geophysics coverage
HAN_2002_VCX1	Hanson 2002	106/3	343085	5918394	0	?	3.15					3.25	No geophysics coverage
HAN_2002_VCX2	Hanson 2002	106/3	342662	5918048		0		?				5.09	No geophysics coverage
HAN_2002_VCX3	Hanson 2002	106/3	339757	5916578		0			??	3.38		5.41	No geophysics coverage
HAN_2002_VCX4B	Hanson 2002	106/3	340239	5917903		0	?	?				4.96	No geophysics coverage
HAN_2002_VCX5	Hanson 2002	106/3	340665	5918098		0	2.92?					4.98	No geophysics coverage
HAN_2002_VCX6	Hanson 2002	106/3	341074	5920260	0	?				0.92		3.1	No geophysics coverage
HAN_2002_VCX7	Hanson 2002	106/3	341785	5920316		0	?					4.86	No geophysics coverage
HAN_2002_VCX8	Hanson 2002	106/3	342061	5920969		0						4.65	No geophysics coverage
HAN_2002_VCX9	Hanson 2002	106/3	342198	5922927		0	0.81					4.53	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
HAN_2002_VCX10	Hanson 2002	106/3	341230	5919419	0	?	0.89	3.65				3.98	No geophysics coverage
UMD_2002_VC1	United Marine 2002	197	328245	5919827				0				2.98	Shallow depression up to 3.5m thick. Infill probably Unit 3
UMD_2002_VC2	United Marine 2002	197	328855	5919516		0	?	?				3.04	Line missing from dataset
UMD_2002_VC3	United Marine 2002	197	329021	5919062	0	?	1.7	?				2.35	Line missing from dataset
UMD_2002_VC4A	United Marine 2002	197	329396	5919539	0	?	2					2.05	Up to 5m unit, possible Unit 3 with a veneer of Unit 4
UMD_2002_VC5A	United Marine 2002	197	329930	5919499	0		0.22					1.17	3m Unit 3 in bank structure with some evidence of a cut feature overlying till
UMD_2002_VC6	United Marine 2002	197	329724	5920113	0		0.91					1.81	3m Unit 3 in bank structure with some evidence of a cut feature overlying till
UMD_2002_VC7	United Marine 2002	197	331541	5919457	0		0.33					0.65	Line missing from dataset
UMD_2002_VC8A	United Marine 2002	197	331332	5920011	0		0.61			1.29		2.22	Line missing from dataset
UMD_2002_VC9	United Marine 2002	197	330185	5920342	0		0.45					2.2	Up to 4m bank structure (Unit 3) overlying till
UMD_2002_VC10	United Marine 2002	197	329931	5921047	0	0.28	?		?			0.36	As UMD_2002_VC9. Up to 4m bank structure (Unit 3) overlying till

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2002_VC11A	United Marine 2002	197	329179	5921729	0		0.46					1.92	5m bank structure (Unit 3) overlying till
UMD_2002_VC12	United Marine 2002	197	329488	5922418		0		?		1.81		1.96	3m channel (?) deposits (Unit 3 over till)
UMD_2002_VC13	United Marine 2002	197	330526	5922447	0					0.2		1.71	Line missing from dataset
UMD_2002_VC14	United Marine 2002	197	331286	5923374						0		0.64	Till (Unit 2) with a veneer of sediment
UMD_2002_VC15	United Marine 2002	197	328363	5922680	0		0.43			1.18		1.64	Till (Unit 2) with a veneer of sediment
UMD_2002_VC16B	United Marine 2002	197	327649	5922445		0						2.22	Probable seabed sediment (Unit 4) over till (Unit 2).
UMD_2002_VC17	United Marine 2002	197	331250	5921865	0					0.35		0.66	Till overlain by veneer of seabed sediments
UMD_2008_VC35	United Marine 2008	493	327771	5916893				0				2.16	Channel feature up to 10m deep, probably Unit 3 as indicated by vibrocore.
UMD_2008_VC36	United Marine 2008	493	328621	5916933				0				2.33	Up to 5m sand and gravel within broad shallow cut.
UMD_2008_VC37	United Marine 2008	493	328037	5917387	0			0.47				2.47	Broad shallow channel feature. Up to 6m of infill sediment (Unit 3)
UMD_2008_VC39A	United Marine 2008	493	328129	5917672				0				2.19	Up to 5m sand and gravel (Unit 3) within broad shallow cut.

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2008_VC40	United Marine 2008	493	328083	5918410	0			0.55				1.89	Up to 5m sand and gravel (Unit 3) within broad shallow cut.
UMD_2008_VC41	United Marine 2008	493	327501	5918714	0					2.08		2.41	Part of a small bank structure that is probably Holocene seabed sediments over lying till. J. Russell (JR) to check
UMD_2008_VC42	United Marine 2008	493	327907	5918974	0							1.66	2m sand and gravel on edge of sndwave (Unit 4 or at least unit 3 reworked) overlying till. JR to check.
UMD_2008_VC44	United Marine 2008	493	327501	5920117	0					1.84		2.55	3m Unit 4 (sandwave) overlying till
UMD_2008_VC45	United Marine 2008	493	326804	5921505	0	?				0.7		2.15	Till with veneer of sediment
UMD_2008_VC46	United Marine 2008	493	325741	5922753	0			0.17				2.44	Part of broad shallow channel feature up to 7m deep infilled with well-layered sediments forming a bank like infill feature.
UMD_2008_VC47	United Marine 2008	493	326367	5922802	0	?		2.1				2.34	Edge of sand and gravel bank feature up to 4m thick at location.
UMD_2008_VC48	United Marine 2008	493	326087	5923181	0			0.17				2.32	Part of a large bank feature comprising sand and gravel. Up to 6m deep at VC location. Base of bank is undulating and forms a channel cut to the north
UMD_2008_VC49	United Marine 2008	493	326345	5923360	0			0.22				2.47	Up to 6m bank/channel structure with veneer of seabed sediment

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2008_VC50A	United Marine 2008	493	326835	5923234		0						2.3	Up to 6m bank structure- Unit 3
UMD_2008_VC51A	United Marine 2008	493	326681	5923574		0						1.64	Up to 6m bank structure- Unit 3
UMD_2008_VC53	United Marine 2008	493	327600	5923495		0		?				2.03	2m sand (unit 3) over till (Unit 2)
UMD_2008_VC54	United Marine 2008	493	327893	5923825	0			0.16				2.52	Up to 3m sand and gravel- edge of bank (Unit 3) overlying till
UMD_2008_VC55	United Marine 2008	493	327356	5924221		0		?		1.16		3.02	Edge of sand and gravel bank feature (unit 3) up to 1m thick at location overlying till
UMD_2008_VC56	United Marine 2008	493	326597	5923968	0			1.4				1.7	Up to 6m bank structure- Unit 3 overlying till
UMD_2008_VC57	United Marine 2008	493	326079	5924214	0				0.13			1.77	Till with veneer of sediment
UMD_2008_VC58	United Marine 2008	493	325932	5923964			0					1.69	Up to 5m sand and gravel bank feature
UMD_2008_VC59	United Marine 2008	493	325367	5923905	0		0.88					1.98	Up to 7m sediment, probably Unit 3 overlain by a veneer of seabed sediments (Unit 4)
HAN_2001b_VC1	Hanson 2001B	400	330362	5917034		0	0.71					2.95	No geophysics coverage
HAN_2001b_VC2	Hanson 2001B	400	330413	5917993		0	1					3.03	No geophysics coverage
HAN_2001b_VC3	Hanson 2001B	400	330547	5916806		0	?					2.74	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
HAN_2001b_VC4	Hanson 2001B	400	330826	5918073		0	?					2.86	No geophysics coverage
HAN_2001b_VC5	Hanson 2001B	400	330788	5917510		0	1.29		2.41			2.96	No geophysics coverage
HAN_2001b_VC6	Hanson 2001B	400	333515	5916464		0			1.74			3.01	No geophysics coverage
HAN_2001b_VC7	Hanson 2001B	400	331306	5916265		0	0.4			2.08		2.52	No geophysics coverage
HAN_2001b_VC8	Hanson 2001B	400	332437	5918417		0				1.5		2.63	No geophysics coverage
HAN_2001b_VC9	Hanson 2001B	400	331382	5917230		0						1.07	No geophysics coverage
HAN_2001b_VC10	Hanson 2001B	400	331799	5917545	0	?	0.09	2.3				2.6	No geophysics coverage
HAN_2001b_VC11	Hanson 2001B	400	333276	5918697		0	?					2.53	No geophysics coverage
HAN_2001b_VC12	Hanson 2001B	400	333166	5917244		0	?					1.81	No geophysics coverage
HAN_2001b_VC13	Hanson 2001B	400	333812	5917775		0	1.48					3.15	No geophysics coverage
HAN_2001b_VC14	Hanson 2001B	400	333751	5916910		0						3.14	No geophysics coverage
UMD_1997_PV2		197			0	1.15						1.6	No geophysics coverage
UMD_1997_PV3		197				0	0.2					2.27	No geophysics coverage
UMD_1997_PV4		197			0		1.1					1.9	No geophysics coverage
UMD_1997_PV5		197				0						2.3	No geophysics coverage
UMD_1997_PV6		197			0	1.75	?					2.95	No geophysics coverage
UMD_1997_PV7		197			0		1.9					2.54	No geophysics coverage
UMD_1997_PV8		197			0							2.3	No geophysics coverage
UMD_1997_PV9		197											No geophysics coverage
UMD_1997_PV10		197											No geophysics coverage
UMD_1997_PV13R		197											No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_1997_PV14		197											No geophysics coverage
UMD_1997_PV16		197											No geophysics coverage
UMD_1997_PV19		197											No geophysics coverage
UMD_1997_PV22		197											No geophysics coverage
UMD_1997_PV22		197											No geophysics coverage
UMD_1996_HV48C		106				0						2.5	No geophysics coverage
UMD_1996_HV58A		106			0				0.12	?		0.55	No geophysics coverage
UMD_1996_HV59B		106								0		2	No geophysics coverage
UMD_1996_HV61A		106				0			0.8	?		1	No geophysics coverage
UMD_1996_HV62		106								0		0.3	No geophysics coverage
UMD_1996_HV64		106			0					0.25		0.9	No geophysics coverage
UMD_1996_HV65A		106								0		1.55	No geophysics coverage
UMD_1996_HV67		106							0	?		2.8	No geophysics coverage

Southern Area

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2001_VC1	United Marine 2001	481	341758	5902879		0		?				2.95	Series of strong reflectors in a bank feature up to 4m thick containing westerly dipping reflectors. Seismic nature indicates sands and gravels (probable Unit 3) with a veneer of Unit 4.
UMD_2001_VC2	United Marine 2001	481	342079	5903821		0		?				2.75	Bank structure up to 5m thick, overlying 4m till over bedrock. Possible Unit 3 sand and gravel bank/possible sandbank (Unit 4). However, lies within an area of sandwaves-probably Unit 4
UMD_2001_VC3	United Marine 2001	481	342217	5904781	0			?				2.62	4m high bank structure overlying till. Bank probably unit 4.
UMD_2001_VC4	United Marine 2001	481	342975	5905755	0					0.61		2.53	5.5m till (Unit 2) overlain by veneer of seabed sediments (Unit 4).
UMD_2001_VC5	United Marine 2001	481	343932	5905725	0					0.96		1.83	4m till (Unit 2) overlain by seabed sediments (Unit 4).
UMD_2001_VC6A	United Marine 2001	481	342639	5906773		0						1.83	4m high bank structure overlying till. Bank maybe Unit 3 or 4, probably 4. REC data within the area indicates Unit 4
UMD_2001_VC7	United Marine 2001	481	343648	5906758	0				0.23			1.08	Veneer of seabed sediments (Unit 4) over till (Unit 2).
UMD_2001_VC8	United Marine 2001	481	343838	5907714						0		1.42	Up to 2m till (Unit 2) overlying bedrock (Unit 1).
UMD_2001_VC9	United Marine 2001	481	344333	5908205	0							2.9	5m Unit 3 within the southern edge of a channel feature cutting into bedrock.
UMD_2001_VC10	United Marine 2001	481	344486	5907688		0				0.26		0.45	2m till overlain by bedrock
UMD_2001_VC11	United Marine 2001	481	345099	5908563		0				1.11		1.27	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2001_VC12	United Marine 2001	481	345175	5907688		0					1.42	2.8	Bedrock overlain by veneer of sediments, possibly till.
UMD_2001_VC13	United Marine 2001	481	344995	5904715	0		?				0.31	1.19	Approximately 1m seabed sediment (Unit 4) overlying bedrock (Unit 1).
UMD_2001_VC14	United Marine 2001	481	345593	5904692	0						2.28	2.36	Approximately 2m seabed sediment (Unit 4) overlying bedrock (Unit 1).
UMD_2001_VC15	United Marine 2001	481	345968	5903668		0						2.8	Up to 4m bank structure comprising probable sands and gravels (Unit 3) overlying bedrock.
UMD_2001_VC16	United Marine 2001	481	345318	5902741	0							2.01	Large sandbank, Unit 4, overlies channel feature (probable Unit 3) over till.
UMD_2001_VC17	United Marine 2001	481	345760	5902745		0						1.92	Vibrocore situated in the western limit of a large channel feature. Comprises 6m of easterly dipping reflectors, probable Unit 3, overlain by a veneer of seabed sediment (Unit 4).
UMD_2000_VC81a	United Marine 2000	481	345841	5903115		0						0.66	No geophysics coverage
UMD_2000_VC82	United Marine 2000	481	343786	5903711	0		?		?			0.28	Up to 2m seabed sediments (Unit 4) overlying 5m till (Unit 2) over bedrock.
UMD_2000_VC83	United Marine 2000	481	342227	5903789	0							0.7	2m seabed sediments (Unit 4) overlying 5m thick bank structure (Unit 3) overlying till and bedrock.
UMD_2000_VC84a	United Marine 2000	481	342715	5904404		0			0.09			0.34	No geophysics coverage
UMD_2000_VC85	United Marine 2000	481	344933	5903749							0	0.62	Bedrock (Unit 1) at surface.
UMD_2000_VC86	United Marine 2000	481	341888	5905767		0				0.1		1.98	3m till (Unit 2).
UMD_2000_VC87	United Marine 2000	481	343166	5906719	0							0.1	Veneer of seabed sediments (Unit 4) over till (Unit 2).
UMD_2000_VC88	United Marine 2000	481	344805	5906732		0						0.84	3m possible sands and gravels (Unit 3) or till (Unit 2) overlain by seabed sedimetns (Unit 4).

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2000_VC89	United Marine 2000	481	342063	5907764		0						0.1	1.5m seabed sediemnts, probably Unit 4 overlying till (Unit 2).
UMD_2000_VC90	United Marine 2000	481	344352	5907715		0			0.1			0.15	Veneer of sediment overlying till.
UMD_2000_Vc71	United Marine 2000	East Dudgeon Area 1	367766	5905692		0	0.25		?			1.16	No geophysics coverage
UMD_2000_Vc72a	United Marine 2000	East Dudgeon Area 1	368226	5906008		0						0.1	Veneer of sediment over till. Possible 3/4, probable 4
UMD_2000_Vc73b	United Marine 2000	East Dudgeon Area 1	367613	5906853		0						1.22	No geophysics coverage
UMD_2000_Vc74	United Marine 2000	East Dudgeon Area 1	367317	5907552		0		?	0.54			0.64	Veneer of sediment over till. Possible 3/4, probable 4
UMD_2000_Vc75	United Marine 2000	East Dudgeon Area 1	366958	5905527					0			0.1	Veneer of coarse sediments over till Possible 3/4
UMD_2000_Vc76a	United Marine 2000	East Dudgeon Area 1	366551	5906822	0							1.25	Edge of sandbank-Unit 4
UMD_2000_Vc77a	United Marine 2000	East Dudgeon Area 1	365631	5905049	0							0.55	Edge of sandbank-Unit 4
UMD_2000_Vc78	United Marine 2000	East Dudgeon Area 1	365458	5906216	0							0.1	Veneer of sediment on edge of sandwave-Unit 4
UMD_2000_Vc79a	United Marine 2000	East Dudgeon Area 1	364469	5906168		0						0.95	No geophysics coverage

WA reference	Report Reference	Area	UTM31 Easting	UTM31 Northing	Unit 4 from	Unit 3/4 from	Unit 3b Clay silt sand from	Unit 3a sorted sand and gravel from	Unit 2b Till from	Unit 2a Till from	Unit 1 from	Bottom	Geophysics comment
UMD_2000_Vc80a	United Marine 2000	East Dudgeon Area 1	364526	5905539		0						0.52	Veneer of sediment over till. Possible 3/4, probable 4

13.4 APPENDIX IV-GAZETTEER OF PREHISTORIC FEATURES (ON CD-ROM ONLY)

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1001	Palaeolithic flint scraper, Withernsea Road	306165	5953906	MHU2625	Humber	Palaeolithic
1002	Elephant's tooth	304344	5957944	MHU2654	Humber	Palaeolithic
1003	Lower Palaeolithic blade	321450	5905168	NRHE 1478688; MLI43430	Lincolnshire	Palaeolithic
1004	Spring tides of 1839 laid bare a great part of a submerged forest on the shore off owthorne known as noahs wood. Also found were animal bones and freshwater mollusc from a freshwater lake?	304444	5957937	MHU2653	Humber	Mesolithic
1005	Site of probable mesolithic lake settlement. A lake dwelling was found by sheppard in 1898 associated with peat.	302250	5960874	MHU3574	Humber	Mesolithic
1006	Mesolithic flint flakes, N. of East Marsh Farm.	284119	5953122	MLS19793	North Lincolnshire	Mesolithic
1007	Mesolithic flint flake, S. of East Halton Beck.	284071	5953577	MLS19795	North Lincolnshire	Mesolithic
1008	Mesolithic flint core, E. of Haven Road.	285493	5950277	MLS19797	North Lincolnshire	Mesolithic
1009	Mesolithic flint flakes, E. of Haven Road.	285413	5950704	MLS19798	North Lincolnshire	Mesolithic
1010	Mesolithic flint flakes, E. of Rosper Road.	285839	5949917	MLS19800	North Lincolnshire	Mesolithic
1011	Mesolithic flint flakes, E. of Rosper Road.	285957	5949743	MLS19801	North Lincolnshire	Mesolithic
1012	Mesolithic flint flake, E. of Rosper Road.	286070	5949926	MLS19805	North Lincolnshire	Mesolithic
1013	Mesolithic flint flake, N. of Station Road.	286952	5949483	MLS19808	North Lincolnshire	Mesolithic
1014	Mesolithic flint assemblage, East Halton Skitter Site S26.	283826	5953653	MLS20085	North Lincolnshire	Mesolithic
1015	Mesolithic-Early Bronze Age flint.	285841	5949785	MLS20440	North Lincolnshire	Mesolithic
1016	First excavated in the 1890s and again in 1962–6, excavated again when threatened by the sea in 1996–7, and now within a lagoon. The barrow is visible as an earthwork on aps centred at ta 4086 1807. The feature measures c 17m in diameter. It overlay a neolithic occupation site (ea119). Excavation revealed a beaker burial. The body was destroyed by acid ground conditions. Finds included a conical jet button and a broken beaker. The barrow consisted of two phases of clay mound built over a base of charred oak branches and logs with no trace of a ditch. Charcoal gave a radiocarbon date of c. 2000 bc. Visible in 2009 as a circle of darker vegetation immediately above shoreline. Area does not seem to have eroded significantly.	310238	5947317	MHU3383	Humber	Neolithic
1017	Neolithic flint axe, Chapel St Leonards.	322401	5900280	MLI41616	Lincolnshire	Neolithic
1018	Polished stone axe found on Skegness Beach.	322784	5891431	MLI41691	Lincolnshire	Neolithic

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1019	Flint scatter, N. of Station Road.	286311	5949207	MLS19727	North Lincolnshire	Neolithic
1020	Prehistoric, Neolithic, findspot in Cleethorpes	298788	5939836	MNL450	NE Lincolnshire	Neolithic
1021	Neolithic axe. Butt end of a polished stone axe of Langdale type Group VI found embedded in clay on the foreshore at Mogg's Eve.	321481	5905758	NRHE 1479641	NRHE	Neolithic
1022	Large unpolished Neolithic flint axe found in Trusthorpe.	317882	5911624	NRHE 1484580	NRHE	Neolithic
1023	Neolithic polished grey fine-grained volcanic lava or tufa axe found on Skegness beach.	322935	5890719	NRHE 1506627, MLI41692	Lincolnshire	Neolithic
1024	Neolithic flint axe. A Neolithic flaked flint axe, without any trace of grinding and so presumably of an early type.	300060	5938480	NRHE 1519433, MNL455	NE Lincolnshire	Neolithic
1025	A henge was revealed by tidal movements in 1998 on Easington Beach. The henge consisted of a series of rings of gravel, estuarine clay, and dark staining and had an overall diameter of 25-30m.	310348	5947525	NRHE 1520599, MHU20437	Humber	Neolithic
1026	Evidence of Neolithic occupation spanning a period of more than 1000 years from the early 4th millennium BC to the mid or late 3rd millennium BC. The occupation site was identified beneath a Bronze Age Barrow, excavated by ERAS in the 1960's and 1990's.	310233	5947312	NRHE 1521000, MHU20439	Humber	Neolithic
1027	Flint scraper, Spurn Head, on river side near entrance gate; possisbly *in situ*.	310907	5944347	NRHE 1522570, MHU15214	Humber	Neolithic
1028	Neolithic antler pick found 1969.	322465	5900476	NRHE 355974	NRHE	Neolithic
1029	Findspot In Grimsby, tree trunk coffin?	296093	5940166	NRHE 81409, MNL1134	NE Lincolnshire	Neolithic
1030	A Neolithic stone axe and some worked flints (including scrapers, cores and flakes) were found at various locations in Humberton in 1942-3. The axe is is Lincoln Museum (accession number 80.54).	300937	5935463	NRHE 81891	NRHE	Neolithic
1031	A Neolithic ground stone axe was found on Cleethorpes beach in 1970. It is in private possession.	299642	5938873	NRHE 81902, MNL452	NE Lincolnshire	Neolithic
1032	Spearhead, Easington Shore	310211	5948708	Mhu15168	Humber	Bronze Age
1033	Smook Hills circular cropmark	305342	5955673	Mhu19217	Humber	Bronze Age
1034	Possible Round Barrow, S of Lockham	309066	5946683	Mhu19488	Humber	Bronze Age
1035	Kilnsea Beacon Barrow Group	310822	5946709	Mhu3382	Humber	Bronze Age
1036	Barrow overlying Neolithic occupation site	310238	5947317	Mhu3383	Humber	Bronze Age
1037	Cinerary urns, Kilnsea Beach	311350	5943599	Mhu3387	Humber	Bronze Age
1038	Leaf-shaped spearhead, Kilnsea	311679	5944644	Mhu8301	Humber	Bronze Age
1039	Beaker found on beach at Sutton on Sea	320081	5908663	Mli41443	Lincolnshire	Bronze Age
1040	Bronze Age flint dagger found In Chapel St Leonard	322515	5901334	Mli41622	Lincolnshire	Bronze Age

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1041	Flint assemblage, Halton Marshes	283774	5953524	Mls19725	North Lincolnshire	Bronze Age
1042	Early Bronze Age peat peposit, East Halton Skitter	283773	5953713	MLS21153	North Lincolnshire	Bronze Age
1043	Bronze Age axe hammer in Cleethorpes	299232	5939734	MNL1442	NE Lincolnshire	Bronze Age
1044	Bronze Age findspot in Cleethorpes	300060	5938480	MNL1469	NE Lincolnshire	Bronze Age
1045	Bronze Age findspot In Cleethorpes	300060	5938481	MNL2259	NE Lincolnshire	Bronze Age
1046	A Bronze Age round barrow is visible as an earthwork on air photographs.	310224	5947323	NRHE 1448707	NRHE	Bronze Age
1047	A skull and skeletal remains of at least three bodies were found on the beach at Ingoldmells. The date has been suggested as Bronze Age.	323221	5894809	NRHE 1483170	NRHE	Bronze Age
1048	Bronze Age axe hammer. An axe hammer from a clay pit in Cleethorpes. Possibly a duplicate of SMR: 0072/2/0 (CL92, HOB UID 1519477).	300060	5938481	NRHE 1519476	NRHE	Bronze Age
1049	Bronze Age axe hammer. A perforated axe hammer found in Cleethorpes. It is 6.5 inches long and 2.5 inches thick. Found in a clay pit in Cleethorpes In 1894. Possible duplicate of SMR: 0074/1/0 (HOB UID 1519176).	300060	5938481	NRHE 1519477	NRHE	Bronze Age
1050	Possible round barrows, Cliff Cottage, Out Newton	308154	5951745	NRHE 1520047, MHU19402	Humber	Bronze Age
1051	Possible round barrow, N of Easington	309562	5949455	NRHE 1520160, MHU19495	Humber	Bronze Age
1052	Bronze Age / Iron Age occupation, Easington Cliffe. Finds of animal bones, pottery and wooden spear of Late Bronze Age to Late Iron Age date from Easington Cliff.	309965	5948775	NRHE 1520362, MHU15112	Humber	Bronze Age
1053	Bronze Age spearhead, Easington Shore. Bronze Age leaf-shaped spearhead, Easington Beach.	310059	5948718	NRHE 1520368	NRHE	Bronze Age
1054	Occupation, flint assemblage and Bronze Age pottery. Undated core, 2 flakes and a chunk of till a flint, together with Bronze Age Pottery (Kilnsea-24), found while cleaning a cliff section during a coastal survey by HWP. Two sections were cleaned.	309951	5948575	NRHE 1520391	NRHE	Bronze Age
1055	Bronze Age socketed axehead found on Easington Beach In 1969.	310176	5948209	NRHE 1520533, MHU3371	Humber	Bronze Age
1056	Possible round barrow and pits, S of sewage works	309563	5948051	NRHE 1520535, MHU19492	Humber	Bronze Age
1057	A barrow was revealed on the beach at Easington by tidal movements in 1998. The barrow was adjacent to a henge, also revealed by the same tide. An external bank and a ditch enclosed a circular area of gravel 9m across with a hearth and the bones of a crouched adult inhumation in the centre.	310334	5947504	NRHE 1520600, MHU20438	Humber	Bronze Age
1058	?Round barrow, E of Lockham Farm	309287	5946913	NRHE	Humber	Bronze Age

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
				1521181, MHU3384		
1059	Possible Bronze Age round barrow, south of Lockham.	309066	5946683	NRHE 1521418	NRHE	Bronze Age
1060	?Round Barrow, S of Long Bank	310019	5946059	NRHE 1521769, MHU3386	Humber	Bronze Age
1061	Bronze Age boat, Kilnsea. Fragment of a Bronze Age sewn-plank boat dated to 1870-1670 BC found on Kilnsea Beach in 1996. The plank was found lying on the beach during low tide near remains of woody peat deposit exposed during low tides.	311012	5945844	NRHE 1521771, MHU19596	Humber	Bronze Age
1062	?Round Barrow, N of Kilnsea Grange	310028	5945898	NRHE 1521778, MHU15558	Humber	Bronze Age
1063	?Round Barrow, NW of Kilnsea Grange	309957	5945893	NRHE 1521779, MHU15559	Humber	Bronze Age
1064	Round Barrow, N of Kilsea Grange	310031	5945798	NRHE 1521780, MHU3385	Humber	Bronze Age
1065	Possible round barrow and other cropmarks, W of Easington Road	309694	5945636	NRHE 1521781, MHU19491	Humber	Bronze Age
1066	Bronze Age / Iron Age pottery, south of Kilnsea. Late Bronze Age to Early Iron Age pottery.	310814	5944454	NRHE 1522561	NRHE	Bronze Age
1067	Rectangular field system and three possible round barrows.	311106	5944333	NRHE 1522571, MHU19490	Humber	Bronze Age
1068	Perforated stone hammer of Bronze Age date.	322067	5892213	NRHE 355901	NRHE	Bronze Age
1069	Early Bronze Age flint dagger.	322471	5901277	NRHE 355959	NRHE	Bronze Age
1070	Bronze Age flint scraper.	322410	5901562	NRHE 355965	NRHE	Bronze Age
1071	Bronze Age axe hammer.	299232	5939734	NRHE 81906	NRHE	Bronze Age
1072	A logboat was reportedly found in 1785 at Owthorne after a series of high tides which scoured away the foreshore to remove the sand layer and reveal a layer of blue clay, in the remains of a submerged oak and hazel forest landscape, presumably part of the former mere basin. It is not known what happened to the boat. A second smaller canoe is said to have been found sixty years earlier.	304344	5957944	NRHE 910673, MHU2655	Humber	Bronze Age
1073	Finds of animal bones, pottery and wooden spear of late Bronze Age to late Iron Age date from Easington Cliff.	309965	5948775	MHU15112	Humber	Iron Age
1074	Iron Age chalk figurine.	304703	5957144	MHU17846	Humber	Iron Age
1075	Findspot of bronze coin of Cunobeline (AD 10-40) found on beach at Holmpton in 1968	306328	5954872	MHU2614	Humber	Iron Age
1076	On the beach at Kilnsea, near Hornsea, a complete late Bronze Age/early Iron Age cinerary urn, together with the fragments of two others were found in 1957.	311350	5943599	MHU3387	Humber	Iron Age

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1077	Find of two Iron Age coins.	309965	5948775	MHU8096	Humber	Iron Age
1078	Late Bronze Age to early Iron Age pottery.	310814	5944454	MHU8328	Humber	Iron Age
1079	Iron Age pigmy urn	318216	5913375	MLI41436	Lincolnshire	Iron Age
1080	Iron-Age saltern site, Ingoldmells	323001	5898393	MLI41667	Lincolnshire	Iron Age
1081	IA figurine, East Halton Skitter	284489	5954380	MLS17785	North Lincolnshire	Iron Age
1082	Early Iron Age saltern, with briquetage, shallow vessels etc. near circular enclosure IN17, Ingoldmells.	323106	5897604	NRHE 1479779, MLI41660	Lincolnshire	Iron Age
1083	An undated earthwork linear feature was identified from aerial photographs, probably part of either possible saltern IN22 or Iron Age saltern IN19.	323048	5897347	NRHE 1479793	NRHE	Iron Age
1084	Early Iron Age saltern, with briquetage, shallow vessels etc. Ingoldmells	323187	5897337	NRHE 1479795, MLI41661	Lincolnshire	Iron Age
1085	Early Iron Age saltworking site, with briquetage, shallow vessels. Ingoldmells	323320	5897078	NRHE 1479806, MLI41658	Lincolnshire	Iron Age
1086	Iron Age saltern site, producing hand bricks, short rods and Iron Age pottery. Ingoldmells.	322356	5896774	NRHE 1480946, MLI41654	Lincolnshire	Iron Age
1087	Early Iron Age salt working site with briquetage and pottery including some Belgic. Found In 1954 exposed on beach a large amount of briquetage and burnt surfaces found. At TF 5752 6777 Early Iron Age salt working site with hearth was exposed after 1953.	323272	5895968	NRHE 1483118	NRHE	Iron Age
1088	Early Iron Age salt working site with briquetage and pottery, including Belgic found in 1954. At a later date briquetage and burnt surfaces were seen exposed in mud on the beach.	323235	5895720	NRHE 1483134, MLI41663	Lincolnshire	Iron Age
1089	Early Iron Age saltworking site with briquetage and pottery, including Belgic found In 1954. At a later date briquetage and burnt surfaces were seen exposed in mud on the beach.	323228	5895630	NRHE 1483138, MLI41662	Lincolnshire	Iron Age
1090	Two Iron Age coins, Easington Beach. Find of two Iron Age coins.	309965	5948775	NRHE 1520367	NRHE	Iron Age
1091	Large Iron Age urn or jar and other sherds from Kilnsea Beach (Kilnsea-3), found *circa* 1960, and now in Hull and East Riding Museum.	310104	5945055	NRHE 1522519	NRHE	Iron Age
1092	Early Iron Age salt-workings.	323070	5897543	NRHE 355838	NRHE	Iron Age
1093	Iron Age salt-workings, briquetage, pottery including Belgic.	323191	5895813	NRHE 355850	NRHE	Iron Age
1094	Iron Age beaker fragment found.	320081	5908663	NRHE 356020	NRHE	Iron Age
1095	Iron Age gold coin of *circa* 40AD. Findspot in Cleethorpes.	299229	5937699	NRHE 81862, MNL1210	NE Lincolnshire	Iron Age
1096	The remains of a complete Iron Age cinerary urn, containing calcined bone, and fragments of others were found on the beach at Kilnsea in 1957.	311366	5943894	NRHE 81965	NRHE	Iron Age

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1097	Iron Age-Roman saltworking, Ingoldmells	323334	5895980	MLI41664	Lincolnshire	Iron Age/ Romano-British
1098	Enclosure, west of North Killingholme Refinery	284924	5951199	MLS17461	North Lincolnshire	Iron Age/ Romano-British
1099	Possible enclosure ditch	283735	5953085	MLS20080	North Lincolnshire	Iron Age/ Romano-British
1100	Iron Age enclosure, E of Rosper Road	285735	5950147	MLS20140	North Lincolnshire	Iron Age/ Romano-British
1101	Curvilinear gully and ditch	284928	5951070	MLS21459	North Lincolnshire	Iron Age/ Romano-British
1102	Iron Age/Roman ditched rectangular enclosure and parallel boundaries are visible as cropmarks on air photographs.	303192	5958096	NRHE 1088286	NRHE	Iron Age/ Romano-British
1103	A Sub-Rectangular Enclosure, Defined By A Single Ditch, Is Faintly Visible As A Cropmark On Air Photographs (1999). It Measures Approximately 54m By 45m (Maximum). Possible Iron Age or Roman date.	284957	5951208	NRHE 1325814	NRHE	Iron Age/ Romano-British
1104	Iron Age or Roman saltern site was exposed by movement of sand to the north of Ingoldmells Point. A large quantity of briquetage and hand bricks were recovered during investigations in 1979 (ELI5664). Some burnt material was associated with the debris.	323054	5898232	NRHE 1479711, MLI87088	Lincolnshire	Iron Age/ Romano-British
1105	Iron Age / Romano British briquetage. A few fragments of briquetage were discovered during the Lindsey Survey at Vickers Point South in a woody peat layer, which probably date to the Iron Age/Romano-British periods.	323124	5897723	NRHE 1479769, MLI43341	Lincolnshire	Iron Age/ Romano-British
1106	Two saltern sites were seen in a ditch *circa* 2m down and 14 paces apart. Finds include handmade bricks, 9cm or smaller, pans and Iron Age potsherds, some Roman pottery was also recorded.	322219	5897686	NRHE 1479777	NRHE	Iron Age/ Romano-British
1107	Possible Iron Age / Romano British artefacts. Hand bricks and base of gritty jar found close to saltern troughs, Ingoldmells.	323355	5896002	NRHE 1483116	NRHE	Iron Age/ Romano-British
1108	Iron Age / Romano-British Settlement, Easington Gas Terminal. A geophysical survey and series of watching briefs, evaluations and excavations by ASWYAS in 2004/5 on the site of a gas terminal and pipeline revealed extensive late Iron Age/Romano-British remains.	309088	5949138	NRHE 1520354	NRHE	Iron Age/ Romano-British
1109	Assemblage of unprovenanced Iron Age/Romano-British pottery (Kilnsea-22), found at various times, now in Hull and East Riding Museum.	310004	5945062	NRHE 1520589	NRHE	Iron Age/ Romano-British
1110	Iron Age / Romano British enclosures, Kilnsea. A geophysical survey immediately W of the sea defences by Archaeological Services (West Yorkshire Archaeological Service) in early 2006 produced evidence for an area of conjoined linear features.	310944	5944886	NRHE 1522534	NRHE	Iron Age/ Romano-British
1111	Clay cylinders, bricks, etc. It has been suggested the finds may be related to a saltern and be of Iron Age or Romano-British date.	322151	5895285	NRHE 355856	NRHE	Iron Age/ Romano-

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
						British
1112	Possible Iron Age and Roman occupation site with hut sites. Medieval finds including pottery. Roman pottery and a coin hoard containing coins dating from Augustus to the mid-4th century AD. Neolithic axe.	318216	5913375	NRHE 356005	NRHE	Iron Age/ Romano-British
1113	Remains of an ancient mere and traces of lake dwellings exposed at low tides at Sand-le-Mere.	302193	5960853	MHU1409	Humber	Prehistoric
1114	Vertical wattles set in clay on the foreshore at Easington were identified by Roger Thomas in August 2006.	310290	5947699	MHU20513	Humber	Prehistoric
1115	Flint axe from Mablethorpe.	317851	5914032	MLI41427	Lincolnshire	Prehistoric
1116	Flint axe found At Trusthorpe.	317882	5911624	MLI41449	Lincolnshire	Prehistoric
1117	Worked flint flake from Chapel St Leonards.	322406	5901783	MLI41613	Lincolnshire	Prehistoric
1118	Flint scraper found in Chapel St Leonards.	322485	5901477	MLI41614	Lincolnshire	Prehistoric
1119	Possible hut circle group, Ingoldmells.	323367	5896904	MLI41645	Lincolnshire	Prehistoric
1120	Perforated stone hammer found Skegness.	322075	5892182	MLI41698	Lincolnshire	Prehistoric
1121	Prehistoric enclosure earthwork, Marshchapel Parish.	308087	5930495	MLI88100	Lincolnshire	Prehistoric
1122	Prehistoric findspot in Humberston.	300937	5935463	MNL1195	NE Lincolnshire	Prehistoric
1123	Former channel of the Freshney.	295036	5941293	MNL1700	NE Lincolnshire	Prehistoric
1124	Former beach or sand bank in Grimsby.	295076	5941571	MNL2088	NE Lincolnshire	Prehistoric
1125	Humber sunken forest.	299212	5939795	MNL2097	NE Lincolnshire	Prehistoric
1126	Prehistoric findspot in Immingham.	288935	5946823	MNL845	NE Lincolnshire	Prehistoric
1127	Potential prehistoric circular enclosure is visible as a cropmark on air photographs.	307283	5956103	NRHE 1448112	NRHE	Prehistoric
1128	Prehistoric flint knife found at Mablethorpe, Molas Report.	318379	5912983	NRHE 1483528	NRHE	Prehistoric
1129	Enclosure north of Out Newton. Undated prehistoric enclosure.	307941	5952076	NRHE 1520030	NRHE	Prehistoric
1130	Earthworks, Cliffe Farm, Out Newton. Undated earthworks, possibly of prehistoric date.	308220	5951755	NRHE 1520046	NRHE	Prehistoric
1131	Trackway or Droveway, Out Newton. Undated prehistoric trackway or droveway.	308106	5951563	NRHE 1520052	NRHE	Prehistoric
1132	Prehistoric deer antler and animal bone.	310022	5948525	NRHE 1520393, MHU17853	Humber	Prehistoric

WA ID	DESCRIPTION	UTM31N Easting	UTM31N Northing	Other Ref ID	HER	Period
1133	Flint assemblage. Possibly six Late Prehistoric flakes and a core of till A and B flint (Kilnsea-18), found during fieldwalking by Humber Wetland Project.	309831	5946879	NRHE 1521179	NRHE	Prehistoric
1134	Flint assemblage and Romano-British pottery. Four possible later prehistoric flakes and 2 chunks of till A and B flint, 95 sherds of 3rd- to 4th-century Roman and 1 sherd of medieval pottery (Kilnsea-8), found during fieldwalking by Humber Wetland Project.	309597	5946395	NRHE 1521436	NRHE	Prehistoric
1135	Ditches, east of Kilnsea Grange. Undated ditches, probably prehistoric.	310513	5945879	NRHE 1521770	NRHE	Prehistoric

13.5 APPENDIX V-GAZETTEER OF GEOPHYSICAL FEATURES (ON CD-ROM ONLY)

WA ID	Classification	Length (km)	Discrimination	Notes	Data Quality	Confidence	Internal references	Line	Area
7001	Complex cut and fill	0.611	A1	Complex cut and fill sequence. Only eastern and western edges is observed, the base of the cut is not discernible but in excess of 18m. Fill is a generally transparent unit with some faint reflectors overlain by a veneer of seabed sediments. The eastern edge of the initial cut is cut by a secondary cut from seabed to 6.4m sub-seabed.	Good	Medium	6006	2	Northern area
7002	Complex cut and fill	0.695	A1	Large, broad undulating cut from seabed to 17.6m. Cuts through 2 types of till. Cut infilled with 2 fill units. Fill 1 comprises relatively strong chaotic reflectors up to 10.5m thick. Fill 2 comprises up to 12.5m well-layered onlapping sediments overlain by veneer of seabed sediments.	Medium	High	6010	2	Northern area
7003	Complex cut and fill	0.786	A1	Large, broad-scale undulating cut from seabed to maximum of 14.1m sub-seabed. Fill 1 is observed in eastern side of cut and is observed to seabed and comprised a series of relatively strong well-layered unit. A secondary cut is observed in the central and west of the feature. Infill of this cut comprises up to 11.3m of unstructured sediments.	Medium	High	6011	2	Northern area
7004	Complex cut and fill	0.362	A1	Relatively symmetrical cut feature from seabed to 15.8m sub-seabed with two fill units. Fill 1 comprises up to 11.0m dipping reflectors overlain by Fill 2. Fill 2 comprises up to 8.2m unstructured fill overlain by a veneer of seabed sediments (no bedforms).	Medium	High	6012	2	Northern area
7005	Sediment unit	2.718	A2	Cut at seabed and then unit deepens to inshore end of line. Up to 11.6m thick and in the west overlain by 2 further units. A unit onlaps the initial unit and is up to 6.4m thick. To the east this unit is observed close to surface; to the west unit is overlain by a unit up to 8.7m thick.	Medium	Medium	6013	3	Northern area
7006	Complex cut and fill	0.873	A1	Large broad-scale cut feature cutting through two till units. Complex infill including bank structures and two main fill units. The edge of a bank structure is observed on the western limit of the cut feature. Bank likely composed of sands and gravels, up to 6.3m high and comprises chaotic reflectors. A thin unit, up to 1.7m thick, is observed on eastern edge of cut feature and is interpreted as a gravel unit. In the main cut Fill 1 comprises up to 8.8m transparent unit which is predominantly overlain by Fill 2 throughout most of the feature except in the west where Fill 1 is at the seabed. Fill 2 well-layered up to 13.4m thick overlain by veneer of seabed sediment.	Medium	High	6014	3	Northern area
7007	Simple cut and fill	0.223	A1	Western limit of Botney Cut Formation comprising dipping reflectors cutting through till on western side of Sand Hole feature. Sediments in excess of 17m (true depth not observed).	Medium	Medium	6015	3	Northern area
7008	Complex cut and fill	0.499	A1	Undulating cut into underlying chaotic till unit. Cut from seabed to 11.6m sub-seabed with fill to seabed comprising strong reflectors (unstructured). This fill is cut into by small cut feature up to 3.5m thick, possibly infilled with Holocene re-worked seabed sediments.	Medium	Medium	6016	3	Northern area

WA ID	Classification	Length (km)	Discrimination	Notes	Data Quality	Confidence	Internal references	Line	Area
7009	Complex cut and fill	2.378	A1	Complex cut and fill feature. Basal reflector only observed on western side of feature, cut from seabed to 11.4m sub-seabed. Basal fill comprises transparent unit up to 8.5m thick. This fill is cut by secondary cut feature. Cut is extensive and undulating from seabed to 18.2m sub-seabed and comprises two fill units. Fill 1 comprises generally transparent unit with occasional evidence of dipping well-layered reflectors up to 15.1m thick. Fill 2 observed from seabed in west and deepens to the east onlapping the cut. Maximum fill of 13.3m to eastern limit overlain by veneer of seabed sediment (no bedforms).	Medium	Medium	6018	4	Northern area
7010	Simple cut and fill	0.754	A1	Undulating cut and marks the base of Botney Cut Formation (dipping reflectors) on western edge of Sand Hole feature.	Medium	Medium	6019	4	Northern area
7011	Simple cut and fill	0.354	A1	Small cut and fill feature on eastern side of Sand Hole Feature. Probable Botney cut (as 6019) up to 8.4m thick.	Medium	Medium	6020	4	Northern area
7012	Depression	0.719	A2	Depression from seabed to 8.3m sub-seabed. Infilled with up to 5.5m layered sediments and overlain by up to 2.8m Holocene sediments (probably sands and gravels).	Good	Low	6022	5	Northern area
7013	Simple cut and fill	0.959	A1	Broad shallow cut from seabed to 8.6m sub-seabed. Infilled with stronger reflectors to seabed. Possibly edge of Botney Cut Formation associated with Sand Hole Feature.	Medium	Medium	6024	5	Northern area
7014	Simple cut and fill	1.557	A1	Broad shallow cut feature from seabed to 8.1m sub-seabed with unstructured fill to the seabed. Two small isolated areas of shallow gas are observed indicating some organic content towards the base of the fill. Associated with nearshore documented as being exposed during low spring tides.	Medium	High	6025	6	Central Area
7015	Simple cut and fill	0.807	A2	Small shallow cut between 7.7 and 8.6m sub-seabed. The base is marked by strong reflector. Fill up to 2.7m thick overlain by Holocene bank structure up to 7m thick.	Medium	Medium	6026	6	Central Area
7016	Simple cut and fill	0.131	A2	Small cut (continuation of **7015**) between 4.4 and 5.0m sub-seabed. Fill up to 1.4m thick overlain by up to 3.8m Holocene bank sediment	Medium	Medium	6027	6	Central Area
7017	Simple cut and fill	2.742	A1	Undulating cut feature from 2.7m to 8.8m sub-seabed. Fill comprises faint dipping reflectors up to 7.6m thick overlain by a veneer of Holocene increasing to 3.2m thick (bank structure).	Good	Medium	6028	7	Central Area
7018	Complex cut and fill	3.397	A1	Cut and fill feature. Western cut of feature is a strong reflector marking the base of a Holocene bank up to 4.3m high. This reflector is truncated by shallow gas feature up to 164m long. The basal reflector continues at around 2.2m sub-seabed then deepens to 16.3m sub-seabed. Infill is generally transparent with few faint reflectors. An internal strong reflector is observed between 8.8 to 13m sub-seabed. Seabed sediments of variable thickness.	Good	Medium	6029	7	Central Area
7019	Complex cut and fill	1.930	A1	Cut marked by strong reflector. Two small cuts are observed and are infilled with transparent unit. Cut between seabed and 10m sub-seabed. Fill up to max of 8.3m thick overlain by veneer of seabed sediments thickening to 2.2m associated with bedforms (small sandwaves).	Good	Medium	6030	7	Central Area
7020	Simple cut and fill	0.329	A2	Small shallow cut (or depression) from seabed to 5.3m sub-seabed. Fill unit comprises strong reflectors (coarse-grained) and overlain by veneer of Holocene except where thickens to sandwaves up to 2.6m thick. Possibly comprises early Holocene infill sediments (sands and gravels), also possible till infill.	Medium	Medium	6032	8	Southern Area

WA ID	Classification	Length (km)	Discrimination	Notes	Data Quality	Confidence	Internal references	Line	Area
7021	Depression	0.118	A2	Small depression from seabed to 4.5m sub-seabed. Fill comprises strong reflectors, possible coarser-grained sediments. Possibly comprises early Holocene infill sediments (sands and gravels), also possible till infill.	Medium	Medium	6033	8	Southern Area
7022	Depression	0.067	A2	Small shallow depression from seabed to 2.3m . Possibly comprises early Holocene infill sediments (sands and gravels), also possible till infill.	Medium	Medium	6034	8	Southern Area
7023	Simple cut and fill	0.136	A1	Northern side of cut feature (southern side not discernible). Cut from 11.3m to 3.4m sub-seabed. Fill comprises transparent unit. Fill is overlain by up to 4.6m Holocene sandbanks and sandwaves.	Medium	Medium	6035	8	Southern Area
7024	Simple cut and fill	0.408	A2	Base of thin cut unit protected by overlying Holocene (5081). Fill up to 2.2m thick. Fill overlain by seabed sediments in the form of sandwaves up to 10.2m high.	Medium	Medium	6036	8	Southern Area
7025	Bank	0.965	A2	Unit probably sands and gravels. Generally up to 3.4m thick to seabed except to south where overlain by Holocene sandwave (up to 5.2m high).	Medium	Medium	6037	8	Southern Area
7026	Complex cut and fill	0.472	A1	Undulating cut into till/bedrock. Cut from 2.1m to 12.6m sub-seabed. Fill comprises a series of strong reflectors at the base of the fill overlain by a (finer-grained) more transparent unit up to 10.4m thick overlain by Holocene seabed sediments in the form of sandwaves up to 5.7m high.	Good	High	6045	9	Southern Area
7027	Simple cut and fill	1.295	A1	Undulating cut from seabed to 10.0m sub-seabed. Fill comprises strong chaotic reflectors with some layering to the south. Overlain by Holocene seabed sediments up to 12.1m thick associated with sandwaves.	Good	Medium	6047	9	Southern Area
7028	Bank	3.228	A2	Undulating basal reflector with overlying bank feature. Bank feature shows evidence of structure and is up to 5m high.	Good	High	6048	7	Central Area
7029	Bank	1.848	A2	Undulating basal reflector with overlying bank feature. Bank feature shows evidence of structure and is up to 5.8m high.	Good	High	6049	7	Central Area
7030	Bank	3.799	A2	Bank structure up to 5.9m high. Transparent basal layer (fine-grained sediments) overlain by probable coarser sediments.	Good	High	6050	6	Central Area
7031	Bank	1.015	A2	Bank structure up to 6.7m high. To the west the bank comprises a series of strong dipping reflectors (coarse-grained) and to the east primarily transparent with some chaotic reflectors (predominantly fine-grained).	Good	High	6051	6	Central Area

13.6 APPENDIX VI - GAZETTEER OF KNOWN WRECKS (ON CD-ROM ONLY)

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8001		1330164		NORFOLK	BRITISH CRAFT, 1788	1509-1815		312155.2	5936299
8002	119	942776		SWALLOW	ENGLISH CARGO VESSEL, 1801	1509-1815		303512.9	5941298
8003	104	1340933		PROSPERITY	1808 wreck of English cargo vessel which foundered after grounding on the Binks en route from Gothenburg with tar, timber, and deals; a wooden sailing vessel.	1509-1815	?BRITISH	310967.5	5941010
8004	158			AURORA		1509-1815	SWEDISH	310868.3	5940997
8005	108	1340931		BREMEN PACKET	1808 wreck of English packet which foundered after grounding on the Binks. Making for the Humber while bound to the Baltic with sugar, coffee, and other goods, she was a wooden sailing vessel.	1509-1815	?GERMANY	312695.5	5941558
8006	195; 486	913089		RETRIEVER	Remains of 1900 wreck of English trawler which foundered near the Bull Lightvessel after a collisin, while on a fishing and return trip out of Kingston-upon-Hull. Built of wood, she was a steam screw-driven vessel.	1816-1913	BRITISH	307164.9	5938764
8007	398			HOMER		1816-1913	BRITISH	337604.8	5953144
8008	105	1348814		HMS COBRA	BRITISH DESTROYER, 1901	1816-1913	BRITISH	371603.8	5924111
8009	430; 518			CHELSEA (POSSIBLY)		1816-1913	BRITISH	372495.8	5899448
8010	142	1372691		REX	1903 wreck of English trawler which foundered 3 miles east north east of Spurn Head light ship following collision. This wooden sailing vessel,	1816-1913	BRITISH	322183.3	5939967

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					built 1891, departed from Grimsby on a fishing and return trip.				
8011		1406496		MARY	1830 wreck of British craft which stranded on Haile Sand during a gale. Thought to have been en route from Berwick-upon-Tweed to Sunderland, she was a wooden sailing vessel.	1816-1913		322329.4	5942400
8012		1489532		FRIENDS	1858 wreck of English sloop which stranded near Saltfleet on her passage for London with stone. Constructed of wood, she was a sailing vessel.	1816-1913		313809.8	5922316
8013		1302091		CONQUEROR	ENGLISH SCHOONER, 1894	1816-1913		313699.7	5933453
8014	322; 585	1373444		LANCASTER (POSSIBLY)	1905 wreck of English trawler which foundered 15 miles east of Spurn Head following collision. This steel steam vessel departed from Grimsby on a fishing and return trip.	1816-1913	BRITISH	336843.8	5934581
8015	0	1373444		LANCASTER	1905 wreck of English trawler which foundered 15 miles east of Spurn Head following collision. This steel steam vessel departed from Grimsby on a fishing and return trip.	1816-1913	BRITISH	339151.4	5937163
8016	401; 552			MERCHISTON		1816-1913	BRITISH	336379.9	5948548
8017	198; 609			PACIFIC		1816-1913	BRITISH	378610	5918780
8018	14			RHENO		1816-1913	BRITISH	347342.3	5930768
8019	73	913052; 943102		CRAMLINGTON	POSSIBLE REMAINS OF MERCHANT VESSEL, 1908	1816-1913	BRITISH	312669.9	5932538
8020	43	943108		DART	ENGLISH TRAWLER, 1909	1816-1913	BRITISH	303551.9	5942224
8021	301; 450	907874; 1374609		CRUX	1912 wreck of English trawler which stranded at Holmpton. This steel steam vessel, built 1896, was on a fishing and return trip.	1816-1913	BRITISH	306345.2	5956404

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8022	94			HARWICH		1816-1913	BRITISH	395776.3	5920736
8023	127	1303596		THOMAS CAMPBELL	ENGLISH DANDY, 1913	1816-1913	BRITISH	319996.6	5933277
8024	245; 506	913083		DAYRIAN	REMAINS OF BRITISH STEAM TRAWLER, 1913	1816-1913	BRITISH	309795.3	5938400
8025	148	913210			POSSIBLE REMAINS OF FISHING VESSEL	1816-1913		337385.7	5914647
8026	266; 558	913055; 943085		THESSALY	REMAINS OF BRITISH MERCHANT STEAMSHIP, 1890	1816-1913	BRITISH	326631.5	5932967
8027	159	943072		JOHN AND THOMAS	ENGLISH SLOOP, 1876	1816-1913	BRITISH	309335.1	5933665
8028	136			SILVER QUEEN		1816-1913	BRITISH	358686.6	5946432
8029	70	1369063		SAVE-ALL	An English dandy which collided with another vessel and foundered 4.5 miles NE of Spurn Head in 1883. The wind conditions were SSW force 1 and it was foggy. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 18	1816-1913	BRITISH	314833.3	5945480
8030	107	1369063		SAVE ALL	An English dandy which collided with another vessel and foundered 4.5 miles NE of Spurn Head in 1883. The wind conditions were SSW force 1 and it was foggy. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 18	1816-1913	BRITISH	314948	5945456
8031	78	943095		EXPRESS	ENGLISH SMACK, 1899	1816-1913	BRITISH	334400	5908564
8032	171; 179	1351561		WILLIAM BALLS (PROBABLY)	ENGLISH CARGO VESSEL, 1893	1816-1913	BRITISH	353130.9	5938470
8033	67; 31			MILO / SECRET		1816-1913	BRITISH	335621.6	5938955

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8034	90	1302127		STAR	ENGLISH DANDY, 1895	1816-1913	BRITISH	325438.3	5912781
8035	664	1351218		LUTHA	SCOTTISH BRIG, 1886	1816-1913	BRITISH	315599.5	5922274
8036	139			PEARL		1816-1913		307795.4	5939760
8037	51	943087		BEELSBY	ENGLISH FISHING KETCH, 1890	1816-1913	BRITISH	335790.1	5932640
8038	399; 632			NORFOLK (POSSIBLY)		1816-1913	BRITISH	358953	5949176
8039	4	943086		FIDELITY	ENGLISH KETCH, 1890	1816-1913		339178.5	5905246
8040	156	1302129		LIZZIE CARTER	ENGLISH KETCH, 1896	1816-1913	BRITISH	321490.1	5925951
8041	95			ZOE		1816-1913	BRITISH	388860.6	5917123
8042	145	1302095		VINETA	ENGLISH DANDY, 1894	1816-1913	BRITISH	337253.4	5926929
8043	290	1363635		FRANCIS/FRANCES	BRITISH CARGO VESSEL, 1872	1816-1913	BRITISH	309220.3	5951273
8044	102			POLLY CAMPBELL		1816-1913	BRITISH	316033.2	5939492
8045	282; 433	913075; 978168		DUNSANY	REMAINS OF MERCHANT STEAMSHIP, 1876	1816-1913	BRITISH	315129.1	5937228
8046	40			CULMORE		1816-1913		308430.6	5939982
8047	41			LOTTIE		1816-1913	BRITISH	327268	5939068
8048	92			ETHEL		1816-1913		311893.8	5938171
8049	253; 457	913080		ETHEL (POSSIBLY)	POSSIBLE REMAINS OF BRITISH KETCH, 1894	1816-1913	BRITISH	312174.8	5938075
8050	27	1369243		BONNIE LASS	An English ketch which collided with another vessel and foundered 25 miles SSE of Flamborough Head in 1884 in wind conditions NNW. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1873.	1816-1913	BRITISH	314878.4	5957821

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8051	138			JANE AND ELIZABETH		1816-1913	BRITISH	361371.2	5903529
8052	42	1404751		TRURO	1820 wreck of English craft which stranded on the Binks, en route from North Shields to London; a wooden sailing vessel.	1816-1913		299143.3	5941172
8053	116			EDMUND DENISON		1816-1913	BRITISH	349247.1	5938499
8054	32			REBECCA SLEIGHT		1816-1913	BRITISH	330822.8	5939125
8055	146	1302098		ROSEBUD	ENGLISH KETCH, 1894	1816-1913	BRITISH	329794.5	5916550
8056	202	984107		TRITON	ENGLISH SCHOONER, 1851	1816-1913	BRITISH	311089.1	5939688
8057	79			ESK		1816-1913	BRITISH	339979.8	5951794
8058	151	1368705		EXCELSIOR	ENGLISH FISHING VESSEL, 1879	1816-1913	BRITISH	383707.7	5936783
8059	159			MARSHALL (PROBABLY)		1816-1913	BRITISH	313708.4	5944526
8060	352; 436	907863		MARSHALL (POSSIBLY)	REMAINS OF VESSEL, PROBABLY BRITISH STEAMER, 1853	1816-1913	BRITISH	320412.3	5949006
8061	251; 618			CECIL (POSSIBLY)		1816-1913	BRITISH	345175.7	5945682
8062	76	1350993; 1363722		ANN	ENGLISH BRIGANTINE/DANDY, 1873	1816-1913	BRITISH	311896.1	5938233
8063	71			MARIAN FRANCIS		1816-1913	BRITISH	310877.1	5959560
8064	39	1371490		SPRAY	1894 wreck of English dandy which foundered 16 miles north east of Spurn Head following collision. This wooden sailing vessel, built 1891, departed from Grimsby on a fishing and return trip.	1816-1913	BRITISH	337652.4	5945008
8065	166; 173	907878		DERWENT	REMAINS OF BRITISH CRAFT, 1885	1816-1913	BRITISH	315879.3	5957597
8066			MLS20123		ENGLISH SLOOP WILLIAM	1816-1913		287853.4	5950182

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8067			MLS20122		ENGLISH KETCH IVY	1816-1913		287864.1	5950191
8068		907832	MNL1498	MONIMIA	DISPERSED REMAINS OF VESSEL, POSSIBLY TRAWLER, 1914	1914-1945		305281.7	5940201
8069		908323			POSSIBLY SILTED UP PART OF A LIGHTER, 1919	1914-1945		306279.9	5940082
8070		913235			REMAINS OF BARGE, POSSIBLY THE LORD HAIG, 1933	1914-1945		308585.5	5938363
8071		913091		LORMONT	REMAINS OF ESCORT VESSEL, 1940	1914-1945		322119.8	5938266
8072		913077		PRINCESS VICTORIA	REMAINS OF BRITISH MINESWEEPER, 1940	1914-1945		324437.1	5937190
8073	361; 479	1374696		NONIMIA (POSSIBLY)	1914 wreck of English fishing vessel which foundered 0.25 miles above Bull buoy following collision. This steel steam vessel, built 1912, departed from Grimsby on a fishing and return trip.	1914-1945	BRITISH	305311	5940248
8074	260; 593	1374729		FITTONIA (POSSIBLY)	1914 wreck of English trawler which foundered 27 miles south east of Spurn Head light vessel after being mined. This iron steam vessel, built 1891, departed from Grimsby on a fishing and return trip.	1914-1945	BRITISH	359255.3	5929053
8075	111			REVIGO (POSSIBLY)		1914-1945	BRITISH	355023.8	5941968
8076	278			REVIGO		1914-1945	BRITISH	364557.6	5940323
8077	58			KILMARNOCK (POSSIBLY)		1914-1945	BRITISH	365710.9	5937570
8078	152			KILMARNOCK (POSSIBLY)		1914-1945	BRITISH	365821	5934289
8079	120			REBONO (POSSIBLY)		1914-1945	BRITISH	364013	5944390

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8080	3	1374766		KHARTOUM	1914 wreck of English cargo vessel which foundered 20 miles east south east of Spurn Head having been mined. This steel steam vessel, built 1893, was en route from the River Tyne to Oran with coal.	1914-1945	BRITISH	343069	5925342
8081	37	1374851		SCHIELAND	1915 wreck of Dutch cargo vessel which foundered 20 miles east south east of Spurn light vessel after detonating a mine. This steel steam vessel was en route from Goole to Rotterdam with coal.	1914-1945	DUTCH	338440.9	5934713
8082	326; 580	1374851		SCHIELAND (POSSIBLY)	1915 wreck of Dutch cargo vessel which foundered 20 miles east south east of Spurn light vessel after detonating a mine. This steel steam vessel was en route from Goole to Rotterdam with coal.	1914-1945	DUTCH	342258.8	5935651
8083	265			NIMROD		1914-1945	BRITISH	344695.2	5917494
8084	210, 651	907859	MNL1476	HVITVEIS	Remains of 1915 wreck of Norwegian schooner which foundered north of Immingham, located south of the modern Number 9A buoy, following a collision. She had just left Goole for Rouen with coal (some sources state her departure point as Kingston-upon-Hull).	1914-1945	NORWEGIAN	291384.9	5947283
8085	209; 630	1352001		TRIGNAC (POSSIBLY)	FRENCH CARGO VESSEL, 1916	1914-1945	FRENCH	349723.1	5918354
8086	154	1352001		TRIGNAC	FRENCH CARGO VESSEL, 1916	1914-1945	FRENCH	354783	5920886
8087	248; 531	892357; 1302307		BOGATYR	1916 incident in which a Danish cargo vessel grounded 12 miles ENE of the Docking Shoal en route from San Juan for Middlesbrough with iron ore. She then floated off towards Chapel St. Leonards, remaining there for three months, before being recovered and	1914-1945	DANISH	343927.5	5898501

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8088	304; 449	907855; 1374881		DIDO	1916 wreck of English cargo vessel which foundered 4 miles north north east of Spurn Head light vessel, after striking a mine in a gale and snow. This steel steam vessel, built 1896, was en route from Middlesbrough to Bombay with general cargo.	1914-1945	BRITISH	318290.7	5944973
8089	135			RIVAULX		1914-1945	BRITISH	319701.3	5931371
8090	90	913053; 1303828		RIEVAULX ABBEY	POSSIBLE REMAINS OF BRITISH MERCHANT STEAMSHIP, 1916	1914-1945	BRITISH	320853.7	5932564
8091	152			REGO		1914-1945	BRITISH	369653.4	5897267
8092	410; 619	978613		JERSEY (PROBABLY)	REMAINS OF ENGLISH TRAWLER, 1916	1914-1945	BRITISH	342934.5	5954478
8093	257; 564	978614; 1375067		RADO (POSSIBLY)	1916 wreck of English trawler which foundered 15 miles east north east of Spurn Head light vessel after being scuttled. This iron steam vessel, built 1903, departed from Grimsby on a fishing and return trip.	1914-1945	BRITISH	345465.1	5951642
8094	150; 5	1375071		ROVER / JENNIE BULLER	1916 wreck of British trawler which foundered 10 miles ENE of Spurn Head light vessel after being scuttled.	1914-1945	BRITISH	341257.3	5947204
8095	337; 474			CORINTH (POSSIBLY)		1914-1945	BRITISH	319688	5958791
8096	120	907889		CORINTH	BROKEN REMAINS OF STEAMER, PROBABLY BRITISH, 1916	1914-1945	BRITISH	320036.3	5954558
8097	111	913049		FAUNUS	1916 wreck of Swedish cargo vessel which capsized and foundered 6 miles ESE of Donna Nook after being mined off Flamborough Head, later to be dispersed. En route from Domsjo to London with timber products, she was a steam-driven vessel, built of steel.	1914-1945	SWEDISH	319960.9	5927988

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8098	126	1375096		NORA	1916 wreck of Danish cargo vessel which foundered 7 miles south of Withernsea after being mined en route from Harnosand to Gijon with timber. Constructed of steel in 1910, she was a steam-driven vessel.	1914-1945	DANISH	317183.8	5949588
8099	182; 465	907888		MODIG	Possible remains of 1916 wreck of Norwegian cargo vessel, located 8.5 miles ENE of Withernsea. If the MODIG, she was a cargo vessel, laden with coal which foundered after being mined. For the account of the wreck event, see TA 37 SW 210.	1914-1945	NORWEGIAN	320412.3	5958256
8100	421	907827; 1375211		LAXTON	1916 wreck of English cargo vessel which was lost near the Bull light vessel. This steel steam vessel, built 1905, was en route from Goole to Le Treport with coal.	1914-1945	BRITISH	308984.7	5939462
8101	82	913041; 943139		EGRET	REMAINS OF RUSSIAN MERCHANT STEAMSHIP, 1917	1914-1945	RUSSIAN	339404	5905331
8102	347; 519	913042; 1459750		ARGO	Possible remains of 1917 wreck of Norwegian cargo vessel, located approximately 2 miles east of the northern end of the Inner Dowsing. Her position at the time of loss was described as "near the Inner Dowsing Light Vessel". If the ARGO, she was an iron vessel.	1914-1945	NORWEGIAN	340583	5908152
8103	274; 529	913204; 1459768		HEIMLAND	Possible remains of 1917 wreck of Norwegian cargo vessel, located approximately 2.5 miles east of the central section of the Inner Dowsing. If the HEIMLAND, she was a steamer which foundered after being mined.	1914-1945	NORWEGIAN	341749.9	5906223
8104	419; 648	907897		MODIVA (POSSIBLY)	Possible remains of 1917 wreck of Norwegian cargo vessel, located approximately 9.25 miles ENE of	1914-1945	NORWEGIAN	321801.3	5959471

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					Withernsea. If the MODIVA, she was a steamer, built of steel, which foundered after being mined en route from Hartlepool for Rouen with coal.				
8105	426	907890		PORTIA	Remains of 1917 wreck of Norwegian cargo vessel, located approximately 9 miles ENE of Withernsea or 8 miles NE of Dimlington. She foundered in this position after being mined en route from Sunderland to Bilbao with coal. The wreck site was later dispersed.	1914-1945	NORWEGIAN	321647.9	5959002
8106	84			IDA (POSSIBLY)		1914-1945	NORWEGIAN	367342.4	5929758
8107	47	1464743		WEST	1917 wreck of Norwegian schooner which foundered 3 miles west of the northern part of the Dudgeon Shoal, after being stopped and scuttled by a U-boat; her position of loss is also stated as 3 miles off the Dudgeon Light Vessel. She was en route from Kingston-upon-Hull.	1914-1945	NORWEGIAN	370791.5	5898164
8108	22			FRANCES		1914-1945	BRITISH	322285.6	5952430
8109	91			ROSE OF JUNE		1914-1945	BRITISH	322285.6	5952430
8110	144			WILLIAM AND BETSY		1914-1945	BRITISH	322285.6	5952430
8111	85			ELSIE		1914-1945	BRITISH	322286.5	5952429
8112	46			HARBINGER		1914-1945	BRITISH	322286.5	5952429
8113	190; 181	907896; 1375552		EMPRESS (PROBABLY)	REMAINS OF VESSEL, PROBABLY BRITISH ARMED MERCHANTMAN, 1917	1914-1945	BRITISH	312371.5	5959779
8114	185; 549	1459776; 943135		FANE	Possible remains of 1917 wreck of Norwegian cargo vessel, located approximately 3 miles SE of the present-day Inner Dowsing Buoy. If the FANE, she was a steamer, built of	1914-1945	NORWEGIAN	342180	5908842

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					steel, which foundered after being mined en route from Rouen for Sunderland.				
8115	331; 602			ONESTA		1914-1945	ITALIAN	340529.8	5919828
8116	165	1352063		COSTANZA	ITALIAN CARGO VESSEL, 1917	1914-1945	ITALIAN	345460.4	5910296
8117	226	1302371		VERNON	ENGLISH CARGO VESSEL, 1917	1914-1945	BRITISH	340320.2	5913867
8118	254; 653	907898; 1376704		PARACIERS	1917 wreck of French vessel which foundered 8 miles east of Spurn Head after being torpedoed. This steel steam vessel, built 1894, was en route from Newcastle upon Tyne with coal.	1914-1945	FRENCH	316067	5960033
8119	415; 471	907892		LYRA (BOW SECTION)	Remains of 1917 wreck of Norwegian cargo vessel, located approximately 3.5 miles ENE of Withernsea lighthouse. She foundered in this position after being mined on passage from Skien for Rouen with ammonium nitrate and aluminium. Constructed of steel.	1914-1945	NORWEGIAN	310229.2	5959400
8120	350; 443	907847		FERMO	REMAINS OF BRITISH TRAWLER, 1917	1914-1945	BRITISH	318948.4	5942010
8121	275; 453	907893		GEORGIOS ANTIPPA (POSSIBLY)(FWD PART)	REMAINS OF ARMED STEAMER, PROBABLY BRITISH, 1917	1914-1945	GREEK	315833.3	5959207
8122	268; 463	907852		WINGA	Remains of 1918 wreck of Scottish cargo vessel, which foundered approximately 6 miles NE of Spurn Point, a position consistent with that described at the time of loss. She was involved in a collision while en route from Kingston-upon-Hull for Sunderland.	1914-1945	BRITISH	319034	5943739
8123	170; 180	1381280		STRATON (POSSIBLY)	1918 wreck of a British trawler which foundered 26 miles east of the River Humber light vessel after detonating a mine. This steel steam vessel was on a	1914-1945	BRITISH	349441	5945699

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					fishing trip.				
8124	19			UB 54		1914-1945	GERMAN	349769.5	5902489
8125	396; 520	1352076		LAURIUM (POSSIBLY)	BRITISH CARGO VESSEL, 1918	1914-1945	BRITISH	354635.1	5897545
8126	277			HMS EGRET		1914-1945	BRITISH	319490.1	5939793
8127	167; 174			HMS EGRET		1914-1945	BRITISH	320422.4	5940275
8128	110			ABY (POSSIBLY)		1914-1945	BRITISH	346717.2	5955157
8129	147	913048; 1303892		FRYKEN	POSSIBLE REMAINS OF SWEDISH MERCHANT STEAMSHIP, 1918	1914-1945	SWEDISH	329312.6	5926838
8130	375; 649	907895; 1377629		OTIS TETRAX	1918 wreck of Dutch collier which foundered 28 miles south of Flamborough Head after being torpedoed. This steel steam vessel, built 1916, was en route from Methil to Rouen with coal.	1914-1945	BRITISH	311101.8	5959675
8131	315; 478	913059		ODESSA	POSSIBLE REMAINS OF BRITISH STEAMSHIP, 1918	1914-1945	BRITISH	305747.2	5935172
8132	240	913205; 943141		FREIDIG (POSSIBLY)	REMAINS OF VESSEL, Possibly SS Fredig	1914-1945	NORWEGIAN	343751.3	5906362
8133	24	943141		FREIDIG	1918 wreck of Norwegian cargo vessel which foundered near the NE Docking Buoy following a collision en route from Middlesbrough for Rouen with iron ingots. Constructed of iron in 1882, she was a steam-driven vessel.	1914-1945	NORWEGIAN	343625.3	5901758
8134	244; 645			SCOTIA (POSSIBLY)		1914-1945	BRITISH	349718.4	5946308
8135	13	907838		EXMOOR	REMAINS OF VESSEL, 1919	1914-1945		312800	5940579
8136	233; 501	908322	MNL1503	Maritime Wreck Site W60 Seazone 233	POSSIBLE REMAINS OF LIGHTER, 1919	1914-1945		306238.5	5939963

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8137	236; 504		MNL1504			1914-1945		306299.2	5940099
8138	2			A 785		1914-1945		306507	5940245
8139	382; 641	943143		HARDEN	ENGLISH CARGO VESSEL, 1919	1914-1945	?BRITISH	372948.3	5925049
8140	149	943144		SINGAPORE	ENGLISH TRAWLER, 1920	1914-1945	BRITISH	287369.8	5950818
8141	353			ALEXANDRA		1914-1945		286798.1	5951587
8142	234; 595			CAVEHILL (POSSIBLY)		1914-1945	BRITISH	356672.9	5933908
8143	113	1457260		CAVEHILL	Remains of 1921 wreck of British cargo vessel, located to the north of the Outer Dowsing Shoal. She was said at the time of loss to have foundered 25 miles east of Spurn Head after a leak, en route from Newcastle-upon-Tyne to Amsterdam with coal.	1914-1945	BRITISH	365422	5936526
8144	29			GERHARDT		1914-1945		315513.4	5942976
8145	286; 464	907851		GERHARDT (POSSIBLY)	SONAR CONTACT, POSSIBLE REMAINS OF VESSEL	1914-1945	GERMAN	316637.3	5943205
8146	409	907831; 1377904		MAFEKING	1922 wreck of an English trawler which stranded off Spurn Head. This steel steam vessel, built 1903, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	BRITISH	310574.1	5939708
8147	363	907861		SERGEI	Dispersed remains of 1923 wreck of English cargo vessel which foundered in the River Humber following collision. This steel steam vessel, built 1899, was en route from Malmo to Kingston upon Hull with pit props.	1914-1945	BRITISH	288142.5	5949360
8148	376	907846		MAGNOLIA (POSSIBLY)	POSSIBLE REMAINS OF STEAM TRAWLER, 1923	1914-1945		299737.9	5942183
8149	294; 482			MAGNOLIA (PROBABLY)		1914-1945	BRITISH	299842	5942210

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8150	118	907835		HARLECH	DISPERSED REMAINS OF VESSEL	1914-1945	BRITISH	312573.9	5940001
8151	389			TORWOOD		1914-1945	BRITISH	309220.3	5951273
8152	7	913096; 1378040		CONQUEROR	1925 wreck of a British trawler which foundered off Spurn Head following a collision. This steel steam vessel departed from Kingston upon Hull on a fishing and return trip.	1914-1945	BRITISH	316088.1	5938005
8153	676			MIDDLE LT VESSEL		1914-1945		299952.1	5943304
8154	293; 446	907860		SALTOUN	Possibly remains of the 1927 wreck of a Scottish cargo vessel which foundered 8 miles off Spurn Head following a collision. This steel steam vessel, built 1918, was en route from Antwerp to Grangemouth with pig iron.	1914-1945	BRITISH	318056.3	5947953
8155	328; 475	907858		IONIC (PROBABLY)	Possibly the remains of a 1928 wreck of an English trawler which foundered 4 miles north east of the Spurn Head light vessel following a collision. This iron steam vessel, built 1890, departed from Grimsby on a fishing and return trip.	1914-1945	BRITISH	320843.1	5945371
8156	164	1352096		POLZELLA (POSSIBLY)	BRITISH CARGO VESSEL, 1928	1914-1945	BRITISH	343691.2	5926280
8157	12	1303936		BELOVAR	SPANISH TRAWLER, 1928	1914-1945	BRITISH	304339.7	5941264
8158	36			NO.9 (CLAY HUTS) LIGHT FLOAT		1914-1945		290374.2	5947713
8159	155			VICTORIA		1914-1945		296892.7	5942005
8160	241; 563			OGONO		1914-1945	SPANISH	369291	5917203
8161	411	1378162		TERN	1931 wreck of a British cargo vessel which foundered off the River Humber following a collision. This iron steam vessel, built 1875, was en route form Kingston upon Hull to London with	1914-1945	BRITISH	315930.7	5941569

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					general cargo.				
8162	327; 441	913082; 1378167		LUCERNE	1931 wreck of an English trawler which foundered off Spurn Head following a collision. This iron steam vessel was built in 1900.	1914-1945	BRITISH	319877.8	5937921
8163	511	1378169		RIVER DON	1931 wreck of a Scottish trawler which foundered 8 miles north east of Spurn Head light vessel following a collision. This steel steam vessel, built 1918, departed from Aberdeen on a fishing and return trip.	1914-1945	BRITISH	318605.1	5949355
8164	355; 620	1378169		RIVER DON (POSSIBLY)	1931 wreck of a Scottish trawler which foundered 8 miles north east of Spurn Head light vessel following a collision. This steel steam vessel, built 1918, departed from Aberdeen on a fishing and return trip.	1914-1945	BRITISH	329708.4	5948475
8165	422; 435	907856		LADAS (POSSIBLY)	SMALL WRECK, POSSIBLY REMAINS OF TRAWLER, 1932	1914-1945	BRITISH	326817.8	5944838
8166	393			LORD HAIG (POSSIBLY)		1914-1945	BRITISH	308596.6	5938336
8167	397; 499	913081		LORD HAIG (POSSIBLY)	REMAINS OF BRITISH SAILING BARGE, 1933	1914-1945	BRITISH	310280.9	5938262
8168	306; 508			NADOD (POSSIBLY)		1914-1945	NORWAY	299803.1	5943681
8169	231; 473	907830		RAYFORD	REMAINS OF BRITISH STEAMER, 1937	1914-1945	BRITISH	325986.3	5938976
8170	381; 600	1381448		KATINA BULGARI	1939 wreck of a Greek cargo vessel which foundered 7 miles south of the River Humber following collision in fog. This steel steam vessel, built in 1912, was en route from Kingston upon Hull to Buenos Aires with coal.	1914-1945	GREEK	335894.5	5940924
8171	30	1381466		GLUCKAUF (POSSIBLY)	1939 wreck of a German cargo vessel which foundered 20 miles north east of	1914-1945	GERMAN	338057.2	5949262

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					Spurn Head after a collision in fog. This steel steam vessel, built in 1912, was en route from Immingham to Rostock with coal.				
8172	218; 514	1381498		GRANGEMOUTH	1939 wreck of a Scottish cargo vessel which foundered 15 miles off Spurn Head following a collision. This steel steam vessel, built in 1908, was en route from Antwerp to Lieth with general cargo.	1914-1945	BRITISH	332631.1	5957773
8173	684	907833		SALTAIRE	REMAINS OF BRITISH STEAM TRAWLER, 1939	1914-1945	BRITISH	308932.2	5940085
8174	225	907891		ORSA	Dispersed remains of 1939 Scottish cargo vessel which foundered 27 miles south of Flamborough Head after detonating a mine. This steel steam vessel, built 1925, was en route from the River Tyne to Bordeaux with coal.	1914-1945	BRITISH	320719.7	5958777
8175	314; 556	913046		DEODATA	POSSIBLE REMAINS OF NORWEGIAN TANKER, 1939	1914-1945	NORWEGIAN	340638.1	5913671
8176	227; 439	907886; 1385741		WHITEMANTLE (POSSIBLY)	1939 wreck of an English cargo vessel which foundered about 5 miles west of Withernsea after detonating a mine. This steel steam vessel, built in 1920, was en route from the River Tyne to London with coal.	1914-1945	BRITISH	316032.8	5958240
8177	169; 172	907884		ALBANIA (BOW SECTION)	REMAINS OF BOW SECTION OF SWEDISH MERCHANT STEAMER, 1939	1914-1945	SWEDISH	322545.9	5957804
8178	276; 434	907840; 908337		ALBANIA (POSSIBLY)	SONAR CONTACT, POSSIBLY SWEDISH STEAMER, 1939	1914-1945	SWEDISH	323873.5	5942317
8179	216; 515	913043		KONSTANTINOS HADJIPATERAS	REMAINS OF GREEK CARGO VESSEL, 1939	1914-1945	GREEK	341068.6	5909389
8180	201; 573	1352099		CAPITAINE EDMOND	FRENCH CARGO VESSEL, 1939	1914-1945	FRENCH	342020.7	5911831

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
				LABORIE					
8181	15	907894		JUNO	SCATTERED REMAINS OF FINNISH STEAMER, 1939	1914-1945	BRITISH	320763.5	5959171
8182	280; 442	907870		CANADA	Remains of 1939 wreck of Danish cargo vessel which foundered 1.75 miles NE of Holmpton after being mined. Bound from Vancouver to Copenhagen and Gothenburg with general cargo, beans, and passengers, she was an engine-driven vessel built of steel.	1914-1945	DANISH	309618.1	5954586
8183	49			SIG		1914-1945	NORWEGIAN	322070.6	5955469
8184	255; 447	907866; 1378185		DRYBURGH	1939 wreck of a Scottish cargo vessel which foundered 0.5 miles north east of Dimlington following a collision. This steel steam vessel, built 1919, was en route from Leith for Antwerp with coal and meat.	1914-1945	BRITISH	310523	5953510
8185	98	907825		DEERPOOL (FOR'D SECTION)	DISPERSED FORWARD SECTION OF VESSEL, 1939	1914-1945	BRITISH	310223.5	5939228
8186	95	907826		DEERPOOL (AFTER SECTION)	DISPERSED AFTER-SECTION OF VESSEL, 1939	1914-1945	BRITISH	310434.4	5939204
8187	194; 437	907868; 1378231		GEORGIOS	1939 wreck of a Greek cargo vessel which foundered 0.5 miles north east of Dimlington after a collision. This steel steam vessel, built in 1939, was en route from Sfax to Aberdeen with esparto grass.	1914-1945	GREEK	309663.5	5954632
8188	318; 451	907849		B O BORJESSON	DISPERSED REMAINS OF VESSEL, PROBABLY SWEDISH STEAMER, 1939	1914-1945	SWEDISH	324233	5942583
8189	336; 588	913054; 943149		RHUYS	REMAINS OF FRENCH MERCHANT STEAMSHIP, 1939	1914-1945	FRENCH	326487.3	5932570

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8190	149	907842		MANGALORE	Remains of 1939 English cargo vessel which foundered in Hawke Roads after detonating a mine. This steel steam vessel, built in 1920, was en route from Calcutta to Tees Bay with general cargo.	1914-1945	BRITISH	306391.8	5941458
8191	84	913065		BOX HILL	Remains of 1939 wreck of British cargo vessel which foundered 8.5 miles ENE of Haile Sand after detonating a mine, bound for Kingston-upon-Hull from St. John, New Brunswick. Laden with wheat, she was a steel screw-driven steamer.	1914-1945	BRITISH	328788.8	5935548
8192	404	1377744		KEYNES	Remains of 1940 wreck of English collier which foundered after gun and bomb action while en route from Southampton to Sunderland in ballast. This steel screw steamer was built in 1915.	1914-1945	BRITISH	351297.3	5952660
8193	102	907854		HMS LUDALADY (?LUDA LADY)	DISPERSED REMAINS OF VESSEL, PROBABLY TRAWLER, 1940	1914-1945	BRITISH	300372	5945139
8194	222; 652	1378245		BRITISH COUNCILLOR	1940 wreck of an English tanker which foundered 11.5 miles east north east of Dimlington High Land Tower after being torpedoed. This steel steam vessel, built in 1922, was en route from the River Tyne to Abadan in ballast.	1914-1945	BRITISH	328530.5	5958322
8195	213; 526	1349570		GIORGIO OHLSEN	ITALIAN CARGO VESSEL, 1940	1914-1945	ITALIAN	376807.2	5907650
8196	319; 533	1349572		BARON AILSA	SCOTTISH CARGO VESSEL, 1940	1914-1945	BRITISH	378263.7	5907057
8197	429; 466	907857		HMS BENVOLIO	1940 wreck of a British trawler which foundered off the River Humber after detonating a mine. This steel steam vessel, built in 1930, was hired by the Admiralty and converted to a minesweeper.	1914-1945	BRITISH	324495.3	5945171

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8198	307; 544	1349573		P.L.M. 25	FRENCH CARGO VESSEL, 1940	1914-1945	FRENCH	379189.8	5908161
8199	259; 540	1383893		CHEVYCHASE	1940 wreck of an English cargo vessel which foundered on the Dudgeon Shoal after detonating a mine. This steel steam vessel, built in 1926, was en route from Blyth to London with coal.	1914-1945	BRITISH	381114.8	5905516
8200	264; 548	1349574		BURGOS	NORWEGIAN CARGO VESSEL, 1940	1914-1945	NORWEGIAN	375671.7	5907061
8201	99	913079		AC 9	POSSIBLE REMAINS OF BARGE, 1940	1914-1945	BRITISH	330040.6	5937296
8202	217; 477	907885		HENRY WOODALL	SMALL, DISPERSED REMAINS OF VESSEL, PROBABLY COLLIER, 1940	1914-1945	BRITISH	307530.8	5958459
8203	365; 444			HMS PRINCESS VICTORIA		1914-1945	BRITISH	324402.6	5937240
8204	305; 476	913063; 943151		CITY OF BIRMINGHAM	REMAINS OF BRITISH CARGO VESSEL, 1940	1914-1945	BRITISH	318143.9	5935916
8205	323; 445	913067; 943155		SALACON	1940 wreck of an English trawler which foundered 5.3 miles off Spurn Head light vessel. This steel steam vessel, built in 1905, departed from Grimsby on a fishing and return trip.	1914-1945	BRITISH	317990.6	5936231
8206	141	913058		HMS DERVISH	POSSIBLE REMAINS OF BRITISH TRAWLER, 1940	1914-1945	BRITISH	327303.2	5933453
8207	203; 440	913061; 943157		GOTHIC	1940 wreck of an English tanker which foundered 1 mile south south west of Chequer Shoal Buoy after being mined. This steel steam vessel, built in 1919, was en route from Immingham to Billingham with creosote.	1914-1945	BRITISH	313234.6	5935736
8208	48			HMS SEA KING		1914-1945	BRITISH	301897.4	5942294
8209	200; 503	907843		RECULVER	Dispersed remains of 1940 wreck of an English Trinity House vessel which	1914-1945	BRITISH	307512.5	5941412

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					foundered 1.5 cables NE of No.1A gas buoy near Spurn Head after detonating a mine, en route from the Humber Lightvessel to Killingholme. Constructed of steel.				
8210	132	1378288		HMS MISTLETOE	1940 wreck of a British fishing vessel which foundered at Bull Sand Fort after detonating a mine. This steel engine vessel, built in 1890, was hired by the Admiralty as a patrol boat.	1914-1945	BRITISH	304553.4	5939769
8211	112	1378288; 907828	MNL1499	HMS MISTLETOE (POSSIBLY)	1940 wreck of a British fishing vessel which foundered at Bull Sand Fort after detonating a mine. This steel engine vessel, built in 1890, was hired by the Admiralty as a patrol boat.	1914-1945	BRITISH	305454.1	5939702
8212	317; 494	1378288		HMS MISTLETOE	1940 wreck of a British fishing vessel which foundered at Bull Sand Fort after detonating a mine. This steel engine vessel, built in 1890, was hired by the Admiralty as a patrol boat.	1914-1945	BRITISH	305482.1	5939716
8213	239; 484	913074; 943152		WINDSOR (PART OF)	POSSIBLE REMAINS OF BRITISH STEAM TRAWLER, 1940	1914-1945	BRITISH	309131.7	5937418
8214	79	913062; 943152		WINDSOR (PART OF)	POSSIBLE REMAINS OF STEAM TRAWLER, 1940	1914-1945	BRITISH	312042.3	5935876
8215	18	943156		BUOYANT	ENGLISH CRAFT, 1940	1914-1945	BRITISH	317199.5	5934405
8216	101	913064; 943153		CARLTON	REMAINS OF BRITISH STEAM TRAWLER, 1940	1914-1945	BRITISH	313888.4	5936166
8217	298; 483	913094; 943154		SAGACITY	1940 wreck of an English cargo vessel which beached on the Bull Sand after detonating a mine. This steel engine vessel, built in 1936, was en route from Kings Lynn to the River Tyne with wheat.	1914-1945	BRITISH	305738.4	5939225
8218	246; 460	907837;		AMENITY	1940 wreck of an English cargo vessel which foundered off Spurn Head after	1914-1945	BRITISH	313204.5	5940099

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
		1380160			detonating a mine and following gun action. This steel engine vessel was en route from Goole to Margate with general cargo.				
8219	173	1380172		HMS GAEL	1940 wreck of a British yacht which foundered north north east of Spurn Head after detonating a mine. This steel steam vessel was hired by the Admiralty.	1914-1945	BRITISH	309033.1	5934419
8220	83	913086		HMML 3 (STERN SECTION)	POSSIBLE REMAINS OF BRITISH MOTOR LAUNCH, 1940	1914-1945	BRITISH	311790.9	5938362
8221	175	1352122		HMS MANX PRINCE	BRITISH TRAWLER, 1940	1914-1945	BRITISH	312513.7	5934310
8222	104			RECONO		1914-1945		306598.9	5940241
8223	68	1352129		HMS CALVERTON	BRITISH TRAWLER, 1940	1914-1945	BRITISH	314561	5934353
8224	106			HMS LORMONT		1914-1945	BRITISH	322149	5938283
8225	129	913084		HMS CORTINA	POSSIBLE REMAINS OF BRITISH TRAWLER, 1940	1914-1945	BRITISH	322427.9	5937887
8226	673			STALKER		1914-1945	BRITISH	304459.6	5944136
8227	163	907836	MNL1502	HMS ST CYRUS	Wreck of a British tug, sunk by a mine off the Humber in 1941. Built in 1919 she was a Saint class vessel and was used as a rescue tug from May 1940. The wreck was dispersed by the Admiralty in 1945.	1914-1945	BRITISH	306089.8	5940387
8228	345	1352132		GWYNWOOD	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	302107.7	5942903
8229	394; 513					1914-1945		338358.4	5958531
8230	273; 505	907841	MNL1490	THOMAS DEAS	Dispersed remains of an English trawler which foundered 4 miles off Spurn Head after being mined. This steel steam vessel departed from Fleetwood on a fishing trip.	1914-1945	BRITISH	302053.6	5941606

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8231	169	907839	MNL1501	HMS REMILLO	1941 wreck of a British trawler which foundered near Spurn Head after detonating a mine. This steel steam vessel, built in 1917, was hired by the Admiralty as a danlayer.	1914-1945	BRITISH	305975	5940878
8232	325; 623			HMS ST DONATS		1914-1945	BRITISH	368552.4	5927209
8233	383; 524	943165; 913035		ANONITY	BRITISH MERCHANT STEAMER, 1941	1914-1945	BRITISH	325752.6	5890902
8234	344; 557	1352139		FLASHLIGHT (PROBABLY)	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	353791.7	5933656
8235	86	1349633		HERPORT	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	372209.1	5899146
8236	388; 497	913060; 943162		DAPHNE II	POSSIBLE REMAINS OF BRITISH STEAMSHIP, 1941	1914-1945	BRITISH	304506.9	5935670
8237	61	1379849		GLOAMING	1941 wreck of a British drifter which foundered off the River Humber after detonating a mine. This wooden engine vessel was built in 1928 and was hired by the Admiralty in 1939 as a patrol boat.	1914-1945	BRITISH	296086.1	5943284
8238	126	907834	MNL1494	JOAN MARGARET	POSSIBLE REMAINS OF BRITISH FISHING VESSEL, 1941	1914-1945	BRITISH	303032.8	5940389
8239	89	913092		HMS LORD SELBORNE	POSSIBLE REMAINS OF TRAWLER, 1941	1914-1945	BRITISH	315099.7	5938663
8240	249; 575	1379868		FERMAIN (POSSIBLY)	1941 wreck of a Channel Islander cargo vessel which foundered off Spurn Head after being bombed. This steel steam vessel, built in 1920, was en route from Sunderland to Cowes with coal.	1914-1945	BRITISH	359909.1	5941758
8241	121	1379972		HMS BAHRAM	1941 wreck of a British drifter which foundered in the north channel of the River Humber after detonating a mine. This steel steam vessel, built in 1924,	1914-1945	BRITISH	308653.9	5942757

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					was hired by the Admiralty as a patrol boat.				
8242	413	943166		AHAMO	BRITISH TANKER, 1941	1914-1945	BRITISH	366910.7	5916001
8243	271; 507	913070		HMS OTHELLO	REMAINS OF ENGLISH TRAWLER, 1941	1914-1945	BRITISH	303902.9	5936949
8244	220	1379986		ROYSTON	1941 wreck of an English cargo vessel which foundered in the River Humber after being bombed. This steel steam vessel, built in 1929, was en route from Hartlepool to London with coal.	1914-1945	BRITISH	345118	5944448
8245	83	913056		HMS SUSARION	REMAINS OF BRITISH TRAWLER, 1941	1914-1945	BRITISH	326029.8	5933421
8246	285; 644	1349659		HMS QUEENWORTH	BRITISH MINESWEEPER, 1941	1914-1945	BRITISH	367815.1	5937108
8247	107			FOWBERRY TOWER (PART OF)		1914-1945	BRITISH	324394.6	5938524
8248	166	913090		FOWBERRY TOWER (PART)	REMAINS OF BRITISH STEAMSHIP, 1941	1914-1945	BRITISH	324709.3	5938080
8249	191; 467	913093		FOWBERRY TOWER (PART)	REMAINS OF BRITISH CARGO VESSEL, 1941	1914-1945	BRITISH	324453.9	5938398
8250	93	913087		FOWBERRY TOWER (PART)	REMAINS OF BRITISH STEAM VESSEL, 1941	1914-1945	BRITISH	324991.7	5937976
8251	170			NAUTILUS		1914-1945	DUTCH	330220.6	5943048
8252	279			HMS FLEET TENDER C (EX-MAMARI III)		1914-1945	BRITISH	366910.7	5916001
8253	372; 554			HMS PINTAIL		1914-1945	BRITISH	359220.8	5930987
8254	391; 578			ROYAL SCOTT		1914-1945	BRITISH	359527	5931123
8255	379; 541	1352164		SCHIELAND	DUTCH CARGO VESSEL, 1941	1914-1945	DUTCH	367187.5	5907043

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8256	143	913072		HMS STRATHBORVE	POSSIBLE REMAINS OF BRITISH TRAWLER, 1941	1914-1945	BRITISH	321171.6	5936573
8257	138	913073		REMAINS OF BOILER-POSSIBLY FROM THE STRATHBORVE, 1941		1914-1945	BRITISH	321235.9	5936818
8258	309; 562	907853; 1380393		OPHIR II (POSSIBLY)	1941 wreck of an English trawler which foundered 4 miles north east of the River Humber light vessel after being bombed. This steel steam vessel, built in 1906, was en route from Grimsby to Scotland.	1914-1945	BRITISH	329097.3	5943795
8259	100	913047; 1455294		HMS CORFIELD	Possible remains of 1941 wreck of British minesweeper which foundered in a position 1 mile NE of the Saltfleet Overfalls after being mined. This wreck was dispersed in the post-war period, but her identity is not clearly confirmed. See TF 59 SW 8 .	1914-1945	BRITISH	321725.1	5925571
8260	320; 594	1380420		VECHSTROOM	1941 wreck of a Dutch cargo vessel which foundered 17.5 miles north east of Spurn Head lighthouse after being attacked by aircraft. This steel steam vessel, built in 1918, was en route from Goole to London with coal.	1914-1945	DUTCH	339416.5	5955679
8261	295; 627	913078		KYMA	REMAINS OF GREEK CARGO VESSEL, 1941	1914-1945	GREEK	328265.3	5937098
8262	414; 629			MARIE DAWN		1914-1945	BRITISH	342396.6	5930652
8263	106			MARIE DAWN		1914-1945	BRITISH	342012.1	5931314
8264	316; 583	1349673		BRYNMILL (POSSIBLY)	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	359816.2	5909914
8265	235; 523	1352183		CORMARSH	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	370329.1	5903710
8266	428; 543	1349692		EMPIRE NEWCOMEN	BRITISH CARGO VESSEL, 1941	1914-1945	BRITISH	368884.6	5902745

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8267	232; 565	1352192		WELSH PRINCE	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	365553.3	5917709
8268	211; 537	1456747; 1349703		FIREGLOW	Possible remains of 1941 wreck of English collier which foundered east of the Dudgeon Shoal after striking a mine. If the FIREGLOW, she was a steel-built steamer; however, the identity of this site is not certain, since another site has also been claimed.	1914-1945	BRITISH	372448.7	5908430
8269	97	1352203		DROMORE CASTLE	ENGLISH CARGO VESSEL, 1941	1914-1945	BRITISH	358759.7	5929146
8270	189; 572	1347584; 942992		BENMACDHUI	Possible remains of 1941 wreck of British cargo vessel, located approximately 12 miles ENE of Kilnsea. If the BENMACDHUI, she was a steamer, built of steel, which foundered after being mined en route from London and Immingham for Hong Kong.	1914-1945	BRITISH	335168.8	5949641
8271	425; 611	913068; 943167		STYLIANOS CHANDRIS	REMAINS OF GREEK STEAMSHIP, 1941	1914-1945	GREEK	335310.9	5935548
8272	303	913066; 943169		HMS HENRIETTE	POSSIBLE REMAINS OF BRITISH TRAWLER, 1941	1914-1945	BRITISH	310517.4	5936463
8273	134	1352207		HMS LOCH ALSH	BRITISH TRAWLER, 1942	1914-1945	BRITISH	365221.1	5921629
8274	186; 589	1352220		HMS CAPE SPARTEL (PROBABLY)	ENGLISH TRAWLER, 1942	1914-1945	BRITISH	356476	5928611
8275	250; 626	1380712		CORLAND	1942 wreck of an English collier which foundered 2.5 miles north of No 62 buoy near Spurn Head after being bombed. This steel steam vessel, built in 1917, was en route from Blyth to London with coal.	1914-1945	BRITISH	344030.6	5952679
8276	123	913085; 1385772		AUDACITY	POSSIBLE REMAINS OF BRITISH STEAM TANKER, 1942	1914-1945	BRITISH	325985.4	5937723

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8277	373; 605	1352224		CHATWOOD (POSSIBLY)	ENGLISH CARGO VESSEL, 1942	1914-1945	BRITISH	366710.6	5910519
8278	359	907824		JOHN MOWLEM	SONAR CONTACT, PROBABLY REMAINS OF BRITISH TUG, 1942	1914-1945	BRITISH	306551.2	5939434
8279	333; 532	913040		ARDUITY	Remains of 1942 wreck of English cargo vessel which capsized and foundered after being mined en route from Keadby to Cantley and/or Ipswich with coal. The wreck was dispersed in the post-war period. Constructed of steel, she was an engine-driven vessel.	1914-1945	BRITISH	327040.4	5904373
8280	193; 576	913076		IGHTHAM (POSSIBLY)	REMAINS OF BRITISH MERCHANT STEAMSHIP, 1942	1914-1945	BRITISH	331970.4	5936670
8281	310	1380766		CATFORD	1943 wreck of a British cargo vessel which foundered 11.5 miles north east of the River Humber light vessel after detonating a mine. This steel steam vessel, built in 1919, was en route from London to the River Tyne in ballast.	1914-1945	BRITISH	347057.5	5946982
8282	118	907848		TEANO	DISPERSED REMAINS OF BRITISH COASTER, 1943	1914-1945	BRITISH	303606.8	5943088
8283	297; 528	913038; 943173		TUNIS	POSSIBLE REMAINS OF BARGE, 1944	1914-1945	BRITISH	333038.2	5891849
8284	335; 517	913039; 943171		LCT(4) 1029	REMAINS OF BRITISH LANDING CRAFT TANK, 1944	1914-1945	BRITISH	330351.8	5894727
8285	288; 535	1380778		HMS CAP D'ANTIFER	1944 wreck of a Belgian trawler which foundered off the River Humber after being torpedoed. This steel steam vessel, built in 1920, was taken into the Royal Navy in 1940 and became a minesweeper.	1914-1945	BRITISH	373897.1	5906505
8286	313; 617	913050		RAVONIA (PART) (POSSIBLY)	POSSIBLE REMAINS OF VESSEL, 1944	1914-1945		328092.6	5929820

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8287	139	913051; 943172		RAVONIA (PART)	POSSIBLE REMAINS OF VESSEL, 1944	1914-1945		328482.6	5930920
8288	28			SVERRE		1914-1945	BRITISH	355520.1	5886542
8289	132			DALEMOOR		1914-1945	BRITISH	355627.3	5915851
8290	366; 581	1352236		CARRIER	NORWEGIAN CARGO VESSEL, 1945	1914-1945	NORWEGIAN	365803.9	5914795
8291	165; 614			LA COMBATTANTE (STERN SECTION)		1914-1945	FRENCH	368712.2	5915382
8292	272	913088		RIVER WITHAM	REMAINS OF BRITISH COASTER, 1945	1914-1945	BRITISH	310914.9	5938552
8293	512					1914-1945		333071.6	5957324
8294	99	907844	MNL1486	MANORBIER CASTLE	SALVAGED REMAINS OF STEAM TRAWLER, 1920	1914-1945	BRITISH	298790.7	5941961
8295	158	907845	MNL1489	LORD DE RAMSEY, HER wreck site W45	POSSIBLE REMAINS OF STEAM TRAWLER, 1923	1914-1945	BRITISH	300219.8	5941808
8296	147			TREFUSIS		1914-1945	BRITISH	308131.1	5940798
8297	137					1914-1945		377538.5	5900768
8298	196; 461	913095		SALMONDBY	VESSEL LOST IN 1926	1914-1945		316596.3	5937619
8299	66			SERVICE		1914-1945	BRITISH	298550.2	5941507
8300	77			AUTUMN		1914-1945	?BRITISH	321838.6	5945456
8301	666			RINTO		1914-1945	?BRITISH	299125.1	5942039
8302	117	913208			Possible remains of 1917 wreck of sailing vessel, located approximately 1 mile north of the Inner Dowsing Buoy. In this offshore position, the vessel concerned would certainly have foundered; the date of loss and her position in a known minefield may	1914-1945		338440	5912972

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					indicate a mine-strike.				
8303	34			HMS SHERWOOD		1914-1945	BRITISH	307989.6	5933224
8304	340			VICTORIA		1914-1945	DANISH	348341.5	5922231
8305	87			HMS SHERWOOD (POSSIBLY)		1914-1945	BRITISH	307986.3	5933162
8306	141			DEE		1914-1945		302983.9	5941846
8307	133					1914-1945	?DANISH	387209	5909804
8308	129			GIRL KITTY		1914-1945	BRITISH	317831.3	5925873
8309		1525171		GLADETO	The possible remains of the 1975 wreck of an English fishing vessel which stranded on the sand at Saltfleet. Built of wood, she was an engine-driven vessel. Because this newly discovered and uncharted wreck has not been positively identified, documentary research is advised.	post 1946		315771.2	5921407
8310		1483260			Remains of 19th-century fishing vessel, buried in foreshore. Located during survey in 1997.	post 1946		317785.1	5914528
8311	368; 577	1525179		VIRGINIAN	Intact wreck of an English steam trawler and former British WW1 minesweeper built in Beverley, in 1906. She foundered in 1946 some 27 miles ENE of Spurn Head while on a fishing voyage.	post 1946	BRITISH	355425.1	5950273
8312	80			VASCO		post 1946		314765.1	5935274
8313	424; 625			ANDARINA		post 1946	SPANISH	366693.2	5939737
8314	86			CONNI		post 1946		307756.5	5938338
8315	1			BJERGBOEN		post 1946	DANISH	303598	5941140

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8316	348; 489			WILLIAM HANSON		post 1946		306259.6	5941090
8317	88			CAWARSAND		post 1946	BRITISH	312379.5	5936480
8318	97					post 1946		287920.6	5949185
8319	371			ZOR		post 1946	TURKISH	370032.5	5915560
8320	247			W F VINT		post 1946	BRITISH	369782.5	5922307
8321	378; 646	1525157		RIVERGATE	Partially broken 1959 wreck of an English steel barge which capsized and foundered in heavy weather 10.2 miles NE of Mogg's Eye. She'd been en route from London to Goole with a cargo of scrap iron. Built of steel in Hamburg in 1922, she was an engine driven vessel.	post 1946	BRITISH	335222.3	5914659
8322	332; 608	1525240		REVELLO	Intact wreckage of an English steam trawler which foundered some 13.1 miles ENE of Kilnsea after springing a leak in heavy weather. She had served as a minesweeper in both WW1 and WW2, and had been built of steel in Beverley, in 1908.	post 1946	BRITISH	334625.6	5951948
8323	17			JANET HELEN		post 1946	BRITISH	328385.2	5957029
8324	387			JANET HELEN (POSSIBLY)		post 1946	BRITISH	331003.9	5956903
8325	677			BULKSTAR		post 1946		288589.2	5948070
8326	137	1525257		J H FISHER	Dispersed wreckage of a pilot cutter which foundered 2.6 miles SSE of the Spurn Point beacon following a collision with a tanker while on her way from the Humber. Built of steel in 1931, she was a steam driven vessel.	post 1946	BRITISH	309200.7	5935805
8327	153			NOORDERBLIK		post 1946	BELGIAN	338520.8	5914267

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8328	223; 492			ZEEMERMIN		post 1946	?BRITISH	307548.9	5939520
8329	128			LINDY SUE		post 1946	BRITISH	343403.7	5911970
8330	679			ANZIO 1		post 1946	BRITISH	313050.3	5928191
8331	25			PESHELO (GY364)		post 1946	BRITISH	326463.7	5949676
8332	346; 654			LIGHTSHIP NO 83		post 1946	BRITISH	341274	5957998
8333	370; 621			SEA PEARL		post 1946	BRITISH	342446.4	5954124
8334	38					post 1946		339184.6	5951079
8335	243; 612			MATANUSKA (PROBABLY)		post 1946	BRITISH	343217.8	5930656
8336	230; 637			SHEPHERD LAD		post 1946	BRITISH	352464.2	5933636
8337	143			ENTERPRISE		post 1946	BRITISH	315389.2	5937105
8338	339; 568	1525162		AMELIE-MATHILDE	Scattered 1972 wreckage of a Belgian trawler which sprang a leak in her engine room and foundered 9.5 miles NNE of Mogg's Eye. She had been en route from Belgium on a fishing voyage. Built of steel in Ostend in 1936, she was an engine driven vessel.	post 1946	BELGIAN	332815	5916181
8339	72			WHITE KNIGHT (POSSIBLY)		post 1946	BRITISH	331816.5	5950409
8340	252			VENTURE		post 1946	BRITISH	316259.6	5929647
8341	114			XAVIER		post 1946	?BRITISH	310796.9	5939298
8342	384; 488			AVALON		post 1946	BRITISH	310537.2	5938142
8343	85			LINDA MARIE		post 1946	BRITISH	309436.2	5937528
8344	11			SEA TRIUMPH		post 1946	BRITISH	304461.2	5937546

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8345	219			SIOUX (PROBABLY)		post 1946	BRITISH	368282.2	5941981
8346	16			SIOUX		post 1946	GERMAN	368353.9	5938670
8347	122			ARCONA CHAMPION		post 1946	BRITISH	297431.1	5944371
8348	356; 493	1525352		FEMKE	A Greek-registered cargo coaster which foundered 1.3 miles SW of spurn head after a collision with another vessel, while en route from Antwerp to Selby with a cargo of Calcium Carbonate. Built of steel in Bergum in 1957, she was a diesel-engined vessel.	post 1946	CYPRUS	305005.1	5937181
8349	420; 502			BREITENBURG		post 1946	WEST GERMAN	304709.9	5935064
8350	262	1525347		REVI	Broken up remains of a Panamanian cargo coaster which capsized and foundered 9.4 miles ENE of Kilnsea after her cargo shifted in rough seas, while en route from Rouen to the Tyne. Built of steel in Ruisbroek in 1967 she was powered by a diesel engine.	post 1946	PANAMANIAN	327085.7	5949128
8351	403; 604			SIRI MARIA		post 1946	DANISH	362267.4	5936217
8352	116			LADY DINAH		post 1946	BRITISH	299661.2	5940780
8353	362			SARAH VISHOLM		post 1946	BRITISH	328244.2	5941089
8354	37					post 1946		364511	5912251
8355	89			HEART OF GOLD		post 1946	BRITISH	307886.8	5940189
8356	284; 472			ELO		post 1946	BRITISH	322083.2	5940954
8357	408; 522			MIRABEL		post 1946	BRITISH	355699.4	5896184
8358	192; 516			CLAVIS		post 1946	BRITISH	344311.5	5900622
8359	208; 458			CA NE FAIT RIEN		post 1946	BRITISH	325557.2	5940059

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8360	292; 559			PETROSWIFT		post 1946	BRITISH	348474.3	5928134
8361	682			NIMROD		post 1946	BRITISH	312852	5926067
8362	168; 458			SARAH VISHOLM 2 (PROBABLY)		post 1946	BRITISH	312174.1	5938165
8363	407			DIANA		post 1946	BRITISH	324794	5959018
8364	221			GOLDBELL		post 1946		293375	5947363
8365	100			LIFTING LIGHTER NO 8		post 1946		297224.2	5941502
8366	650; 385	907862		COOK S26	REMAINS OF SALVAGED BARGE	post 1946		288123.8	5949407
8367	8			DUTCH MASTER		post 1946	DUTCH	306980.9	5939670
8368	308			CHEQUER NO3 LT FLOAT		post 1946		313488.2	5937489
8369	74					post 1946		300425.5	5940128
8370	670; 691			GEORGIE		post 1946		308095.5	5933090
8371			MHU2655		Findspot of a complete dugout canoe, 12' long and 4' wide, was recorded in lacustrine deposit about fifty yards south-east of the site of St Peter's Church in 1785. A second smaller canoe was allegedly found some sixty years earlier.	pre-1508		304344.1	5957944
8372			MHU19596		Fragment of a Bronze Age plank boat dated to 1870-1670 BC found on Kilnsea Beach.	pre-1508		311011.8	5945844
8373	485; 287	907822	MNL1495	YORKSHIRE BELLE	PROBABLE REMAINS OF BRITISH BOOM TENDER, 1941	Unknown	BRITISH	303429.7	5937093
8374	23			MIZPAH		Unknown		288492	5951233

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8375	665					Unknown		290070	5946668
8376	656, 674	908340	MNL1473	Maritime Wreck Site W26 Seazone 665&674	POSSIBLE REMAINS OF STRANDED VESSEL	Unknown		290095.7	5946676
8377	258; 432					Unknown		294011.2	5945703
8378	672; 708	908328	MNL1479	Maritime Wreck Site W33 Seazone 708	PROBABLE REMAINS OF STRANDED VESSEL	Unknown		295724.6	5941722
8379	669					Unknown		295741.4	5941690
8380	662; 707					Unknown		296030.9	5941785
8381	681; 657	908333	MNL1481	Maritime Wreck Site W35 Seazone 657 and 681	PROBABLE REMAINS OF STRANDED VESSEL	Unknown		296170.1	5941827
8382	680					Unknown		296379.6	5941212
8383	678; 701			COASTAL FORT NO-1		Unknown		297268.2	5946359
8384	98			ESSEX		Unknown	BRITISH	297032.7	5941716
8385	20	908325			UNIDENTIFIED FEATURE, The wreck of a vessel of unknown date is visible as a structure on air photographs.	Unknown		297223	5941471
8386	183					Unknown		297672.4	5945691
8387	52			BRASH		Unknown		299141.2	5942411
8388	69			MINING LIGHTER NO 50		Unknown		300361.2	5945143
8389	21			GADRA		Unknown		300469.5	5942478
8390	125			BOWPRIDE		Unknown	BRITISH	300936.4	5942644
8391	82			ST HILDA		Unknown		300868.7	5941482
8392	334; 481		MNL1491	Maritime Wreck Site W47 Seazone 334		Unknown		302551.6	5942514

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8393	683; 702					Unknown		302374.6	5936818
8394	687; 700					Unknown		302419.2	5936825
8395	184; 491					Unknown		303852.7	5944218
8396	659	913226			REMAINS OF VESSEL	Unknown		303586.7	5935988
8397	699					Unknown		303586.8	5935990
8398	663					Unknown		303622.5	5936099
8399	688; 698	913224			POSSIBLE REMAINS OF VESSEL	Unknown		304035.7	5935243
8400	114	907823	MNL1496	MEROR	SALVAGED REMAINS OF VESSEL	Unknown	BRITISH	304499.3	5938472
8401	267; 487					Unknown		304678.6	5939439
8402	686; 694	913223			POSSIBLE REMAINS OF VESSEL	Unknown		304900.6	5934554
8403	386; 495	913237			REMAINS OF VESSEL	Unknown		305211.8	5938752
8404	685; 692	913222			POSSIBLE REMAINS OF VESSEL	Unknown		305089	5934409
8405	668; 693	913221			POSSIBLE REMAINS OF VESSEL	Unknown		305568.3	5934195
8406	658; 690	913220			POSSIBLE REMAINS OF VESSEL	Unknown		306052.3	5934077
8407	498					Unknown		306540.7	5939441
8408	131	908349			PROBABLE REMAINS OF MERCHANT VESSEL	Unknown		308087.2	5954104
8409	374					Unknown		307491.1	5940466
8410	500					Unknown		307497.4	5940469
8411	369	913234			REMAINS OF VESSEL	Unknown		307736.4	5938308
8412	689; 695					Unknown		308312	5945393

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8413	302; 468	908348			REMAINS OF VESSEL, COMPLETE WITH BACK BROKEN	Unknown		308932.7	5952770
8414	454					Unknown		309216.3	5951272
8415	490					Unknown		308596.9	5938340
8416	33			DAY DREAM		Unknown		308698.5	5939784
8417	703	913219			POSSIBLE REMAINS OF VESSEL	Unknown		308247.5	5933213
8418	675; 696					Unknown		308924.6	5940005
8419	671; 697					Unknown		309369	5945053
8420	667	908335			PROBABLE REMAINS OF A BARGE	Unknown		309327.3	5942110
8421	50					Unknown		309344.4	5942110
8422	63					Unknown		309237.4	5939791
8423	299; 480					Unknown		310116.5	5937949
8424	197; 509	913229			REMAINS OF VESSEL	Unknown		310243.2	5936072
8425	496; 395	913238			POSSIBLE REMAINS OF VESSEL	Unknown		310921.7	5938734
8426	395					Unknown		310921.8	5938736
8427	93					Unknown		310924.1	5937870
8428	62	908324			POSSIBLE REMAINS OF VESSEL	Unknown		311192.8	5939994
8429	324; 452	913236			POSSIBLE REMAINS OF VESSEL	Unknown		312320	5938215
8430	455					Unknown		312408.4	5937077
8431	400					Unknown		312412.9	5937070
8432	53					Unknown		311820.2	5927965

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8433	160					Unknown		314905.1	5950117
8434	57			WHINSTONE		Unknown	?BRITISH	314400.8	5926007
8435	462; 296	908334			SONAR CONTACT, PROBABLE REMAINS OF VESSEL	Unknown		315937.6	5941723
8436	60			C AND E W		Unknown		316042.3	5939678
8437	75					Unknown		316297.7	5936423
8438	705					Unknown		315586.3	5922271
8439	35					Unknown		318537.1	5956131
8440	163; 175	908354			REMAINS OF SMALL TRAWLER	Unknown		319462.4	5957766
8441	661; 704	913212			REMAINS OF NORWEGIAN FISHING VESSEL	Unknown	NORWEGIAN	316949.7	5917370
8442	510					Unknown		319858.3	5949924
8443	448					Unknown		320716.1	5958769
8444	416; 459					Unknown		320769	5958666
8445	470					Unknown		321656.6	5959012
8446	10			HARWICH		Unknown	BRITISH	319882.3	5933219
8447	343; 438					Unknown		320215	5936129
8448	311; 469	907865		GIUSEPPE	REMAINS OF CRAFT	Unknown	?ITALIAN	322048.5	5950914
8449	45	908344			POSSIBLE REMAINS OF VESSEL	Unknown		323326.6	5948834
8450	164; 176					Unknown		322903.1	5918288
8451	65					Unknown		322790.2	5892280
8452	124					Unknown		323015.5	5891344

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8453	599					Unknown		327098.6	5949140
8454	21	913199			POSSIBLE REMAINS OF AMPHIBIOUS VEHICLE-DUKW	Unknown		324151.2	5895941
8455	312					Unknown		328549	5955981
8456	570					Unknown		328560.2	5955984
8457	117					Unknown		325932.6	5914027
8458	140					Unknown		326104.4	5902116
8459	96	913214			REMAINS OF VESSEL	Unknown		327572.8	5918549
8460	553					Unknown		330978.6	5956871
8461	283; 631					Unknown		330670.5	5952214
8462	6					Unknown		331114.7	5958446
8463	103					Unknown		331708.8	5955084
8464	123	913207			POSSIBLE REMAINS OF VESSEL	Unknown		329216.1	5907139
8465	418; 560					Unknown		332568.5	5949756
8466	354; 610					Unknown		330614.6	5920110
8467	349; 587					Unknown		332446.2	5945513
8468	17	913200			POSSIBLE REMAINS OF AMPHIBIOUS VEHICLE-DUKW	Unknown		329096.7	5897061
8469	112	913203			POSSIBLE REMAINS OF VESSEL	Unknown		329938.5	5904516
8470	291; 616					Unknown		331471.7	5918224
8471	54					Unknown		334327.6	5938258
8472	115			WHITE ROSE		Unknown	BRITISH	337229.2	5954826

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8473	75	913218			POSSIBLE REMAINS OF VESSEL	Unknown		335829.7	5931648
8474	56	913036; 943173		TUNIS (POSSIBLY)	REMAINS OF VESSEL	Unknown		333256.6	5891718
8475	603					Unknown		337599.8	5953171
8476	108					Unknown		336318.2	5927116
8477	101	913217			POSSIBLE REMAINS OF TWO VESSELS	Unknown		336357.7	5926650
8478	26	913198			REMAINS OF STEAMSHIP	Unknown		334169.5	5888532
8479	329; 574					Unknown		338615.2	5951037
8480	9					Unknown		339606.9	5955921
8481	44					Unknown		341111.7	5951570
8482	122	892348			UNIDENTIFIED WRECK OR OBSTRUCTION	Unknown		336933.7	5888282
8483	187					Unknown		340770.9	5927830
8484	269	913206			REMAINS OF DISPERSED VESSEL	Unknown		339333.3	5906539
8485	238; 571					Unknown		340708.7	5913019
8486	423; 542					Unknown		340535.3	5908387
8487	367; 567					Unknown		342610	5935129
8488	341; 639					Unknown		341673	5916420
8489	161; 177					Unknown		343414	5921247
8490	597					Unknown		345120.8	5944432
8491	624					Unknown		346183	5947233

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8492	204					Unknown		346201.6	5947226
8493	405; 561					Unknown		345523.8	5936610
8494	538					Unknown		343738.2	5906346
8495	633					Unknown		347069.3	5946979
8496	655					Unknown		346464.7	5937846
8497	130					Unknown		346458.4	5936487
8498	229; 525					Unknown		345603	5909270
8499	55					Unknown		348138.3	5921094
8500	607					Unknown		348328.2	5922228
8501	638					Unknown		351303.1	5952643
8502	64	892359			Unidentified obstruction located towards the northern end of the Docking Shoal, possibly indicative of wreckage or of a submerged natural feature. There is no information as to dating, except that the obstruction was first reported 1915.	Unknown		348028.3	5900225
8503	153			SCOTIA (POSSIBLY)		Unknown		354002	5944597
8504	157					Unknown		353463.9	5932058
8505	402; 569					Unknown		353922.1	5933714
8506	207					Unknown		352602.2	5910131
8507	59			OTTER		Unknown	BRITISH	355311.2	5938217
8508	342; 591					Unknown		354101.8	5919778
8509	351; 579					Unknown		356494.7	5951044

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8510	199; 534					Unknown		354687.4	5904130
8511	358; 590					Unknown		356303.6	5925957
8512	392; 601					Unknown		356582.4	5926644
8513	412; 555					Unknown		358290.3	5930382
8514	281; 592					Unknown		358348.7	5925849
8515	390; 635					Unknown		358641.6	5929505
8516	377; 613					Unknown		357948.6	5915581
8517	261; 636					Unknown		359669.3	5929041
8518	321; 647					Unknown		359514.2	5926618
8519	582					Unknown		358547	5910009
8520	300					Unknown		358560.3	5910012
8521	256; 546					Unknown		359385.1	5904392
8522	214; 566					Unknown		360753.7	5922934
8523	212; 530					Unknown		359374.8	5895858
8524	364; 584					Unknown		360439.6	5910328
8525	270; 539					Unknown		360132.7	5895403
8526	406; 536					Unknown		361166.6	5907632
8527	289; 547					Unknown		361190.4	5900505
8528	188; 606					Unknown		365544.9	5931731
8529	417; 622					Unknown		367649.8	5947006
8530	228					Unknown		367803.9	5938686

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8531	634					Unknown		368298	5941978
8532	338; 527					Unknown		365686	5899758
8533	596					Unknown		366897.2	5915994
8534	224; 642					Unknown		367948.5	5909093
8535	237; 545					Unknown		367349	5899835
8536	360; 586					Unknown		368113.3	5910372
8537	205; 598					Unknown		368597.2	5912785
8538	427; 643					Unknown		369595.2	5918169
8539	628					Unknown		370019.8	5915551
8540	162; 178					Unknown		372166.4	5922019
8541	206; 521					Unknown		371624.5	5908437
8542	640					Unknown		372571.4	5909667
8543	380					Unknown		372583.1	5909662
8544	357; 551					Unknown		378455.5	5919264
8545	215; 550					Unknown		377305.7	5902537
8546	263					Unknown		385544.4	5909843
8547	109					Unknown		386676.7	5910744
8548	330; 431					Unknown		389757.5	5931847
8549		908347	MLS21166		POSSIBLE WRECK, SOUTH OF EAST HALTON SKITTER	Unknown		285193.5	5953081
8550			MLS21167		POSSIBLE WRECK	Unknown		285188.9	5952958

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8551			MLS21168		POSSIBLE WRECK	Unknown		285768.2	5951972
8552			MNL1474	Maritime Wreck Site W27		Unknown		290151.5	5947256
8553			MNL1475	Maritime Wreck Site W28		Unknown		290527.4	5947425
8554		908339	MNL1477	Maritime Wreck Site W31 Seazone 258	REMAINS OF WOODEN VESSEL	Unknown		293984.8	5945741
8555		1449994			The wreck of a vessel of unknown date is visible as a structure on air photographs.	Unknown		295962.8	5941017
8556		908332	MNL1480	Maritime Wreck Site W34 Seazone 707 and 662	PROBABLE REMAINS OF STRANDED VESSEL	Unknown		296040.8	5941799
8557		1449995			The wreck of a vessel of unknown date was documented from aerial photographs dating to 1945. An analysis of hydrospatial data in 2009 provides no evidence for the remains of this wreck.	Unknown		296010.6	5940984
8558		1449996			The wreck of a vessel of unknown date was documented from aerial photographs dating to 1945. An analysis of hydrospatial data in 2009 provides no evidence for the remains of this wreck.	Unknown		296049.1	5940961
8559		1451978			The wreck of a vessel of unknown date was documented from aerial photographs dating to 1989. An analysis of hydrospatial data in 2009 provides no evidence for the remains of this wreck.	Unknown		296095.3	5941048
8560	706; 660	908331	MNL1482	Maritime Wreck Site W36 Seazone 660 and 706	PROBABLE REMAINS OF STRANDED VESSEL	Unknown		296167.6	5941762
8561		1449999			The wreck of a vessel of unknown date was documented from aerial photographs dating to 1957. An	Unknown		296121.7	5940996

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
					analysis of hydrospatial data in 2009 provides no evidence for the remains of this wreck.				
8562		81409			?Ne Tree-trunk burial	Unknown		296146.6	5940089
8563			MNL1484		Probable Fishing Trawler	Unknown		297204.6	5941486
8564		1448542			The wreck of a probable twentieth century craft is visible as a structure partially submerged in mud below the mean high water mark on air photographs.	Unknown		297615.4	5946406
8565		908330	MNL1485	Maritime Wreck Site W38	REMAINS OF VESSEL	Unknown		297436.2	5941708
8566		1450012	MNL2082		The wreck of a vessel of unknown date is visible as a structure on air photographs	Unknown		297983.9	5940955
8567		1448546			The wreck of a probable twentieth century craft is visible as a structure partially submerged in mud between the mean low and high water lines.	Unknown		298504.4	5946784
8568		1448551			The wreck of a probable twentieth century craft is visible as a structure partially submerged in mud just below the mean high water line.	Unknown		298767.2	5946956
8569		907850	MNL1487; MNL1483	Maritime Wreck Site W42 Same as 41 Seazone NADOD and 508	FOUL, POSSIBLY REMAINS OF DISPERSED VESSEL	Unknown		299784	5943680
8570			MNL1488	Maritime Wreck Site W43		Unknown		299944.3	5941384
8571			MNL1444		Wreck Site on Cleethorpes Foreshore	Unknown		301674.7	5937388
8572			MNL2083		Wreck on Cleethorpes Foreshore	Unknown		301812.8	5937127
8573		908336			POSSIBLE REMAINS OF VESSEL	Unknown		302533.5	5942527
8574		908482	MNL1492;	Maritime Wreck Site W48	REMAINS OF WOODEN CARGO	Unknown		302366.9	5936795

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
			MNL1493	Seazone 683 and 702	VESSEL, PROBABLY BARGE				
8575		908319			REMAINS OF WOODEN VESSEL, PROBABLY SAILING VESSEL	Unknown		302442.1	5936822
8576			MNL1493	Maritime Wreck Site W48 Seazone 683 and 702		Unknown		302469	5936820
8577		1451886			Two potential wrecks of a vessel of unknown date are visible as structures on air photographs.	Unknown		303104.2	5933917
8578		913228			POSSIBLE REMAINS OF VESSEL	Unknown		303629.3	5936123
8579		1450232			The wreck of a post medieval or twentieth century wooden vessel is visible on air photographs.	Unknown		303543.8	5934037
8580		1450237			The possible wreck of a post medieval or twentieth century wooden vessel is visible on air photographs.	Unknown		303701.5	5934427
8581		1450238			The possible wreck of a post medieval or twentieth century wooden vessel is visible on air photographs.	Unknown		303722	5934576
8582			MNL1497	Maritime Wreck Site W54 Seazone 267		Unknown		304706.5	5939451
8583		907829	MNL1500	MISTLETOWE	POSSIBLE REMAINS OF VESSEL	Unknown		305492	5939728
8584		1450330			The wreck of a wooden vessel and other unknown wooden structural remains, probably of post medieval or 20th century are visible on air photographs.	Unknown		305519.8	5934048
8585			MNL1505	Maritime Wreck Site W63		Unknown		306459.8	5939332
8586		1450327			The wreck of a wooden vessel is visible on air photographs.	Unknown		306119.4	5933876
8587		1448241			The wrecks of vessels of uncertain date are visible on air photographs.	Unknown		307230.3	5946962

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8588		1450352			The wreck of a large twentieth century steel vessel is visible on air photographs.	Unknown		307981.8	5933554
8589		1406919		BUSY	1830 wreck of British brig which stranded on Haile Sand en route from London to Sunderland in ballast; a wooden sailing vessel.	Unknown		308171.2	5933681
8590		1524225	MHU19798		Boat situated approximately 30m seawards of the Old Boiler at Spurn Head. The boat was probably a Collier, as there is the crust of what appears to be coal dust. The wreck is only exposed at a 'High Water Spring' low tide.	Unknown		309115.1	5940262
8591		908321			POSSIBLE REMAINS OF SCHOONER	Unknown		309123.6	5939827
8592		1450369			The wreck of a wooden vessel is visible on air photographs.	Unknown		308862.1	5932099
8593		1450370			The wreck of a wooden vessel is visible on air photographs.	Unknown		309233.6	5931822
8594		1521934			Romano-British vessel (Kilnsea-5), found in the early 20th century, and now in Hull and East Riding Museum.	Unknown		310310.7	5945141
8595		1450373			The wreck of a post medieval or twentieth century wooden vessel is visible on air photographs.	Unknown		309607.5	5931435
8596		913233			REMAINS OF VESSEL	Unknown		310115.3	5937931
8597		1451870			The possible wreck of a post-medieval or twentieth century vessel is visible on air photographs.	Unknown		309930.6	5929326
8598		1450374			The wreck of a post medieval or twentieth century wooden vessel is visible on air photographs.	Unknown		310210.7	5931172

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8599		1450377			The wreck of a post medieval or twentieth century wooden vessel is visible on air photograph.	Unknown		310205.9	5930961
8600		1523746	MHU20110		Ship's Futtock, Spurn. A single ship¿s timber was recovered from the Foreshore at Spurn in 2003. The timber was a futtock, one of the separate timbers which compose the frame, from a wooden sailing vessel.	Unknown		311334.6	5943164
8601		913231			REMAINS OF VESSEL	Unknown		312827.9	5937111
8602		913216			REMAINS OF WOODEN STEAMSHIP	Unknown		314919.6	5922272
8603		1027991			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		320844.1	5956901
8604		1027993			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		320991.7	5958284
8605		913232			POSSIBLE REMAINS OF VESSEL	Unknown		319486.9	5936851
8606			MLI97886		Wreck of a boat on the foreshore, Mablethorpe	Unknown		318066.7	5914079
8607		1483285	MLI43426		The remains of a ship are visible, mostly buried in sand, on the beach at Mablethorpe, possibly the Stavanger, a Norwegian vessel, brought in for scrapping. The gazetteer dates the wreck as early modern.	Unknown		318156.2	5913530
8608			MLI43425		The wreck of a boat on the foreshore, Mablethorpe	Unknown		318159.2	5913429

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8609		1483292	MLI43424		Remains of wooden sailing merchant ship of early modern date. Probably being broken up as scrap on beach.	Unknown		318338.2	5913266
8610		1027989			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		321281.6	5954715
8611		913230			REMAINS OF VESSEL	Unknown		320143.1	5936176
8612		1027988			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		321980.7	5954535
8613		1484623	MLI43423	ACORN	Remains of the brig Acorn, an ice ship beached in order to be broken up for scrap in the late 19th century.	Unknown		319143.9	5910744
8614		1484868	MLI43422		Remains of small fishing vessel partially buried on sandy foreshore. Appears to be very similar to other remains of fishing vessels seen locally and possible indicative of a local vernacular tradition of boat building. Recorded in 1997.	Unknown		319229.6	5910537
8615		1027992			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		323540.2	5957744
8616		1027985			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		322737.7	5931384
8617		1027987			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		322900.2	5933267

WA ID	SeaZone ID	NRHE ID	HER ID	Name	Description	Date Period	Nation	UTM31N Easting	UTM31N Northing
8618		1027990			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		327557.5	5954573
8619		913209			REMAINS OF VESSEL	Unknown		325817.9	5914064
8620		1027986			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		330065.5	5932232
8621		913215			REMAINS OF VESSEL	Unknown		330466	5919834
8622		913213			POSSIBLE REMAINS OF VESSEL	Unknown		331552.2	5918156
8623		913045			Possible remains of wreck of probable World War I date, located approximately 1.75 miles NE of the Inner Dowsing Buoy. Previously thought to be the remains of the FANE, this is no longer regarded as the case.	Unknown		340734.4	5912984
8624		892358			POSSIBLE OBSTRUCTION	Unknown		348685.8	5899923
8625		892356			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.	Unknown		351936.6	5897038
8626		1456746		FIREGLOW	Possible remains of 1941 wreck of English collier which foundered east of the Dudgeon Shoal after striking a mine. If the FIREGLOW, she was a steamer, built of steel. Another site has been claimed as the remains of the FIREGLOW [see TG 08 SE 2].	Unknown		376719.3	5931338

13.7 APPENDIX VII - GAZETTEER OF OBSTRUCTIONS AND RECORDED LOSSES (ON CD-ROM ONLY)

Obstructions

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8634			LIVE	OBSTRUCTION	341601	5937993
8635			0		304618	5945504
8636	1		LIVE	RUBBISH SKIP	321486	5908103
8637	2		LIVE		296665	5946310
8638	3		LIFT	OBSTRUCTION	298953	5945357
8639	4		LIVE	OBSTRUCTION	384690	5915975
8640	5	COASTAL FORT NO 1 (PART OF)(POSSIBLY)	LIVE	OBSTRUCTION	296989	5946277
8641	6		LIVE	OBSTRUCTION	373572	5907858
8642	7		LIVE	OBSTRUCTION	331416	5943836
8643	8		LIVE	BARRAGE BALLOON PLATFORM	324597	5943290
8644	9		LIVE	SEWAGE DIFFUSER	297320	5943293
8645	10		LIVE	LARGE BOULDER	333237	5948056
8646	11		LIVE	OBSTRUCTION	366488	5913771
8647	12		LIVE	OBSTRUCTION	350879	5897321
8648	13		LIVE	OBSTRUCTION	290051	5946685
8649	14		DEAD	NON-SUB CONTACT	370208	5909495
8650	15		LIVE	OBSTRUCTION	300035	5941351
8651	16		LIVE	OBSTRUCTION	300361	5945332
8652	18		DEAD		317140	5946627
8653	19		LIVE	OBSTRUCTION	349539	5899295
8654	20		LIVE	OBSTRUCTION	290079	5946569
8655	22		LIVE	DIFFUSER	306757	5955831
8656	23		LIVE	OBSTRUCTION	290088	5946662

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8657	24		DEAD	NON-SUB CONTACT	345502	5908191
8658	25		LIVE	OBSTRUCTION	349289	5898746
8659	26		LIVE	OBSTRUCTION	365638	5914506
8660	27		LIVE	OBSTRUCTION	290090	5946572
8661	28		LIVE	OBSTRUCTION	367488	5907189
8662	29		LIVE	REMAINS OF DOLPHIN	299624	5945949
8663	30		DEAD	OBSTRUCTION	308596	5940439
8664	31		LIVE	OBSTRUCTION	342160	5937927
8665	32		LIVE	OBSTRUCTION	359496	5927222
8666	33				391556	5931627
8667	34		DEAD	PIPE	317507	5916717
8668	35		DEAD	MINE	320408	5949903
8669	36		DEAD	OBSTRUCTION	319842	5935077
8670	39	Underwater Turbine			291917	5946407
8671	40				316296	5936424
8672	41				324593	5943290
8673	42				300362	5945331
8674	43				296987	5946278
8675	44				296663	5946311
8676	45				305493	5941536
8677	46				290088	5946662
8678	47				290052	5946685
8679	48				290090	5946572
8680	49				290025	5946639
8681	50				289126	5949000

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8682	51				289246	5947959
8683	52		LIVE	OBSTRUCTION	289126	5949000
8684	53	WESTERN DOLPHIN IMMINGHAM TERMINAL	LIFT	DOLPHIN	290225	5947255
8685	54				384690	5915976
8686	55				383089	5915898
8687	56				391940	5918742
8688	57				350878	5897322
8689	58				325758	5897182
8690	59				349539	5899295
8691	60				367488	5907190
8692	61				373572	5907860
8693	62				329097	5897061
8694	63				324151	5895942
8695	64				349290	5898746
8696	65				321485	5908103
8697	66				333245	5948041
8698	67				341601	5937992
8699	68				359495	5927222
8700	69				365638	5914505
8701	70				342160	5937928
8702	71				366488	5913772
8703	72				331416	5943836
8704	73		LIVE	SEWER OUTFALL	325758	5897182
8705	74		LIVE	OBSTRUCTION	290025	5946638
8706	76		LIVE	OBSTRUCTION	316301	5936414
8707	77				299623	5945949
8708	78				300035	5941354
8709	80		LIVE	FISHERMENS FASTENER	328218	5954438
8710	81		LIVE	FISHERMENS FASTENER	379200	5936896
8711	87		LIVE	FISHERMENS FASTENER	330074	5932099
8712	91		LIVE	FOUL	290188	5947256
8713	92		LIVE	FISHERMENS FASTENER	368007	5944616
8714	94		LIVE	FOUL	374774	5905354
8715	96		LIVE	FISHERMENS FASTENER	362887	5940434
8716	103		LIVE	FISHERMENS FASTENER	322922	5933135
8717	105		LIVE	FOUL	285195	5953115
8718	109		LIVE		290546	5947414
8719	113		LIVE		319359	5935405
8720	115		LIVE		365800	5922479
8721	119		LIVE		351821	5943644
8722	121		LIVE	FISHERMENS FASTENER	321001	5958171
8723	124		DEAD	FISHERMENS FASTENER	365096	5926333
8724	125		LIVE	FOUL	285206	5952942
8725	127		LIVE		372581	5913048
8726	128		LIVE		383343	5936174
8727	130		LIVE	OBSTRUCTION	362386	5926123
8728	131		DEAD	DRILL BIT	319000	5946658
8729	133		LIVE	FISHERMENS FASTENER	329160	5949577
8730	135		LIVE	?BOULDERS	386446	5933563
8731	136		LIVE	WOODEN OBSTRUCTION	373916	5898451
8732	140		LIVE	FOUL	285767	5951975
8733	142		LIVE	FISHERMENS FASTENER	323547	5957611
8734	144		LIVE		319172	5935319
8735	145		LIVE	FISHERMENS FASTENER	320856	5956785
8736	146		LIVE	CABLE DEBRIS	383793	5934215

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8737	148		LIVE	FISHERMENS FASTENER	358659	5939322
8738	150		LIVE		374063	5921480
8739	151		LIVE	FISHERMENS FASTENER	326618	5942401
8740	154		DEAD		319488	5936854
8741	155		LIFT	FOUL	292907	5947167
8742	156		LIVE	FISHERMENS FASTENER	372049	5936466
8743	157		LIVE	FOUL	312380	5936477
8744	160	SANDRA GLEN	LIVE	M FISHING	306186	5940475
8745	161		LIVE	MACHINERY UNIT	343191	5893887
8746	162		LIVE		297472	5941708
8747	167		LIVE	FISHERMENS FASTENER	369851	5944843
8748	168		LIVE		309191	5935798
8749	171		LIVE	FISHERMENS FASTENER	322741	5931255
8750	172		LIVE	FISHERMENS FASTENER	321287	5954603
8751	174		DEAD		305491	5939731
8752	176		LIVE		362878	5902109
8753	178		LIVE		335865	5949527
8754	179				383798	5934221
8755	180				383338	5936211
8756	181				386467	5933609
8757	182				285765	5951975
8758	183				285196	5953111
8759	184				285207	5952945
8760	185				319171	5935319
8761	186				321170	5936576
8762	187				315100	5938662
8763	188				313825	5944518
8764	189				321237	5936818

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8765	190				319358	5935405
8766	191				314947	5945452
8767	192				319962	5927985
8768	193				326029	5933423
8769	194				324988	5937974
8770	195				322143	5938280
8771	196				313884	5936169
8772	197				312037	5935880
8773	198				325988	5937725
8774	199				322428	5937887
8775	200				317181	5949586
8776	201				312698	5941558
8777	202				320854	5932563
8778	203				324704	5938080
8779	204				310869	5940998
8780	205				310435	5939205
8781	206				309201	5935807
8782	207				306184	5940477
8783	208				310222	5939227
8784	209				306089	5940386
8785	210				305974	5940880
8786	211				299661	5940779
8787	212				303607	5943087
8788	213				297433	5944372
8789	214				300373	5945141
8790	215				310796	5939296
8791	216				310969	5941012
8792	217				290189	5947257
8793	218				290546	5947415
8794	219				297472	5941708
8795	220		LIVE		346015	5904205

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8796	221				373916	5898452
8797	222				343190	5893886
8798	223				372209	5899145
8799	224				339404	5905330
8800	225				374774	5905353
8801	226				358761	5929146
8802	227				365221	5921630
8803	228				329313	5926837
8804	229				351820	5943645
8805	230				345459	5910295
8806	231				338520	5914267
8807	232				346721	5955143
8808	233				372581	5913048
8809	234				355626	5915851
8810	235				338440	5912972
8811	236				327303	5933452
8812	237				362379	5926133
8813	238				365821	5934289
8814	239				330220	5943037
8815	240				328483	5930919
8816	241				374061	5921482
8817	242				365799	5922478
8818	243				321725	5925571
8819	244				328789	5935547
8820	245				330041	5937296
8821	246				364013	5944390
8822	247				343690	5926280
8823	248	ENGINEERING FEATURE UMBILICAL RISES FROM :722			353777	5943780
8824	249				286288	5951359
8825	250				310249	5929068

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8826	251				308581	5940465
8827	252				289005	5947470
8828	253				289594	5947108
8829	254				289046	5947441
8830	255				289042	5947435
8831	256				289002	5947466
8832	257				290432	5946577
8833	258				289586	5947099
8834	259				289597	5947090
8835	260				289001	5947474
8836	261				289605	5947100
8837	262				288997	5947478
8838	263				296656	5941623
8839	264				296674	5941651
8840	265				296691	5941679
8841	266				296667	5941639
8842	267				296661	5941629
8843	268				296654	5941617
8844	269				296678	5941657
8845	270				296671	5941645
8846	271				296664	5941635
8847	272				296684	5941668
8848	273				296680	5941662
8849	274				296688	5941673
8850	275				330699	5890323
8851	276				328400	5894184
8852	277				330049	5891074
8853	278				328102	5889847
8854	279				329363	5890305
8855	280				329399	5890322
8856	281				328456	5898506

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8857	282				329399	5889820
8858	283				328104	5890820
8859	284				328100	5890321
8860	285				329357	5895246
8861	286				328439	5895277
8862	287				328138	5891318
8863	288				328420	5894739
8864	289				330350	5897362
8865	290				328103	5889380
8866	291				330330	5896825
8867	292				329431	5897395
8868	293				331348	5891561
8869	294				330049	5891573
8870	295				328749	5891073
8871	296				329339	5894707
8872	297				329450	5897931
8873	298				328513	5897426
8874	299				328747	5890571
8875	300				329374	5895783
8876	301				328456	5895812
8877	302				329412	5896858
8878	303				328532	5897965
8879	304				330700	5889821
8880	305				330699	5891322
8881	306				328475	5896353
8882	307				329470	5898468
8883	308				330238	5894138
8884	309				330050	5889570
8885	310				331348	5891071
8886	311				328748	5890072
8887	312				330312	5896288

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8888	313				328494	5896892
8889	314				328567	5899038
8890	315				328749	5889572
8891	316				330294	5895750
8892	317				329488	5899005
8893	318				330699	5890821
8894	319				329399	5891321
8895	320				329393	5896321
8896	321				329319	5894170
8897	322				342734	5892416
8898	323				329398	5890821
8899	324				330274	5895212
8900	325				328749	5891575
8901	326				330049	5890074
8902	327				328550	5898501
8903	328				330699	5889320
8904	329				329399	5889333
8905	330				330257	5894674
8906	331				349938	5909520
8907	332				286435	5951451
8908	333				286478	5951480
8909	334				311931	5927117
8910	335				310482	5930223
8911	336				290452	5946691
8912	337				290499	5946707
8913	338				290472	5946682
8914	339				290495	5946712
8915	340				290539	5946675
8916	341				290487	5946722
8917	342				290510	5946652
8918	343				290491	5946717

WA ID	SeaZone ID	Name	Status	Description	UTM31N Easting	UTM31N Northing
8919	344				290506	5946656
8920	345				290545	5946672
8921	346				290550	5946669
8922	347				290459	5946689
8923	348				290466	5946684
8924	349				290556	5946666
8925	350				290561	5946664
8926	351				290533	5946678
8927	352				290519	5946641
8928	353				290504	5946702
8929	354				290524	5946636
8930	355				290516	5946647

Recorded Losses / Casualties

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
8931		1383405			1626 wreck of cargo vessel which foundered near Easington in Holderness after being shot at, while carrying wine; a wooden sailing vessel.	1509-1815	1626	308322	5950936
8932		1318002			CRAFT, 1627	1509-1815	1627	317925	5913807
8933		1443028			1665 wreck of a craft which was lost at Grimsby Road en route to Kings Lynn. She would have been built of wood, and probably a sailing vessel.	1509-1815	1665	298036	5942265
8934		1383294			1666 wreck of Flemish hoy which stranded on the coast of Lincolnshire; a wooden sailing vessel.	1509-1815	1666	324002	5897802
8935		1386616			1667 wreck of collier, thought to have been English, which stranded on the Binks. Possibly laden with coal, she was a wooden sailing vessel.	1509-1815	1667	310853	5939879
8936		1391630			1668 wreck of English collier which stranded on the Bull Sand; a wooden sailing vessel.	1509-1815	1668	305843	5938788
8937		1391631			1668 wreck of pink which foundered after grounding on the Binks; a wooden sailing vessel.	1509-1815	1668	310853	5939879
8938		1392388			1668 wreck of cargo vessel which stranded at the mouth of the Humber, en route to Newcastle-upon-Tyne in ballast; a wooden sailing vessel.	1509-1815	1668	312155	5936299
8939		1392390			1668 wreck of cargo vessel which stranded at the mouth of the Humber, en route to Newcastle-upon-Tyne in ballast; a wooden sailing vessel.	1509-1815	1668	312155	5936299
8940		1392394			1669 wreck of craft which was wrecked near the River Humber; a wooden sailing vessel.	1509-1815	1669	312155	5936299
8941		1392399			1669 wreck of craft which was wrecked near the River Humber; a wooden sailing vessel.	1509-1815	1669	312155	5936299
8942		1392400			1669 wreck of craft which was wrecked near the River Humber; a wooden sailing vessel.	1509-1815	1669	312155	5936299
8943		1461558			1701 wreck of English craft which stranded on the coast of Lincolnshire. Constructed of wood, she was a sailing vessel.	1509-1815	1701	324002	5897802

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
8944		1366512			1703 wreck of British collier which foundered in Grimsby Roads after being driven out of the Humber during the Great Gale; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8945		1366514			1703 wreck of British collier which foundered in Grimsby Roads after being driven out of the Humber during the Great Gale; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8946		1366515			1703 wreck of British collier which foundered in Grimsby Roads after being driven out of the Humber during the Great Gale; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8947		1366517			1703 wreck of British collier which foundered in Grimsby Roads after being driven out of the Humber during the Great Gale; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8948		1366520			1703 wreck of British collier which foundered in Grimsby Roads after being driven out of the Humber during the Great Gale; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8949		1369298			1703 wreck of an unspecified number of colliers which foundered in the River Humber during the Great Gale; all would have been sailing vessels constructed of wood.	1509-1815	1703	300284	5943290
8950		1369302			1703 wreck of an unspecified number of colliers which stranded in the River Humber during the Great Gale; all would have been sailing vessels, constructed of wood.	1509-1815	1703	300284	5943290
8951		1370297			1703 wreck of British collier which capsized and stranded on the Old Den near Spurn Head during the Great Gale; a wooden sailing vessel.	1509-1815	1703	309618	5939955
8952		1370316			1703 wreck of British collier which foundered off Spurn Head after grounding on the Old Den during the Great Gale; a wooden sailing vessel.	1509-1815	1703	309618	5939955
8953		1370320			1703 wreck of British collier which stranded on the Old Den near Spurn Head during the Great Gale. Laden with coal from Newcastle-upon-Tyne, she was a wooden sailing vessel.	1509-1815	1703	309618	5939955
8954		1432265			1703 wreck of craft which foundered in Grimsby Roads during the Great Storm after being driven out of the River Humber; a wooden sailing vessel.	1509-1815	1703	298036	5942265
8955		1432271			1703 wreck of English craft which was wrecked at Kilnsea during the Great Storm; a wooden sailing vessel.	1509-1815	1703	309206	5940136
8956		910909			A logboat was reported to have been found about 1725 at Owthorne: the date of the find was said to have been some sixty years before that of the logboat revealed by coastal erosion in the same area in 1785 [910673]. No	1509-1815	1725	304611	5958176

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					other information is known.				
8957		910909			A logboat was reported to have been found about 1725 at Owthorne: the date of the find was said to have been some sixty years before that of the logboat revealed by coastal erosion in the same area in 1785 [910673]. No other information is known.	1509-1815	1725	304611	5958176
8958		1368492		STEPHEN AND JANE	ENGLISH CARGO VESSEL, 1734	1509-1815	1734	312155	5936299
8959		1375579		LADY GOSSINA	1737 wreck of cargo vessel which stranded near the mouth of the River Humber, while en route from Bremen to London with cargo; a wooden sailing vessel.	1509-1815	1737	312155	5936299
8960		1458790			1738 wreck of English sloop or brigantine which foundered following a collision while fishing off the "Sister Churches" of Withernsea and Owthorne. Constructed of wood, she was a sailing vessel.	1509-1815	1738	311891	5957473
8961		1376407		BRITANNIA	1740 wreck of British craft which foundered during a storm while en route from London to Kingston-upon-Hull; a wooden sailing vessel.	1509-1815	1740	332378	5914196
8962		943062		HAMBURG MERCHANT	1741 wreck of British cargo vessel which was lost in the Humber Estuary en route from Shields to London. Constructed of wood, she was a sailing vessel.	1509-1815	1741	312155	5936299
8963		975903		JOHN AND HANNAH	1744 incident in which a British craft grounded near Spurn Head, being shortly afterwards recovered with little damage. Bound from Riga for Plymouth, she was a wooden sailing vessel.	1509-1815	1744	309206	5940136
8964		975904		BENJAMIN	1744 wreck of English cargo vessel which stranded near the Spurn lighthouse on her voyage from Newcastle-upon-Tyne to London with lead and other goods; a wooden sailing vessel.	1509-1815	1744	309206	5940136
8965		1456338		FRIENDSHIP	1744 wreck of British cargo vessel which foundered in the River Humber, outward-bound for Wisbech. Laden with salt and coal, she was a wooden sailing vessel.	1509-1815	1744	300284	5943290
8966		975905		CONCORD	BRITISH CRAFT, 1747	1509-1815	1747	312155	5936299
8967		942744		MARY	BRITISH CARGO VESSEL, 1749	1509-1815	1749	324002	5897802
8968		942746		OWNERS GOODWILL	BRITISH CARGO VESSEL, 1752	1509-1815	1752	324002	5897802
8969		1437176			1752 wreck of coaster which stranded on the coast of Lincolnshire during	1509-1815	1752	324002	5897802

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					a storm; a wooden sailing vessel.				
8970		1437230			1752 wreck of coaster which stranded on the coast of Lincolnshire during a storm; a wooden sailing vessel.	1509-1815	1752	324002	5897802
8971		942747		PROVIDENCE	ENGLISH CRAFT, 1753	1509-1815	1753	313810	5922316
8972		942748			BRITISH CRAFT, 1753	1509-1815	1753	319406	5923488
8973		1377550		LARK	1753 wreck of English cargo vessel which was lost on her passage from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1753	332378	5914196
8974		1377552		BROTHERHOOD	1753 wreck of English cargo vessel which was lost en route from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1753	332378	5914196
8975		942749		KILHAM	BRITISH CARGO VESSEL, 1757	1509-1815	1757	313810	5922316
8976		975908		PORTER	BRITISH CRAFT, 1757	1509-1815	1757	309206	5940136
8977		942750		DEBORAH	BRITISH CARGO VESSEL, 1758	1509-1815	1758	312155	5936299
8978		942752		AUGUST	BRITISH CRAFT, 1761	1509-1815	1761	300284	5943290
8979		942753		LADY LOUISA	BRITISH CRAFT, 1761	1509-1815	1761	312155	5936299
8980		1301852		GREYHOUND	1762 wreck of British cargo vessel which stranded on the coast of Lincolnshire en route from Newcastle-upon-Tyne to Poole, possibly with coal; a wooden sailing vessel.	1509-1815	1762	324002	5897802
8981		1385747		HOPE	1762 wreck of British cargo vessel which foundered in the River Humber en route from Kings Lynn to Newcastle-upon-Tyne with corn; a wooden sailing vessel.	1509-1815	1762	312155	5936299
8982		1385748			1762 wreck of craft which foundered in the River Humber; a wooden sailing vessel.	1509-1815	1762	312155	5936299
8983		1385749			1762 wreck of craft which foundered in the River Humber; a wooden sailing vessel.	1509-1815	1762	312155	5936299
8984		1385750			1762 wreck of craft which foundered in the River Humber; a wooden sailing vessel.	1509-1815	1762	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
8985		1371004		IPSWICH	ENGLISH CARGO VESSEL, 1763	1509-1815	1763	355610	5911584
8986		975912		LYNN	BRITISH CRAFT, 1764	1509-1815	1764	309206	5940136
8987		975913			SLOOP, 1764	1509-1815	1764	309206	5940136
8988		975914		DOROTHY	BRITISH CARGO VESSEL, 1764	1509-1815	1764	309206	5940136
8989		975915		NANCY	BRITISH CRAFT, 1764	1509-1815	1764	312155	5936299
8990		1319873		POLLY	BRITISH CRAFT, 1764	1509-1815	1764	304740	5957586
8991		942755		ST NICHOLAS	CRAFT, 1765	1509-1815	1765	324002	5897802
8992		975919			ENGLISH BRIG, 1765	1509-1815	1765	309206	5940136
8993		1302491		THOMAS AND REBECCA	1765 wreck of English cargo vessel which stranded on the Trinity Sand en route from King's Lynn to Kingston-upon-Hull with corn and wool, and which may have been recovered; a wooden sailing vessel.	1509-1815	1765	309618	5939955
8994		1302504		PARTRIDGE	1765 wreck of English cargo vessel which stranded on the Trinity Sand en route from King's Lynn to Kingston-upon-Hull with corn; a wooden sailing vessel.	1509-1815	1765	309618	5939955
8995		942756		RISINGHAM	1767 incident in which a British cargo vessel grounded at Chapel Tunnel en route from Klaipeda to Newcastle-upon-Tyne, but was later recovered; a wooden sailing vessel.	1509-1815	1767	323021	5901550
8996		975921		BETSEY	1767 wreck of Scottish passenger vessel which stranded at Northcotes en route from Leith for London with passengers; a wooden sailing vessel.	1509-1815	1767	312155	5936299
8997		1302510			CARGO VESSEL, 1767	1509-1815	1767	312155	5936299
8998		1302513			CRAFT, 1767	1509-1815	1767	312155	5936299
8999		1302514			CRAFT, 1767	1509-1815	1767	312155	5936299
9000		1301867		LIBERTY IN THE NORTH	CARGO VESSEL, 1768	1509-1815	1768	323211	5891521
9001		1301871		ELENORA	CRAFT, 1768	1509-1815	1768	324002	5897802

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9002		1301873		GOULDSBERRY	CARGO VESSEL, 1768	1509-1815	1768	324002	5897802
9003		1376395		COUNTESS OF NORTHUMBERLAND	1768 wreck of British craft which was lost between Newcastle-upon-Tyne and London; a wooden sailing vessel.	1509-1815	1768	332378	5914196
9004		1386474		THREE FRIENDS	1768 wreck of English cargo vessel which stranded on Skegness Middle Sand en route from Hamburg to Oporto with rye and copper; a wooden sailing vessel.	1509-1815	1768	324375	5889806
9005		1376457		FIELD	1769 wreck of British cargo vessel which was lost en route from Kingston-upon-Hull to London with cheese; a wooden sailing vessel.	1509-1815	1769	332378	5914196
9006		942757		JOHN AND SALLY	ENGLISH SLOOP, 1770	1509-1815	1770	324002	5897802
9007		1386545		GROCER	1770 wreck of passenger vessel which stranded on the Trinity Sand; a wooden sailing vessel.	1509-1815	1770	309206	5940136
9008		1301883		PRINCE EDWARD	1771 wreck of British craft which stranded at Saltfleet during a gale. Constructed of wood, she was a sailing vessel.	1509-1815	1771	313810	5922316
9009		1321640		ENDEAVOUR	1771 wreck of British craft which capsized on entering the River Humber from London; a wooden sailing vessel.	1509-1815	1771	300284	5943290
9010		1376465		MARY AND JANE	1771 wreck of English craft which stranded at Tynemouth on her arrival at Newcastle-upon-Tyne from London; a wooden sailing vessel.	1509-1815	1771	332378	5914196
9011		1446504		LYNN PACKET	1771 wreck of English packet which was lost near Saltfleet in a gale. Constructed of wood, she was a sailing vessel.	1509-1815	1771	313810	5922316
9012		942759		GEORGE AND JANE	BRITISH CRAFT, 1772	1509-1815	1772	324002	5897802
9013		1386963			1772 wreck of craft which foundered 3 miles ESE of Spurn Head; a wooden sailing vessel.	1509-1815	1772	310853	5939879
9014		1387075		GENEROUS PLANTER	1772 wreck of British craft which foundered in the River Humber en route from Newcastle-upon-Tyne to London; a wooden sailing vessel.	1509-1815	1772	312155	5936299
9015		1387082		WILLIAM AND JANE	1773 wreck of British cargo vessel which stranded on a sand off the River Humber en route from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1773	312155	5936299
9016		1387088		JANE	1773 wreck of British cargo vessel which foundered en route from	1509-1815	1773	332378	5914196

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.				
9017		1387089		INDUSTRY	1773 wreck of British cargo vessel which foundered en route from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1773	332378	5914196
9018		1387090		DOVE	1773 wreck of British cargo vessel which foundered between Newcastle-upon-Tyne and London with coal; a wooden sailing vessel.	1509-1815	1773	332378	5914196
9019		942760		BRIDLINGTON	1776 wreck of British craft which stranded on the Lincolnshire bank of the entrance to the River Humber, on her passage from London; a wooden sailing vessel.	1509-1815	1776	312155	5936299
9020		942761		WINDSOR	BRITISH CRAFT, 1777	1509-1815	1777	324002	5897802
9021		1387326		ANN AND HENRY	1777 wreck of English collier which stranded on Spurn Head following gun action by an American privateeer. Bound from London to Newcastle-upon-Tyne with some passengers, she was a wooden sailing vessel.	1509-1815	1777	309206	5940136
9022		1387425			1779 wreck of French snow which foundered off Spurn Head following gun action with an English privateer; a wooden sailing vessel.	1509-1815	1779	309206	5940136
9023		1387445		GOOD INTENT	1779 wreck of British craft which was lost at the entrance to the River Humber; a wooden sailing vessel.	1509-1815	1779	312155	5936299
9024		1387448			1779 wreck of French privateer which foundered between Harwich and Flamborough Head; a wooden sailing vessel.	1509-1815	1779	332378	5914196
9025		1301944		KENT	BRITISH CRAFT, 1781	1509-1815	1781	324002	5897802
9026		1387794		GOOD INTENT	1781 wreck of English cargo vessel which foundered after being taken by a French privateer en route from Whitby to London in ballast; a wooden sailing vessel.	1509-1815	1781	332378	5914196
9027		1302644		TRAVELLER	BRITISH CRAFT, 1783	1509-1815	1783	309618	5939955
9028		1325827		JUFFROUW ANNA MARIA	DUTCH CRAFT, 1783	1509-1815	1783	360941	5904005
9029		1301945		BALTICK MERCHANT	BRITISH CARGO VESSEL, 1784	1509-1815	1784	324002	5897802
9030		1389921		MARY	1784 wreck of English cargo vessel which stranded on the Dowsings on her passage with coal; a wooden sailing vessel.	1509-1815	1784	337049	5904757

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9031		1301947		MARY	1785 wreck of British cargo vessel which grounded on the coast of Lincolnshire en route from London to Leith, and which was later recovered; a wooden sailing vessel.	1509-1815	1785	324002	5897802
9032		1301960		GEORGE	1785 wreck of British cargo vessel which stranded on Haile Sand en route from Kings Lynn to Faro with wheat and rye; a wooden sailing vessel.	1509-1815	1785	308101	5931821
9033		1326992		MAYFLOWER	1785 wreck of English craft which foundered near the Dudgeon Light; a wooden sailing vessel.	1509-1815	1785	360941	5904005
9034		1327075		ESTHER	CRAFT, 1785	1509-1815	1785	312155	5936299
9035		1389737		PROSPER	1785 wreck of British sloop which foundered 6 leagues NNW of Cromer following a leak, on her passage from Newcastle-upon-Tyne to Southampton with coal; a wooden sailing vessel.	1509-1815	1785	386037	5907046
9036		1389798		HARRIOT	1785 wreck of English craft which foundered off the River Humber during a storm; a wooden sailing vessel.	1509-1815	1785	312155	5936299
9037		1301969		ELOGIUM	CRAFT, 1786	1509-1815	1786	332378	5914196
9038		1301972		VROW CATHARINA	DUTCH CRAFT, 1786	1509-1815	1786	309130	5929924
9039		1301974		PROVIDENCE	1786 wreck of British craft which stranded near Saltfleet en route from St. Petersburg to Kingston-upon-Hull; a wooden sailing vessel.	1509-1815	1786	313810	5922316
9040		1327150		DIANA	BRITISH CRAFT, 1786	1509-1815	1786	309618	5939955
9041		1327167		BRITANNIA	1786 wreck of English cargo vessel which stranded at Spurn Head en route from Newcastle-upon-Tyne to London. Laden with lead, coal, and glass, she was a wooden sailing vessel.	1509-1815	1786	309618	5939955
9042		1330165		NORFOLK	1788 wreck of English cargo vessel which stranded on the New Sand Hole, possibly after springing a leak en route from Liverpool to Ostend; a wooden sailing vessel.	1509-1815	1788	322329	5942400
9043		1390037		PITT	1788 wreck of English brig which stranded near the Spurn Lighthouse on entering the Humber with ashes and bottles; a wooden sailing vessel.	1509-1815	1788	309206	5940136
9044		1390152			1788 wreck of cargo vessel which foundered near the mouth of the Humber. Laden with coal, she was a wooden sailing vessel.	1509-1815	1788	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9045		1390162		BOSCAWEN	1788 wreck of British cargo vessel which foundered off the "Floating Light", presumed to be the Dudgeon Light vessel, following a collision en route from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1788	360941	5904005
9046		1390181		MARY	1788 wreck of English craft which stranded near Spurn Head during a gale; a wooden sailing vessel.	1509-1815	1788	309206	5940136
9047		942762		ELIZABETH	1790 wreck of British craft which stranded near Saltfleet on her voyage from Oporto; a wooden sailing vessel.	1509-1815	1790	313810	5922316
9048		1301990		ELIZABETH	SCOTTISH SLOOP, 1791	1509-1815	1791	309130	5929924
9049		1301993		GOOD INTENT	ENGLISH SLOOP, 1791	1509-1815	1791	309130	5929924
9050		1302685		ISABELLA	1791 wreck of British cargo vessel which was lost near Spurn Head en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1791	309618	5939955
9051		1336111		LEEDS	CRAFT, 1791	1509-1815	1791	309618	5939955
9052		1376690		HANNAH	1791 wreck of English cargo vessel which foundered en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1791	332378	5914196
9053		1336277		LEVIATHAN	1792 wreck of British craft which was lost near the River Humber on a voyage thought to have been from the Baltic Sea; a wooden sailing vessel.	1509-1815	1792	312155	5936299
9054		1391514			1792 wreck of sloop which foundered in the River Humber; a wooden sailing vessel.	1509-1815	1792	300284	5943290
9055		1301985		VALIANT	BRITISH CRAFT, 1793	1509-1815	1793	313810	5922316
9056		1391911		SUSANNA	1793 wreck of English brig which foundered 18 miles ESE of Spurn Head after springing a leak, en route from Kingston-upon-Hull to London; a wooden sailing vessel.	1509-1815	1793	332378	5914196
9057		973288		SUCCESS	1794 wreck of English schooner which foundered off Dimlington, following a collision on her passage from Shields to London; a wooden sailing vessel.	1509-1815	1794	308322	5950936
9058		1336463		NEPTUNE	ENGLISH CARGO VESSEL, 1794	1509-1815	1794	360941	5904005
9059		1391968			1794 wreck of collier which stranded near Cleethorpes during a gale; a	1509-1815	1794	299525	5938490

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					wooden sailing vessel.				
9060		1047747		PEGGY	1795 wreck of English craft which foundered off Dimlington following a collision in fog; a wooden sailing vessel.	1509-1815	1795	308322	5950936
9061		1336682		ESTHER	1795 wreck of English craft which stranded on the coast of Lincolnshire; a wooden sailing vessel.	1509-1815	1795	324002	5897802
9062		1376705		JEMIMA	1795 wreck of English brig which foundered after a collision a few leagues north of the Dudgeon Light vessel. En route from Shields to Lisbon with coal, she was a wooden sailing vessel.	1509-1815	1795	332378	5914196
9063		1392350		WILLIAM	1795 wreck of English cargo vessel which was wrecked at the mouth of the Humber, en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1795	312155	5936299
9064		942764		ACTIVE	BRITISH CARGO VESSEL, 1796	1509-1815	1796	300284	5943290
9065		942765		THOMAS AND JANE	BRITISH CARGO VESSEL, 1796	1509-1815	1796	300284	5943290
9066		942766		CHANCE	BRITISH CRAFT, 1797	1509-1815	1797	324002	5897802
9067		975935		NANCY	1797 wreck of British cargo vessel which stranded near the River Humber en route from Shields to Portsmouth and Jamaica with coal; a wooden sailing vessel.	1509-1815	1797	312155	5936299
9068		1337829		LATONA	CRAFT, 1797	1509-1815	1797	360941	5904005
9069		1393362		SPRING	1797 wreck of English sloop which stranded near Somercotes en route from Whitby to Kingston-upon-Hull with sailcloth and rope; a wooden sailing vessel.	1509-1815	1797	309130	5929924
9070		942768		COMMERCE	BRITISH CARGO VESSEL, 1798	1509-1815	1798	300284	5943290
9071		942769		SILVER EEL	1798 wreck of a British craft which grounded on Saltfleet Beach to be recovered later. This wooden sailing vessel was en route from Riga to Deptford at the time of the incident.	1509-1815	1798	313810	5922316
9072		1302703		PROVIDENCE	1798 wreck of British craft which stranded near Spurn Head, en route from St. Petersburg to London; a wooden sailing vessel.	1509-1815	1798	309206	5940136
9073		1393452		GOOD INTENT	1798 wreck of British cargo vessel which stranded near Tetney Haven, on her passage from Kingston-upon-Hull to Newcastle-upon-Tyne. Laden with	1509-1815	1798	303762	5933861

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					wine and other goods, she was a wooden sailing vessel.				
9074		1393501		BARNEVELT	1798 wreck of English brig which foundered north of the Humber Estuary, following a collision while on her passage in ballast; a wooden sailing vessel.	1509-1815	1798	312155	5936299
9075		942770		AMERICA	1799 wreck of craft which stranded on the coast of Lincolnshire, en route from Philadelphia to Hamburg; a wooden sailing vessel.	1509-1815	1799	324002	5897802
9076		942771		MARY	1799 wreck of British cargo vessel which foundered after grounding on the Binks en route to Kingston-upon-Hull from St. Petersburg with flax; a wooden sailing vessel.	1509-1815	1799	310853	5939879
9077		1338309		HOPE	1799 wreck of English brig which stranded on the Binks on her passage from Sunderland to London with coal; a wooden sailing vessel.	1509-1815	1799	310853	5939879
9078		1338323		ANN	BRITISH CRAFT, 1799	1509-1815	1799	312155	5936299
9079		1338361		ADMIRAL NELSON	BRITISH CRAFT, 1799	1509-1815	1799	308040	5930251
9080		1393517		HOPE	1799 wreck of English snow which stranded near Dimlington High Land in a storm, after leaving Kingston-upon-Hull to resume her voyage from Riga to Lisbon. Laden with hemp and iron, she was a wooden sailing vessel.	1509-1815	1799	308322	5950936
9081		1393843		PRINCE FREDERICK	1799 wreck of English brig which foundered off Spurn Head following a collision, while on her passage with coal; a wooden sailing vessel.	1509-1815	1799	309206	5940136
9082		942772		PERSIS	BRITISH CARGO VESSEL, 1800	1509-1815	1800	324002	5897802
9083		1394155		ELEANOR	1800 wreck of British brigantine which stranded near North Somercotes en route from Sunderland to London with coal; a wooden sailing vessel.	1509-1815	1800	309130	5929924
9084		942774		ESTHER	BRITISH CARGO VESSEL, 1801	1509-1815	1801	308101	5931821
9085		942775		NANCY	ENGLISH SLOOP, 1801	1509-1815	1801	308040	5930251
9086		942777		BETSEY	ENGLISH CRAFT, 1801	1509-1815	1801	324002	5897802
9087		984077		BENEVOLENCE	ENGLISH CARGO VESSEL, 1801	1509-1815	1801	308040	5930251
9088		984078		HANNAH	BRITISH CRAFT, 1801	1509-1815	1801	310853	5939879

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9089		984079		ARGO	BRITISH CARGO VESSEL, 1801	1509-1815	1801	309206	5940136
9090		1302004		TWO BROTHERS	ENGLISH CRAFT, 1801	1509-1815	1801	303762	5933861
9091		1376706		THAMES	1801 wreck of British cargo vessel burnt by a French privateer on her voyage from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1801	332378	5914196
9092		1338866			1802 wreck of English sloop which foundered south of Grainthorpe Haven; a wooden sailing vessel.	1509-1815	1802	308040	5930251
9093		1338869		WILLIAM	1802 wreck of English sloop which stranded at Cleethorpes en route from King's Lynn to Rotherham with barley; a wooden sailing vessel.	1509-1815	1802	299525	5938490
9094		1338899		GEORGE	1802 incident in which a British craft grounded on the coast of Lincolnshire, to be recovered shortly afterwards; a wooden sailing vessel.	1509-1815	1802	324002	5897802
9095		1339031		SALLY	1802 wreck of English craft which stranded on Trinity Sand during a storm; a wooden sailing vessel.	1509-1815	1802	309206	5940136
9096		1339034		STONEHOUSE	1802 wreck of English cargo vessel which stranded between The Binks and the mainland en route from Plymouth to Shields in ballast; a wooden sailing vessel.	1509-1815	1802	310853	5939879
9097		1376716		DILIGENCE	1802 wreck of British craft which foundered en route from Shields to London; a wooden sailing vessel.	1509-1815	1802	332378	5914196
9098		1394468		FOUR BROTHERS	1802 wreck of British collier which stranded on Spurn Head en route from Shields to London, laden with coal; a wooden sailing vessel.	1509-1815	1802	309206	5940136
9099		1394946			1802 wreck of British sloop which capsized and foundered in the River Humber. Laden with coal, she was a wooden sailing vessel.	1509-1815	1802	300284	5943290
9100		1339137		MARY	1803 wreck of English cargo vessel which stranded on Spurn Head en route to Plymouth with coal; a wooden sailing vessel.	1509-1815	1803	309618	5939955
9101		1339139		VROW MARGARETTA	1803 wreck of Dutch cargo vessel which stranded at Easington en route from Bordeaux to Amsterdam with wine and fruit; a wooden sailing vessel.	1509-1815	1803	308322	5950936
9102		1339238		JOHN AND MARY	1803 wreck of English sloop which stranded on the Trinity Sand on her passage from Sunderland; a wooden sailing vessel.	1509-1815	1803	309618	5939955

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9103		1339283		FANNY	CRAFT, 1803	1509-1815	1803	360941	5904005
9104		1339399			1803 wreck of Prussian craft which stranded near Grainthorpe on her passage to Oporto; a wooden sailing vessel.	1509-1815	1803	308040	5930251
9105		1339400		UNION	CRAFT, 1803	1509-1815	1803	324002	5897802
9106		1339438		HORNBY	1803 incident in which an English cargo vessel grounded upon Haile Sand en route from Riga to Kingston-upon-Hull. Later recovered, she was a wooden sailing vessel.	1509-1815	1803	308101	5931821
9107		1339442		JUNO	CRAFT, 1803	1509-1815	1803	296894	5941573
9108		1395571			1803 wreck of English coble which was wrecked north of Easington High Land during a gale, while on a fishing trip from Hartlepool to the North Sea; a wooden sailing vessel.	1509-1815	1803	308322	5950936
9109		1395577			1803 wreck of part of craft which stranded four miles north of Easington during a gale; a wooden sailing vessel.	1509-1815	1803	304740	5957586
9110		1395614		TRADESMAN	1803 wreck of British cargo vessel which foundered in the vicinity of Spurn Head, while en route from Blakeney to Wakefield with barley; a wooden sailing vessel.	1509-1815	1803	309206	5940136
9111		1395652		ELIZA	1803 wreck of British cargo vessel which stranded on Haile Sand en route from Narva to Kingston-upon-Hull; a wooden sailing vessel.	1509-1815	1803	308101	5931821
9112		1396055			1803 wreck of craft which foundered about 4 leagues off Spurn Head; a wooden sailing vessel.	1509-1815	1803	309206	5940136
9113		1396057			1803 wreck of craft which foundered about 4 leagues off Spurn Head; a wooden sailing vessel.	1509-1815	1803	309206	5940136
9114		1396725			1803 wreck of British sloop which stranded on the Haile Sand en route from King's Lynn to Selby with corn; a wooden sailing vessel.	1509-1815	1803	308101	5931821
9115		1339484		FLY	1804 wreck of English collier which foundered off the Humber en route from Sunderland to Great Yarmouth with coal; a wooden sailing vessel.	1509-1815	1804	312155	5936299
9116		1339650		JOHN	1804 wreck of English cargo vessel which was beached at Owthorne, after springing a leak on her passage from Gdansk to London. Laden with timber, deals, and oak planks, she was a wooden sailing vessel.	1509-1815	1804	304740	5957586

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9117		1339717		NILE	1804 wreck of Scottish brig which stranded near the Spurn Lights on her passage from Gdansk to London with wheat and deals; a wooden sailing vessel.	1509-1815	1804	309618	5939955
9118		1339751			BRIG, 1804	1509-1815	1804	300284	5943290
9119		1339763			BRIG, 1804	1509-1815	1804	300284	5943290
9120		1339764			HOY, 1804	1509-1815	1804	300284	5943290
9121		1339769		INDUSTRY	ENGLISH CRAFT, 1804	1509-1815	1804	312155	5936299
9122		1339789		AGENORIA	1804 wreck of English cargo vessel which stranded on Haile Sand en route from King's Lynn to Portsmouth or Plymouth. Laden with wheat and barley, she was a wooden sailing vessel.	1509-1815	1804	308101	5931821
9123		1339791		SKENE	1804 wreck of cargo vessel which stranded near Saltfleet en route from Shields to London, after earlier grounding on the Inner Dowsing Shoal. Laden with coal, she was a wooden sailing vessel.	1509-1815	1804	313810	5922316
9124		1376734		MARTIN	1804 wreck of British craft which was lost en route from Selby to London; a wooden sailing vessel.	1509-1815	1804	332378	5914196
9125		1395635			1804 wreck of cargo vessel which stranded near Anderby on her passage from King's Lynn with corn, possibly during an exceptionally high tide; a wooden sailing vessel.	1509-1815	1804	318930	5910979
9126		1396393		DELAVAL	1804 wreck of British cargo vessel which foundered after being scuttled and burnt by a privateer, on her passage from Newcastle-upon-Tyne to London; a wooden sailing vessel.	1509-1815	1804	332378	5914196
9127		1396733		FAMILIAN	1804 wreck of Danish cargo vessel which stranded on the Binks en route from Langesund to Kingston-upon-Hull; a wooden sailing vessel.	1509-1815	1804	310853	5939879
9128		1397003			1804 wreck of English lighter which capsized in the River Humber on her passage with gravel; a wooden sailing vessel.	1509-1815	1804	300284	5943290
9129		1397006			1804 wreck of British sloop which was wrecked in the River Humber, on her passage from King's Lynn with corn; a wooden sailing vessel.	1509-1815	1804	300284	5943290
9130		1397078		YORK	1804 wreck of British cargo vessel which foundered in Grimsby Roads following a collision. Laden with coal, she was a wooden sailing vessel.	1509-1815	1804	298036	5942265

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9131		971706		EXPEDITION	1805 wreck of British cargo vessel which foundered after grounding on the Inner Dowsing, on her passage from Shields to London with coal; a wooden sailing vessel.	1509-1815	1805	337049	5904757
9132		1339844		SWIFT	1805 wreck of English craft which stranded on or near the Dudgeon shoal; a wooden sailing vessel.	1509-1815	1805	360941	5904005
9133		1339903		BOLINA	1805 wreck of English brig which foundered in the River Humber, bound to Kingston-upon-Hull from Riga with wheat; a wooden sailing vessel.	1509-1815	1805	300284	5943290
9134		1339985		SARAH	CRAFT, 1805	1509-1815	1805	300284	5943290
9135		1340005		MARY HALL	CRAFT, 1805	1509-1815	1805	310853	5939879
9136		1340008		UNION	ENGLISH CRAFT, 1805	1509-1815	1805	310853	5939879
9137		1396829			1805 wreck of English sloop which was wrecked near Saltfleet on her passage from King's Lynn to the River Humber with peas and barley; a wooden sailing vessel.	1509-1815	1805	313810	5922316
9138		1397062		THOMAS AND HANNAH	1805 wreck of English sloop which foundered near the Dudgeon Light vessel on her passage from Newcastle-upon-Tyne; a wooden sailing vessel.	1509-1815	1805	360941	5904005
9139		1397071			1805 wreck of cargo vessel which stranded "near Spilsby", possibly in the vicinity of Skegness, during a gale. Laden with coal, she was a wooden sailing vessel.	1509-1815	1805	323211	5891521
9140		1397074			1805 wreck of cargo vessel which stranded "near Spilsby", possibly in the vicinity of Skegness, during a gale. Laden with rape seed, she was a wooden sailing vessel.	1509-1815	1805	323211	5891521
9141		1397075			1805 wreck of craft which stranded "near Spilsby", possibly near Skegness, during a gale; a wooden sailing vessel.	1509-1815	1805	323211	5891521
9142		1397076			1805 wreck of craft which stranded "near Spilsby", possibly near Skegness, during a gale; a wooden sailing vessel.	1509-1815	1805	323211	5891521
9143		1397077			1805 wreck of craft which stranded "near Spilsby", possibly near Skegness, during a gale; a wooden sailing vessel.	1509-1815	1805	323211	5891521
9144		1340403		DELIGHT	1806 wreck of Scottish cargo vessel which capsized and stranded near	1509-1815	1806	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Saltfleet with her cargo of oats; a wooden sailing vessel.				
9145		1340411		JANE AND SARAH	1806 wreck of English cargo vessel which foundered off the Dudgeon Light during a gale, while on her passage with coal; a wooden sailing vessel.	1509-1815	1806	360941	5904005
9146		1340413		HAPPY RETURN	1806 wreck of British cargo vessel which stranded near Tetney during a gale. En route from Kingston-upon-Hull to Scarborough, she was a wooden sailing vessel.	1509-1815	1806	303762	5933861
9147		1340520		LEITH PACKET	1807 wreck of Scottish packet which stranded on the southern end of the Haile Sand after leaving Kingston-upon-Hull for Leith; a wooden sailing vessel.	1509-1815	1807	308101	5931821
9148		1340521			BRIG, 1807	1509-1815	1807	300284	5943290
9149		1340523		TELEGRAPH	ENGLISH CRAFT, 1807	1509-1815	1807	312155	5936299
9150		1340526		PEGGY	1807 wreck of British cargo vessel which stranded on the Binks en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1807	310853	5939879
9151		1340563		NANCY	1807 wreck of English sloop which foundered off Kilnsea during a gale, on her passage to Sunderland; a wooden sailing vessel.	1509-1815	1807	309206	5940136
9152		1340569		UNION	1807 wreck of British cargo vessel which stranded near Theddlethorpe en route from Wisbech to Gainsborough with beans; a wooden sailing vessel.	1509-1815	1807	315874	5918151
9153		1340710		AMICUS	1807 wreck of English cargo vessel which stranded 0.5 mile south of "Sister Churches" (Withernsea and Owthorne churches). En route from St. Petersburg to Kingston-upon-Hull with hemp, flax, tallow and passengers, she was a wooden sailing vessel.	1509-1815	1807	304740	5957586
9154		1397769		ALPHA	1807 wreck of English cargo vessel which stranded "near Louth" during a storm, on her passage from Newcastle-upon-Tyne; a wooden sailing vessel.	1509-1815	1807	303762	5933861
9155		1397773			1807 wreck of brig which foundered after grounding on the Outer Binks, with a bearing of ESE from Spurn Head; a wooden sailing vessel.	1509-1815	1807	314871	5940840
9156		1398418		RECOVERY	1807 wreck of English sloop which stranded near Spurn Head, possibly during a gale; a wooden sailing vessel.	1509-1815	1807	309206	5940136
9157		1340915		ALBION	ENGLISH CRAFT, 1808	1509-1815	1808	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9158		1340939			1808 wreck of Swedish craft which stranded on the Binks; a wooden sailing vessel.	1509-1815	1808	310853	5939879
9159		1341030		COURIER	1808 wreck of British sloop which stranded on the Binks after springing a leak in a gale. En route from Sunderland to London with coal, she was a wooden sailing vessel.	1509-1815	1808	310853	5939879
9160		1341033			BRIG, 1808	1509-1815	1808	309618	5939955
9161		1399020			1808 wreck of French lugger which foundered 9 miles off the Dudgeon light vessel after a collision with one of her intended victims; a wooden sailing vessel.	1509-1815	1808	360941	5904005
9162		1399031			1808 wreck of collier which foundered off the River Humber following a collision, while on her passage with coal; a wooden sailing vessel.	1509-1815	1808	312155	5936299
9163		1399038			1808 wreck of collier which foundered off the River Humber following a collision, while on her passage with coal; a wooden sailing vessel.	1509-1815	1808	312155	5936299
9164		1399059		FORRESTER	1808 wreck of English cargo vessel which was wrecked near Kilnsea, on her passage in ballast; a wooden sailing vessel.	1509-1815	1808	309206	5940136
9165		1341324		DWINA	1809 wreck of cargo vessel which was burnt in Grimsby Dock after being struck by lightning. She had just arrived at Grimsby from Malta and Messina with currants and liquorice, and was a wooden sailing vessel.	1509-1815	1809	296894	5941573
9166		1341333		CHARLES AND FREDERICK	CARGO VESSEL, 1809	1509-1815	1809	310853	5939879
9167		1341341		TRUE BRITON	BRITISH CRAFT, 1809	1509-1815	1809	313810	5922316
9168		1341424		LIBERTY	ENGLISH CRAFT, 1809	1509-1815	1809	309618	5939955
9169		1341430		LIBERTY	CRAFT, 1809	1509-1815	1809	312155	5936299
9170		1341481			CARGO VESSEL, 1809	1509-1815	1809	300284	5943290
9171		1341502		MERTELNER	ENGLISH CRAFT, 1809	1509-1815	1809	300284	5943290
9172		1376744		MANCHESTER	1809 wreck of British craft which was lost en route from Selby to Hull; a wooden sailing vessel.	1509-1815	1809	332378	5914196
9173		1402235		EOLUS	1809 wreck of English brig which stranded on Spurn Head after two	1509-1815	1809	309206	5940136

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					collisions, en route from Shields to London with coal; a wooden sailing vessel.				
9174		942778		MARY	ENGLISH CRAFT, 1810	1509-1815	1810	318930	5910979
9175		942780		BETSEY	BRITISH CARGO VESSEL, 1810	1509-1815	1810	318930	5910979
9176		942781		GARLAND	1810 wreck of English craft which stranded at Sutton-on-Sea during a gale; a wooden sailing vessel.	1509-1815	1810	318930	5910979
9177		942783		THETIS	1810 wreck of craft, possibly Swedish, which stranded near Grimsby during a gale, while en route from Gavle to Bristol; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9178		942784		AGATHA	1810 wreck of craft which stranded near Grimsby during a storm, en route from Riga to London; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9179		942785		SOPHIA	1810 wreck of craft which stranded near Grimsby during a storm on her passage from Liepaja; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9180		942786		SOPHIAS DAUGHTER	1810 wreck of craft which stranded near Grimsby during a storm on her passage from Liepaja; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9181		942787		AWS	1810 wreck of craft which stranded near Grimsby during a storm, on her passage from Liepaja; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9182		942788		ABEONA	1810 wreck of English cargo vessel which stranded on Saltfleet beach during a gale. En route from Waterford to Kingston-upon-Hull with seed, she was a wooden sailing vessel.	1509-1815	1810	313810	5922316
9183		942791		VALENTINE	1810 wreck of English cargo vessel which stranded near Saltfleet during a gale en route from Shields to London. Laden with coal, she was a wooden sailing vessel.	1509-1815	1810	313810	5922316
9184		942793		JOHN AND GEORGE	ENGLISH CRAFT, 1810	1509-1815	1810	318930	5910979
9185		942797		IROQUOIS	1810 wreck of English snow which stranded near Grimsby during a storm, en route from Shields to London, possibly with coal; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9186		942798		TRITON	1810 wreck of English craft which stranded at Theddlethorpe during a gale, en route from Sunderland to London; a wooden sailing vessel.	1509-1815	1810	315874	5918151

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9187		942799		AMITY	ENGLISH CRAFT, 1810	1509-1815	1810	315874	5918151
9188		1302783		CITY OF ABERDEEN	1810 wreck of British craft which stranded near Great Coates during a storm, on her passage from London; a wooden sailing vessel.	1509-1815	1810	296894	5941573
9189		1302808		MARGARET	1810 wreck of British cargo vessel which stranded at Stallingborough en route from Wells-next-the-Sea to Kingston-upon-Hull. Laden with barley, she was a wooden sailing vessel.	1509-1815	1810	291264	5946308
9190		1341572		PEARL	1810 wreck of English brig which was lost near Spurn Head; a wooden sailing vessel.	1509-1815	1810	309618	5939955
9191		1341665		BEAUFOY	1810 wreck of British cargo vessel which stranded on the Binks en route from Sunderland to Shoreham-by-Sea with coal; a wooden sailing vessel.	1509-1815	1810	310853	5939879
9192		1341679			CARGO VESSEL, 1810	1509-1815	1810	312155	5936299
9193		1341781		HIRAM	1810 wreck of cargo vessel which was abandoned to founder after springing a leak 13 leagues SSE of Flamborough Head. En route from Newcastle-upon-Tyne to Gibraltar with coal, she was a wooden sailing vessel.	1509-1815	1810	322329	5942400
9194		1341845		WILHELM LUDWIG	1810 wreck of German galliot which stranded near Patrington on her passage from Szczecin with timber and staves; a wooden sailing vessel.	1509-1815	1810	304740	5957586
9195		1341857		ADEONA	BRITISH TRANSPORT VESSEL, 1810	1509-1815	1810	313810	5922316
9196		1341872		MARGARET	ENGLISH CRAFT, 1810	1509-1815	1810	324002	5897802
9197		1341918			HOY, 1810	1509-1815	1810	324002	5897802
9198		1341919		SUPPLY	ENGLISH CRAFT, 1810	1509-1815	1810	309130	5929924
9199		1341920		MARY AND ELEANOR	CRAFT, 1810	1509-1815	1810	309130	5929924
9200		1341937		JOHN	ENGLISH CRAFT, 1810	1509-1815	1810	309130	5929924
9201		1341976		LIBERTY	SCOTTISH CRAFT, 1810	1509-1815	1810	309130	5929924
9202		1341977		MATHEW	1810 wreck of English craft which stranded between Tetney and Theddlethorpe during a gale; a wooden sailing vessel.	1509-1815	1810	309130	5929924

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9203		1341979		JOSEPH AND DOROTHEA	1810 wreck of English craft which stranded between Tetney and Theddlethorpe during a gale; a wooden sailing vessel.	1509-1815	1810	309130	5929924
9204		1341982		ANN AND ISABELLA	1810 wreck of English snow which stranded between Tetney and Sutton-on-Sea during a gale; a wooden sailing vessel.	1509-1815	1810	316030	5922231
9205		1341984		SOUTH ESK	1810 wreck of English craft which stranded between Tetney and Theddlethorpe during a gale; a wooden sailing vessel.	1509-1815	1810	309130	5929924
9206		1341992		AID	ENGLISH CRAFT, 1810	1509-1815	1810	309130	5929924
9207		1341994		SALAMANDER	1810 wreck of English cargo vessel which stranded between Tetney and Theddlethorpe during a gale; a wooden sailing vessel.	1509-1815	1810	309130	5929924
9208		1399869			1810 wreck of English collier which stranded at Saltfleet while on her passage from Shields in ballast; a wooden sailing vessel.	1509-1815	1810	313810	5922316
9209		1399888		ALEXANDER	1810 wreck of British craft which stranded on Spurn Head en route from London to the Baltic; a wooden sailing vessel.	1509-1815	1810	309206	5940136
9210		1399932		UNITY	1810 wreck of English cargo vessel which foundered off the Dudgeon light vessel, on her passage with coal; a wooden sailing vessel.	1509-1815	1810	360941	5904005
9211		1399973		MARTHA	1810 wreck of English brig which stranded on Haile Sand; a wooden sailing vessel.	1509-1815	1810	308101	5931821
9212		1399984			1810 wreck of Prussian brig which stranded between the mouth of the River Humber and Skegness, on her passage to London with wheat; a wooden sailing vessel.	1509-1815	1810	317925	5913807
9213		984081		HOPE	1811 wreck of English brig which foundered off the River Humber following a collision on her passage from Sunderland. Laden with coal, she was a wooden sailing vessel.	1509-1815	1811	312155	5936299
9214		1342200		JORGEN CHRISTIAN	CRAFT, 1811	1509-1815	1811	310853	5939879
9215		1400387		LOUISA	1811 wreck of British craft which was abandoned by her crew to founder on her passage between London and Newcastle-upon-Tyne; a wooden sailing vessel.	1509-1815	1811	332378	5914196
9216		1342676		HEBE	BRITISH CRAFT, 1812	1509-1815	1812	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9217		1342677		HANNAH	1812 wreck of English cargo vessel which stranded on the Inner Dowsing en route from London to Gothenburg with goods; a wooden sailing vessel.	1509-1815	1812	337049	5904757
9218		1342678		VIOLET	CRAFT, 1812	1509-1815	1812	332378	5914196
9219		1400503		MARY	1812 wreck of English sloop which stranded near Tetney Haven while on her passage to Louth with coal; a wooden sailing vessel.	1509-1815	1812	303762	5933861
9220		1400516		BESSEY	1812 wreck of craft which foundered between Kingston-upon-Hull and Wisbech; a wooden sailing vessel.	1509-1815	1812	332378	5914196
9221		1400569		VICISSITUDE	1812 wreck of English snow which foundered following a collision. En route from Sunderland to London with coal, she was a wooden sailing vessel.	1509-1815	1812	332378	5914196
9222		1341686		HOPE	1813 wreck of English cargo vessel which stranded on a rock at the entrance of the Humber. En route from Helgoland to Kingston-upon-Hull with wheat and seed, she was a wooden sailing vessel.	1509-1815	1813	312155	5936299
9223		1342859		WILLIAM	ENGLISH BRIG, 1813	1509-1815	1813	312155	5936299
9224		1342862		GUTE MUTTER	1813 wreck of Prussian cargo vessel which stranded on the coast of Lincolnshire en route from Riga to Kingston-upon-Hull with logwood; a wooden sailing vessel.	1509-1815	1813	324002	5897802
9225		1342883		IRIS	BRITISH CRAFT, 1813	1509-1815	1813	360941	5904005
9226		1342964		FRIENDS	BRITISH CARGO VESSEL, 1813	1509-1815	1813	317925	5913807
9227		1342969		JULIET	ENGLISH CARGO VESSEL, 1813	1509-1815	1813	300284	5943290
9228		1342971		MARY	BRITISH CRAFT, 1813	1509-1815	1813	310853	5939879
9229		1342972		UNITY	1813 wreck of English cargo vessel which stranded on the Binks while on her passage with coal; a wooden sailing vessel.	1509-1815	1813	312155	5936299
9230		1343094		AMITY	1814 wreck of English brig which was wrecked near Spurn Head; a wooden sailing vessel.	1509-1815	1814	309618	5939955
9231		1343112		BRITANNIA	1814 wreck of Scottish sloop which stranded on the New Sand en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1814	322329	5942400

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9232		1343114		OCEAN	1814 wreck of British cargo vessel which stranded on the Binks en route from Shields to London and/or Faversham with coal; a wooden sailing vessel.	1509-1815	1814	310853	5939879
9233		1343382			CRAFT, 1814	1509-1815	1814	360941	5904005
9234		1343386		SALT CAT	1814 wreck of English brig which foundered off the River Humber following a collision; a wooden sailing vessel.	1509-1815	1814	312155	5936299
9235		1343393		ELIZA	1814 wreck of Scottish cargo vessel which foundered off Spurn Head following a collision. En route from Kirkwall to Kingston-upon-Hull with kelp, she was a wooden sailing vessel.	1509-1815	1814	309618	5939955
9236		1343416		MARIA	ENGLISH SLOOP, 1814	1509-1815	1814	300284	5943290
9237		1343449		WILLIAM	1814 wreck of English craft which foundered 8 leagues from Spurn Head; a wooden sailing vessel.	1509-1815	1814	309618	5939955
9238		1343454		WILLIAM AND SUSAN	ENGLISH CARGO VESSEL, 1814	1509-1815	1814	315874	5918151
9239		1343455		STEADY	ENGLISH CRAFT, 1814	1509-1815	1814	313810	5922316
9240		1401166		NEPTUNE	1814 wreck of English cargo vessel which stranded near Saltfleet during a gale, with her cargo of coal; a wooden sailing vessel.	1509-1815	1814	313810	5922316
9241		1401187		ESTAFETTE	1814 wreck of Danish schooner which capsized and stranded near Saltfleet after being captured as a prize; a wooden sailing vessel.	1509-1815	1814	313810	5922316
9242		1401477		ELIZABETH	1814 wreck of English craft which foundered off the Humber after springing a leak; a wooden sailing vessel.	1509-1815	1814	312155	5936299
9243		1343985		ARMEN	BRITISH CARGO VESSEL, 1815	1509-1815	1815	324002	5897802
9244		1343989		HAWK	1815 wreck of British cargo vessel which foundered off Spurn Head en route from Shields to London with coal; a wooden sailing vessel.	1509-1815	1815	309618	5939955
9245		1344013		SPRING	1815 wreck of British cargo vessel which stranded on Spurn Head en route from Sunderland to London with coal; a wooden sailing vessel.	1509-1815	1815	309618	5939955
9246		1344082		THOMAS	CRAFT, 1815	1509-1815	1815	317454	5930522
9247		1344264		BETSEY AND JANET	1815 wreck of Scottish cargo vessel which stranded near North	1509-1815	1815	309130	5929924

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Somercotes en route from Grangemouth to London with coal; a wooden sailing vessel.				
9248		1344284		SHAFTO	1815 wreck of English craft which foundered after grounding on the Outer Dowsing Shoal, en route from Shields to London; a wooden sailing vessel.	1509-1815	1815	374813	5924027
9249		1344402		THREE FRIENDS	ENGLISH CRAFT, 1815	1509-1815	1815	332378	5914196
9250		1344443		WILLIAMSON	CRAFT, 1815	1509-1815	1815	312155	5936299
9251		1344453		PHOENIX	1815 wreck of English craft which foundered off Spurn Point en route from Shields to London; a wooden sailing vessel.	1509-1815	1815	309618	5939955
9252		1344532		HOPE	ENGLISH CRAFT, 1815	1509-1815	1815	309130	5929924
9253		1401826		CHARLOTTE	1815 wreck of English cargo vessel which was lost near Dimlington, on her passage from Sunderland with coal; a wooden sailing vessel.	1509-1815	1815	308322	5950936
9254		1402125		ISABELLA AND MARY	1815 wreck of British cargo vessel which foundered following a collision en route from Newcastle-upon-Tyne to London with coal; a wooden sailing vessel.	1509-1815	1815	332378	5914196
9255		1406925		WILLIAM AND ANN	1830 wreck of British craft which stranded on the Haile Sand en route from London to Sunderland; a wooden sailing vessel.	1509-1815	1830	308101	5931821
9256		1406941			1830 wreck of sloop which stranded and bilged on Haile Sand en route from London to Newcastle-upon-Tyne; a wooden sailing vessel in ballast.	1509-1815	1830	308101	5931821
9257		1406942			1830 wreck of schooner which stranded and bilged on Haile Sand en route from Newcastle-upon-Tyne to Kingston-upon-Hull; a wooden sailing vessel.	1509-1815	1830	308101	5931821
9258		1406957		NANCYS	1830 wreck of a sloop stranded and bilged on Haile Sand en route from the Elbe for London with potatoes; a wooden sailing vessel.	1509-1815	1830	308101	5931821
9259			MLS21164		Casualty- KETCH LOUTH, EAST HALTON SKITTER	1816-1913		284543	5954005
9260			MLS21165		Casualty-SLOOP WILLIAM, EAST HALTON SKITTER	1816-1913		284543	5954005
9261		1330406		BRANCH	CRAFT, 1816	1816-1913	1816	310853	5939879
9262		1344630		MARY	1816 wreck of English cargo vessel which foundered off Spurn Point after springing a leak on her passage from Sunderland with coal; a wooden	1816-1913	1816	309618	5939955

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					sailing vessel.				
9263		1344658		GOOD HOPE	1816 wreck of English cargo vessel which stranded on the coast of Lincolnshire during a gale, on her passage in ballast; a wooden sailing vessel.	1816-1913	1816	324002	5897802
9264		1344682		THOMAS	ENGLISH CRAFT, 1816	1816-1913	1816	308982	5950910
9265		1197003		NEW BRADFORD	1817 wreck of English cargo vessel which exploded and foundered off the Dudgeon after catching fire en route from London to Kingston-upon-Hull. Laden with gunpowder and rum, she was a wooden sailing vessel.	1816-1913	1817	360941	5904005
9266		1403344		FLY	1817 wreck of British schooner which foundered 12 miles from the Dudgeon light vessel, after a collision. En route from Great Yarmouth to Leith with barley, she was a wooden sailing vessel.	1816-1913	1817	360941	5904005
9267		1316389		INDUSTRY	ENGLISH SLOOP, 1818	1816-1913	1818	300284	5943290
9268		1345806		PROVIDENCE	1818 wreck of English snow which stranded on the Binks on her passage from Shields to Gibraltar with coal, earthenware pottery and barrels; a wooden sailing vessel.	1816-1913	1818	310853	5939879
9269		1345816		UNITY	1818 wreck of English cargo vessel which was lost near Trusthorpe. Laden with coal, she was a wooden sailing vessel.	1816-1913	1818	318977	5912369
9270		1345902		CHARLES AND MARY	ENGLISH CRAFT, 1818	1816-1913	1818	323021	5901550
9271		1403556		FRIENDS ADVENTURE	1818 wreck of brig which stranded on the Binks en route from Shields to King's Lynn. Laden with coal, she was a wooden sailing vessel.	1816-1913	1818	310866	5940069
9272		1046749		INDUSTRY	1819 wreck of English brig which grounded on the Outer Binks, then drifted off to founder. Laden with potatoes from Leith, she was a wooden sailing vessel.	1816-1913	1819	314871	5940840
9273		1346036		ISABELLA	1819 wreck of English brig which stranded on Spurn Point en route from Sunderland to Portsmouth with coal; a wooden sailing vessel.	1816-1913	1819	309618	5939955
9274		1346563		PATENT	BRITISH CARGO VESSEL, 1819	1816-1913	1819	324002	5897802
9275		1346580		CITY OF NORWICH	ENGLISH SCHOONER, 1819	1816-1913	1819	313810	5922316
9276		1346719		WILLIAM	1819 wreck of English brig which foundered off Trusthorpe after a collision	1816-1913	1819	318977	5912369

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					on her passage from Sunderland with coal; a wooden sailing vessel.				
9277		894940		ENDEAVOUR	1820 wreck of English cargo vessel which stranded on Haile Sand on her passage either to or from Stockton-on-Tees; a wooden sailing vessel.	1816-1913	1820	308101	5931821
9278		1346721		JOHN	1820 wreck of English craft which stranded on the Binks on diverting into the Humber for repairs after a leak. En route from Shields to London, she was a wooden sailing vessel.	1816-1913	1820	310853	5939879
9279		1346726		MINERVA	1820 wreck of English collier which stranded on the Binks en route from Newcastle-upon-Tyne to Rochester. Laden with coal, she was a wooden sailing vessel.	1816-1913	1820	310853	5939879
9280		1346954		INDUSTRY	1820 wreck of British cargo vessel which stranded between Grimsby and Trusthorpe during a gale. En route from Sunderland to Kingston-upon-Hull, she was a wooden sailing vessel.	1816-1913	1820	311305	5928909
9281		1346958		VRIENDEN	1820 wreck of Dutch craft which was lost between Grimsby and Trusthorpe during a gale. En route from Ostend to Kingston-upon-Hull, she was a wooden sailing vessel.	1816-1913	1820	311305	5928909
9282		1347207		BLAYDES	1820 wreck of English cargo vessel which stranded on the Binks en route from Shields to London with coal; a wooden sailing vessel.	1816-1913	1820	310853	5939879
9283		1347609		JOHN	1820 wreck of British brig which was abandoned to founder approximately 8 miles SW of the Dudgeon light vessel en route from Shields to London; a wooden sailing vessel.	1816-1913	1820	360941	5904005
9284		1347849		CHARLOTTE AUGUSTA	CARGO VESSEL, 1820	1816-1913	1820	318930	5910979
9285		1404506			1820 wreck of craft which foundered in the River Humber during a gale; a wooden sailing vessel.	1816-1913	1820	300284	5943290
9286		1347879		GOTHENBURG	SWEDISH CARGO VESSEL, 1821	1816-1913	1821	324002	5897802
9287		1347896		BROTHERS AND SISTERS	1821 wreck of English sloop which foundered off Ingoldmells; a wooden sailing vessel.	1816-1913	1821	323407	5896891
9288		1347929		JOHN	CARGO VESSEL, 1821	1816-1913	1821	315874	5918151
9289		1347961		MOLD	1821 wreck of British craft which foundered 4 or 5 miles east of the Dudgeon after springing a leak. En route from Shields to London, she was a wooden sailing vessel.	1816-1913	1821	360941	5904005

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9290		1348637		JOSEPH AND MARY	1821 wreck of English cargo vessel which stranded on the New Sand Hole during a gale. En route from Newcastle-upon-Tyne to London with coal, she was a wooden sailing vessel.	1816-1913	1821	322329	5942400
9291		1348638		WILLIAM AND ANN	ENGLISH CARGO VESSEL, 1821	1816-1913	1821	322329	5942400
9292		1348654			1821 wreck of English sloop which foundered in the River Humber during a gale; a wooden sailing vessel.	1816-1913	1821	300284	5943290
9293		1348655			ENGLISH SLOOP, 1821	1816-1913	1821	324002	5897802
9294		1348707		ADVENTURE	1821 wreck of British craft which stranded on the coast of Lincolnshire during a storm, en route from Whitby to Wisbech; a wooden sailing vessel.	1816-1913	1821	324002	5897802
9295		1349016		THOMAS	BRITISH TRANSPORT VESSEL, 1821	1816-1913	1821	310853	5939879
9296		1349030		FERDINAND	PRUSSIAN CARGO VESSEL, 1821	1816-1913	1821	324002	5897802
9297		1405005		ORION	1821 wreck of English craft which sprang a leak and was abandoned to founder, possibly off Spurn Head. En route from Shields to London, she was a wooden sailing vessel.	1816-1913	1821	309206	5940136
9298		894045		HAZARD	1822 wreck of English brig which foundered after grounding on Trinity Sand during a gale, while bound from Sunderland with coal; a wooden sailing vessel.	1816-1913	1822	309206	5940136
9299		942803		BETSEY AND MARY	1822 wreck of English brig which stranded at Ingoldmells Point during a gale, while en route from King's Lynn to Kingston-upon-Hull. Laden with wheat and rape seed, she was a wooden sailing vessel.	1816-1913	1822	323407	5896891
9300		1349073		RAMBLER	1822 wreck of British schooner which stranded on the Trinity Sand during a gale, en route from Cork to Kingston-upon-Hull. Laden with beef, pork and butter, she was a wooden sailing vessel.	1816-1913	1822	309618	5939955
9301		1349074		MARY	1822 wreck of English collier which foundered after grounding on the Sunk Sand [alternatively, the Trinity Sand] during a gale. Laden with coal, she was a wooden sailing vessel.	1816-1913	1822	300284	5943290
9302		1349389		VINE	1822 wreck of English brig which stranded on Haile Sand; a wooden sailing vessel.	1816-1913	1822	308101	5931821
9303		1349591			1822 wreck of English sloop which foundered in the River Humber during	1816-1913	1822	300284	5943290

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					a gale; a wooden sailing vessel.				
9304		1349619			BRIG, 1822	1816-1913	1822	332378	5914196
9305		1405688			1822 wreck of craft which foundered 4 leagues ESE of Dimlington; a wooden sailing vessel.	1816-1913	1822	308322	5950936
9306		1349864		FOUR SISTERS	BRITISH SLOOP, 1823	1816-1913	1823	300284	5943290
9307		1349892		PRINCE OF WALES	1823 wreck of English craft which stranded on the Trinity Sand during a gale. En route from London to Gainsborough, she was a wooden sailing vessel.	1816-1913	1823	300284	5943290
9308		1349893			SLOOP, 1823	1816-1913	1823	300284	5943290
9309		1350098		JOHN AND HARRIET	CRAFT, 1823	1816-1913	1823	318977	5912369
9310		1350751		FRIENDSHIP	CRAFT, 1823	1816-1913	1823	284543	5954005
9311		1350846			1823 wreck of Scottish brig which foundered after grounding and capsizing on the Binks on entering the River Humber. On her passage from Shields with coal, she was a wooden sailing vessel.	1816-1913	1823	310853	5939879
9312		1350902		SISTERS	1823 wreck of cargo vessel which foundered after grounding on the Outer Dowsing Shoal en route from Riga to London. Laden with hemp, she was a wooden sailing vessel.	1816-1913	1823	374813	5924027
9313		1351292			CARGO VESSEL, 1823	1816-1913	1823	355610	5911584
9314		1351384			1823 wreck of Scottish smack which was lost in the Humber estuary during a gale; a wooden sailing vessel.	1816-1913	1823	312155	5936299
9315		1405884		ARMENIUS	1823 wreck of cargo vessel which stranded near Kilnsea on her passage from New Orleans to Bremen with tobacco and cotton; a wooden sailing vessel.	1816-1913	1823	309206	5940136
9316		1406535		BETSY	1823 wreck of English craft which stranded on Rosse Spit; a wooden sailing vessel.	1816-1913	1823	317454	5930522
9317		1351778			ENGLISH SLOOP, 1824	1816-1913	1824	303762	5933861
9318		1351781		VROW GESINA	1824 wreck of cargo vessel, probably Dutch, which stranded on the coast	1816-1913	1824	324002	5897802

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					of Lincolnshire en route from Lubeck to Grimsby; a wooden sailing vessel.				
9319		1351833		HARRIET	BRITISH CARGO VESSEL, 1824	1816-1913	1824	317925	5913807
9320		1351835		PROVIDENCE	ENGLISH SLOOP, 1824	1816-1913	1824	308101	5931821
9321		1351882		COMMERCE	1824 wreck of English cargo vessel which foundered after grounding on Theddlethorpe Overfalls on her passage from Scarborough and "running for the Humber". Laden with coal, she was a wooden sailing vessel.	1816-1913	1824	315874	5918151
9322		1351886		ENGELINA	1824 wreck of cargo vessel which was beached at Theddlethorpe after springing a leak on her passage from Carolinensiel to Kingston-upon-Hull. Constructed of wood, she was a sailing vessel.	1816-1913	1824	315874	5918151
9323		1351995		MARQUIS WELLINGTON	1824 wreck of Prussian cargo vessel which stranded on Haile Sand after grounding on Spurn Point. En route from Archangel and/or Gdansk to London with deals and flour, she was a wooden sailing vessel.	1816-1913	1824	308101	5931821
9324		1352016			CRAFT, 1824	1816-1913	1824	310853	5939879
9325		1352028		DELIGHT	1824 wreck of cargo vessel which stranded near Waxholme during a gale. En route from Archangel to London, she was a wooden sailing vessel.	1816-1913	1824	304740	5957586
9326		1352032		DIAMOND	1824 wreck of English brig which stranded near Cleethorpes during a gale; a wooden sailing vessel.	1816-1913	1824	299525	5938490
9327		1352035		ELIZABETH	1824 wreck of British brig which stranded near Cleethorpes during a gale. En route from Kingston-upon-Hull to Newcastle-upon-Tyne, she was a wooden sailing vessel.	1816-1913	1824	299525	5938490
9328		1352090		NANCY	ENGLISH BRIG, 1824	1816-1913	1824	299525	5938490
9329		1352092			DUTCH GALLIOT, 1824	1816-1913	1824	299525	5938490
9330		1352101		FORTUNE	1824 wreck of Scottish brig which foundered near the Dudgeon Light Vessel following a collision. En route from St. David's to London, she was a wooden sailing vessel.	1816-1913	1824	360941	5904005
9331		1360163		CLEMENTINA	1824 wreck of British craft which foundered off the coast of Lincolnshire on her passage from Wells-next-the-Sea to Leeds; a wooden sailing vessel.	1816-1913	1824	332378	5914196
9332		1406603			1824 wreck of brig which foundered 8 miles NNW of the Dudgeon Light Vessel. Thought to have been on her passage south, she was a wooden	1816-1913	1824	360941	5904005

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					sailing vessel.				
9333		984086		ELBE	1825 wreck of English snow which stranded at Out Newton during a gale, on her passage from St. Petersburg to London. Laden with tallow and wool, she was a wooden sailing vessel.	1816-1913	1825	308982	5950910
9334		1358933		DANDY	1825 wreck of British craft which foundered off the Dudgeon shoal following a collision with a wreck. En route from Dundee to London, she was a wooden sailing vessel.	1816-1913	1825	360941	5904005
9335		1359920		FORTH	BRITISH CARGO VESSEL, 1825	1816-1913	1825	309206	5940136
9336		1359924		BEE	1825 wreck of British cargo vessel which stranded at Ingoldmells during a storm, en route from London to Leeds with a general cargo which may have included any or all of the following: grocery provisions, spirits, hops, and paper products. She would have	1816-1913	1825	323407	5896891
9337		1359925		HALIFAX	1825 wreck of British cargo vessel which stranded at Ingoldmells during a storm, while en route from London to Leeds with a general cargo, which may have included any or all of the following products: grocery provisions, spirits, hops and paper products.	1816-1913	1825	323407	5896891
9338		1359929		TWO BROTHERS	CARGO VESSEL, 1825	1816-1913	1825	318977	5912369
9339		1407488		COLLINGS	1825 wreck of English craft which stranded on the Haile Sand en route from Newcastle-upon-Tyne to Brancaster; a wooden sailing vessel.	1816-1913	1825	308101	5931821
9340		1407642		GOVERNOR MYERS	1825 wreck of English brig which stranded at Saltfleet; a wooden sailing vessel.	1816-1913	1825	313810	5922316
9341		1360366			ENGLISH SLOOP, 1826	1816-1913	1826	300284	5943290
9342		1360375		DRIE ZUSTERS	1826 wreck of Dutch craft which stranded near Ingoldmells after departing from Kingston-upon-Hull for Amsterdam; a wooden sailing vessel.	1816-1913	1826	323407	5896891
9343		1360379		MINERVA	BRITISH CARGO VESSEL, 1826	1816-1913	1826	317454	5930522
9344		1360381		MARY ANN	1826 wreck of English craft which foundered after grounding on Theddlethorpe Overfalls; a wooden sailing vessel.	1816-1913	1826	315874	5918151
9345		1360382		JANNETTE MARGARETHA	1826 wreck of Dutch cargo vessel which stranded near Saltfleet en route from Pekela to Kingston-upon-Hull; a wooden sailing vessel.	1816-1913	1826	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9346		1407872		GOOD INTENT	1826 wreck of English collier which foundered about 10 miles south of the Humber following a collision. On her passage from London in ballast, she was a wooden sailing vessel.	1816-1913	1826	337049	5904757
9347		1407901			1826 wreck of English sloop which foundered, possibly off the Humber, after a collision with a northbound vessel while on her southbound voyage. Carrying an unspecified cargo, also possibly from the Humber, she was a wooden sailing vessel.	1816-1913	1826	312155	5936299
9348		942806		FANNY	ENGLISH CRAFT, 1827	1816-1913	1827	324002	5897802
9349		1164552		MARGARET	SCOTTISH CARGO VESSEL, 1827	1816-1913	1827	309206	5940136
9350		1237062		HERO	1827 wreck of English craft which foundered 10 miles north of the Dudgeon light vessel, or "Float", after a collision; a wooden sailing vessel.	1816-1913	1827	360941	5904005
9351		1304718		DUCHESS	ENGLISH CRAFT, 1827	1816-1913	1827	309618	5939955
9352		1304721		HYTHE	ENGLISH CARGO VESSEL, 1827	1816-1913	1827	309618	5939955
9353		1304728		CONSTANTINE	BRITISH CARGO VESSEL, 1827	1816-1913	1827	309618	5939955
9354		1304732		UNION	BRITISH CRAFT, 1827	1816-1913	1827	312155	5936299
9355		1304733		UNION	BRITISH CARGO VESSEL, 1827	1816-1913	1827	309618	5939955
9356		1304735		CATHARINE	BRITISH CRAFT, 1827	1816-1913	1827	287923	5950889
9357		1304761		NEPTUNE	SCOTTISH CARGO VESSEL, 1827	1816-1913	1827	304740	5957586
9358		1316026		SUSANNAH	BRITISH CRAFT, 1827	1816-1913	1827	337049	5904757
9359		1316030		WILLIAM AND ANN	BRITISH CRAFT, 1827	1816-1913	1827	319594	5928587
9360		1352440		VIGILANTE	CARGO VESSEL, 1827	1816-1913	1827	309130	5929924
9361		1359089		SUSANNAH	CRAFT, 1827	1816-1913	1827	312155	5936299
9362		1359094		SMIRNA	CRAFT, 1827	1816-1913	1827	312155	5936299
9363		1408355		UNION	1827 wreck of English sloop which was thought to have foundered en route from Sunderland to Wisbech. Laden with coal, she was a wooden	1816-1913	1827	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					sailing vessel.				
9364		1408361		SPEEDWELL	1827 wreck of British craft which was thought to have foundered between Shields and London; a wooden sailing vessel.	1816-1913	1827	332378	5914196
9365		1408362		RICHARDS	1827 wreck of English brig which was thought to have foundered en route from Sunderland to London; a wooden sailing vessel.	1816-1913	1827	332378	5914196
9366		942805		FORTUNATUS	CRAFT, 1828	1816-1913	1828	324002	5897802
9367		1304789		MAY	ENGLISH SLOOP, 1828	1816-1913	1828	309130	5929924
9368		1304797		ROSAMOND	1828 wreck of English brig which foundered off Spurn Head following a collision. Laden with coal, she was a wooden sailing vessel.	1816-1913	1828	309618	5939955
9369		1315894		FAIR TRADER	1828 wreck of English brig which foundered off the River Humber while on her southbound passage to Great Yarmouth with coal. Constructed of wood, she was a sailing vessel.	1816-1913	1828	312155	5936299
9370		1315899		WILLIAM AND SARAH	1828 wreck of English sloop which stranded at Tunstall during a gale, while on her passage to King's Lynn with coal; a wooden sailing vessel.	1816-1913	1828	304740	5957586
9371		1316039		EUPHEMIA	SCOTTISH SLOOP, 1828	1816-1913	1828	308101	5931821
9372		1357695		NEWLAND	CARGO VESSEL, 1828	1816-1913	1828	287923	5950889
9373		1357743		ASPERN	1828 wreck of English craft which stranded on the Binks en route from Sunderland to London; a wooden sailing vessel.	1816-1913	1828	310853	5939879
9374		1408523		NETTLE	1828 wreck of British craft which foundered between Sunderland and Great Yarmouth, after springing a leak. Constructed of wood, she was a sailing vessel.	1816-1913	1828	309206	5940136
9375		1355792		HOPPETT	CRAFT, 1829	1816-1913	1829	313810	5922316
9376		1355822		JOHN CRAIG	CRAFT, 1829	1816-1913	1829	309206	5940136
9377		1355972		FANNY	ENGLISH SLOOP, 1829	1816-1913	1829	309130	5929924
9378		1355992		STAR	SCOTTISH CRAFT, 1829	1816-1913	1829	309130	5929924
9379		1356104		RICHARD AND JANE	ENGLISH SCHOONER, 1829	1816-1913	1829	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9380		1409010		WILLIAM AND ESTHER	1829 wreck of English sloop which foundered off Dimlington following a collision in fog. Laden with coal, she was a wooden sailing vessel.	1816-1913	1829	308322	5950936
9381		1409079		SHALLOT	1829 wreck of English cargo vessel which foundered after grounding on the Binks. En route from Shields to Odessa, she was a wooden sailing vessel.	1816-1913	1829	310853	5939879
9382		1409093			1829 wreck of brig which foundered in Tetney Haven during a gale; a wooden sailing vessel.	1816-1913	1829	303762	5933861
9383		1409094			1829 wreck of brig which foundered in Tetney Haven during a gale; a wooden sailing vessel.	1816-1913	1829	303762	5933861
9384		942807		THOMAS AND MARY	ENGLISH SLOOP, 1830	1816-1913	1830	324375	5889806
9385		1303752		JESSIE	1830 wreck of British craft which stranded on Haile Sand en route from Newcastle to Hull; a wooden sailing vessel.	1816-1913	1830	308101	5931821
9386		1304994		BELLONA	1830 wreck of British craft which stranded near Tunstall during a gale, en route from London to Sunderland; a wooden sailing vessel.	1816-1913	1830	304740	5957586
9387		1305015		FRAU METTA	1830 wreck of German cargo vessel which capsized and stranded near Withernsea, en route from Carolinensiel to Kingston-upon-Hull. Laden with rape seed, she was a wooden sailing vessel.	1816-1913	1830	304740	5957586
9388		1309100			1830 wreck of Scottish sloop which foundered near the Dudgeon Shoal after a collision. Laden with an unspecified cargo, she was a wooden sailing craft.	1816-1913	1830	360941	5904005
9389		1309103		MARIA	1830 wreck of English brig which foundered near the Dudgeon Shoal following a collision, en route from King's Lynn to London and Portsmouth. Laden with a cargo variously described as corn or coal, she was a wooden sailing vessel.	1816-1913	1830	360941	5904005
9390		1316022			1830 wreck of Dutch cargo vessel which stranded between Ingoldmells and Skegness, on her passage from the Baltic Sea. Laden with tallow, timber, and staves, she was a wooden sailing vessel.	1816-1913	1830	323407	5896891
9391		1316066		RICHARD	1830 wreck of English craft which foundered following a collision while at anchor in the New Sand Hole. En route from Newcastle-upon-Tyne to Great Yarmouth, she was a wooden sailing vessel.	1816-1913	1830	322329	5942400

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9392		1316068		FORTITUDE	BRITISH CARGO VESSEL, 1830	1816-1913	1830	308101	5931821
9393		1357040		LEEDS	BRITISH BRIG, 1830	1816-1913	1830	310853	5939879
9394		1357060			1830 wreck of brig which foundered at the mouth of the Humber; a wooden sailing vessel.	1816-1913	1830	312155	5936299
9395		1357061			1830 wreck of sloop or smack which foundered a mile from the Bull Buoy; a wooden sailing vessel.	1816-1913	1830	305150	5940762
9396		1357091		MARY	1830 wreck of British craft which was abandoned to founder off Dimlington after springing a leak on her southbound passage from Shields; a wooden sailing vessel.	1816-1913	1830	308982	5950910
9397		1357093			CRAFT, 1830	1816-1913	1830	300284	5943290
9398		1409622		ANN	1830 wreck of English cargo vessel which stranded on Ingoldmells Point; a wooden sailing vessel.	1816-1913	1830	323407	5896891
9399		1410662		TELEMACHUS	1830 wreck of English craft which stranded near North Somercotes during a gale. En route from London to Shields, she was a wooden sailing vessel.	1816-1913	1830	309130	5929924
9400		1410664		LOUISE	1830 wreck of British brig which stranded near North Somercotes during a gale. En route from London to Sunderland in ballast, she was a wooden sailing vessel.	1816-1913	1830	309130	5929924
9401		1047762		HENRYS	1831 incident in which an English craft grounded near Trusthorpe, thought to have been recovered shortly afterwards; a wooden sailing vessel.	1816-1913	1831	318977	5912369
9402		1047768		CARLISLE	1831 wreck of British cargo vessel which stranded at Saltfleet while en route from Cardiff to Blyth with iron; a wooden sailing vessel.	1816-1913	1831	313810	5922316
9403		1047773		GEORGE	ENGLISH CARGO VESSEL, 1831	1816-1913	1831	308982	5950910
9404		1047783		HENRY	1831 incident in which an English collier grounded near Saltfleet,and is thought to have been recovered shortly afterwards; a wooden sailing vessel.	1816-1913	1831	313810	5922316
9405		1047784		STRANGER	1831 incident of English collier which grounded near Saltfleet, to be recovered shortly afterwards; a wooden sailing vessel.	1816-1913	1831	313810	5922316
9406		1047785		MARK AND ANN	1831 incident in which an English collier grounded near Saltfleet, to be	1816-1913	1831	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					recovered shortly afterwards; a wooden sailing vessel.				
9407		1047786		CYGNET	1831 incident in which an English cargo vessel grounded near Saltfleet, to be recovered shortly afterwards; a wooden sailing vessel.	1816-1913	1831	313810	5922316
9408		1047788		BARBADOES PACKET	1831 wreck of British cargo vessel which stranded near Chappel en route from Cadiz to Kingston-upon-Hull; a wooden sailing vessel.	1816-1913	1831	323021	5901550
9409		1047789		ISABELLA	1831 incident in which an English cargo vessel grounded at Skegness, to be recovered shortly afterwards. Laden with coal, she was a wooden sailing vessel.	1816-1913	1831	323211	5891521
9410		1316072		BEER AND WYNGETT	1831 incident in which an English craft grounded near Saltfleet en route from Gallipoli to Kingston-upon-Hull, to be recovered shortly afterwards. Constructed of wood, she was a sailing vessel.	1816-1913	1831	313810	5922316
9411		1316084		JENNY	1831 incident in which a British cargo vessel grounded at Ingoldmells en route from Messina to Kingston-upon-Hull; a wooden sailing vessel.	1816-1913	1831	323407	5896891
9412		1357100		JANE AND ANN	SCOTTISH CARGO VESSEL, 1831	1816-1913	1831	308982	5950910
9413		1357567			ENGLISH SCHOONER, 1831	1816-1913	1831	322329	5942400
9414		1358152		ATALANTA	CARGO VESSEL, 1831	1816-1913	1831	287923	5950889
9415		1358158			BRIG, 1831	1816-1913	1831	309618	5939955
9416		1411286		WILLIAM AND MARY	1831 wreck of English cargo vessel which was lost near Spurn Head in a gale, while en route from North Shields to London with coal; a wooden sailing vessel.	1816-1913	1831	309206	5940136
9417		942810		RAMSDEN	ENGLISH SLOOP, 1832	1816-1913	1832	332378	5914196
9418		1237934		ATLAS	BRITISH CRAFT, 1832	1816-1913	1832	360941	5904005
9419		1237947		LOWTHER	BRITISH PACKET, 1832	1816-1913	1832	360941	5904005
9420		1237951		HARRIET	BRITISH CARGO VESSEL, 1832	1816-1913	1832	360941	5904005
9421		1316087		APOLLO	1832 incident in which an English cargo vessel grounded at Anderby, on her passage from Kingston-upon-Hull with coal, to be recovered shortly afterwards. Constructed of wood, she was a sailing vessel.	1816-1913	1832	318930	5910979

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9422		1316094		ELIZABETH	ENGLISH SLOOP, 1832	1816-1913	1832	319594	5928587
9423		1358852		FRIENDS	1832 wreck of English brig which foundered about 3 miles NE of Spurn Point, while on her southbound passage with coal; a wooden sailing vessel.	1816-1913	1832	309618	5939955
9424		1358854		ROBERT AND SARAH	1832 wreck of British craft which foundered after grounding on the Dudgeon shoal during a "heavy gale". On her passage from Sunderland, she was a wooden sailing vessel.	1816-1913	1832	360941	5904005
9425		1407182		SUCCESS	1832 wreck of British craft which foundered off the Dudgeon Shoal. En route from Newcastle-upon-Tyne to Great Yarmouth, she was a wooden sailing vessel.	1816-1913	1832	360941	5904005
9426		927735		HARMONY	1833 wreck of English cargo vessel which was wrecked during a gale near Skegness, on her passage from Seaham with coal; a wooden sailing vessel.	1816-1913	1833	323211	5891521
9427		942808		BARBARA	BRITISH BRIG, 1833	1816-1913	1833	324002	5897802
9428		942809		MARY	BRITISH CRAFT, 1833	1816-1913	1833	324002	5897802
9429		942811		ISABELLA AND EUPHEMIA	BRITISH BRIG , 1833	1816-1913	1833	332378	5914196
9430		942813		MERMAID	1833 wreck of English craft which stranded on the coast of Lincolnshire; a wooden sailing vessel.	1816-1913	1833	324002	5897802
9431		1237957		HADDOW HOUSE	BRITISH CARGO VESSEL, 1833	1816-1913	1833	360941	5904005
9432		1238005		ELY	1833 wreck of English brig which foundered after grounding on the Race Bank; a wooden sailing vessel.	1816-1913	1833	360941	5904005
9433		1238084		ROBERT	BRITISH CRAFT, 1833	1816-1913	1833	360941	5904005
9434		1302336		HUDDERSFIELD	BRITISH BRIG, 1833	1816-1913	1833	317454	5930522
9435		1305999		HOPEWELL	1833 wreck of British cargo vessel which stranded on the Trinity Sand in a gale, while en route from Seaham to King's Lynn with coal; a wooden sailing vessel.	1816-1913	1833	309618	5939955
9436		1306075		DEBLYDE WITHIMOT	1833 wreck of Dutch cargo vessel which stranded near North Somercotes on her passage from Sunderland to Amsterdam with coal; a wooden	1816-1913	1833	309130	5929924

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					sailing vessel.				
9437		1306079		HENDRIKA	1833 wreck of Dutch cargo vessel which stranded near North Somercotes en route from Sunderland to Amsterdam with coal; a wooden sailing vessel.	1816-1913	1833	309130	5929924
9438		1306082		AMITY	ENGLISH CRAFT, 1833	1816-1913	1833	309130	5929924
9439		1306106		SARAH	1833 wreck of British craft which foundered off the Humber en route from Spalding to Goole; a wooden sailing vessel.	1816-1913	1833	312155	5936299
9440		1306110		ROSE OF SHARON	1833 wreck of British craft which stranded on Spurn Head en route from Newcastle-upon-Tyne to Grimsby; a wooden sailing vessel.	1816-1913	1833	309618	5939955
9441		1306115		CERES	1833 wreck of British craft which stranded on Kilnsea Beach. Possibly en route from Newcastle-upon-Tyne to Grimsby, she was a wooden sailing vessel.	1816-1913	1833	309618	5939955
9442		1316100			1833 wreck of brig which foundered off Skegness; a wooden sailing vessel.	1816-1913	1833	332681	5891179
9443		1350391			CRAFT, 1833	1816-1913	1833	360941	5904005
9444		1431654		FAIRY	1833 wreck of British craft which stranded on Holme Spit during a gale, while en route from Newcastle-upon-Tyne to Gainsborough; a wooden sailing vessel.	1816-1913	1833	287923	5950889
9445		1431688		WHARFINGER	1833 wreck of English sloop which foundered in a storm en route from Middlesbrough to London with coal; a wooden sailing vessel.	1816-1913	1833	332378	5914196
9446		1431895		SHIPWRIGHT	1833 wreck of English brig which was discovered in distress during a gale, and abandoned to founder en route from Sunderland to Maldon. Laden with coal, she was a wooden sailing vessel.	1816-1913	1833	332378	5914196
9447		1431896		SCARBRO	1833 wreck of British craft which is thought to have foundered in the North Sea in a gale, after leaving Shields for Worthing; a wooden sailing vessel.	1816-1913	1833	332378	5914196
9448		1432017		MARGARET	1833 wreck of British craft which foundered during a gale on her passage from Newcastle-upon-Tyne to Aldeburgh; a wooden sailing vessel.	1816-1913	1833	332378	5914196
9449		1432686			1833 wreck of sloop which foundered off the Humber; a wooden sailing vessel.	1816-1913	1833	312155	5936299

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9450		1432710		RESOLUTION	1833 wreck of English craft which was abandoned to founder off the Dudgeon, after springing a leak; a wooden sailing vessel.	1816-1913	1833	360941	5904005
9451		1435337		ORD	1833 wreck of English craft which foundered 35 miles SE of Flamborough Head en route from Sunderland to Portsmouth. Constructed of wood, she was a sailing vessel.	1816-1913	1833	314871	5940840
9452		942815		MARIA	BRITISH CRAFT, 1834	1816-1913	1834	324002	5897802
9453		1302347		BETSEY	BRITISH CRAFT, 1834	1816-1913	1834	318930	5910979
9454		1309905		WILLIAM AND MARY	CRAFT, 1834	1816-1913	1834	300683	5939562
9455		1309908		ENDEAVOUR	CRAFT, 1834	1816-1913	1834	312155	5936299
9456		1385789		LADY ANDOVER	1834 wreck of a British craft which foundered off the River Humber. This wooden sailing vessel was built in 1781.	1816-1913	1834	296894	5941573
9457		1306187		LONDON PACKET	BRITISH PACKET, 1835	1816-1913	1835	310853	5939879
9458		1316199			SLOOP, 1835	1816-1913	1835	300284	5943290
9459		1316203			SLOOP, 1835	1816-1913	1835	300284	5943290
9460		1364425		HOPE	BRITISH CRAFT, 1835	1816-1913	1835	312155	5936299
9461		1441794		ECLIPSE	1835 wreck of English schooner which foundered after springing a leak on her passage from Wells-next-the-Sea to the River Humber with barley. Constructed of wood, she was a sailing vessel.	1816-1913	1835	332378	5914196
9462		1350281		SARAH	ENGLISH BRIG, 1836	1816-1913	1836	360941	5904005
9463		1364551		HOLDERNESS	1836 wreck of British craft which was wrecked near Dimlington, while en route from London to Shields; a wooden sailing vessel.	1816-1913	1836	308322	5950936
9464		1364560		HAWK PACKET	1836 wreck of British packet which was abandoned to founder off Grimsby after springing a leak en route from Seaham to London; a wooden sailing vessel.	1816-1913	1836	296894	5941573
9465		1366208		FORTITUDE	1836 wreck of English brig which was wrecked off or near Mablethorpe, en route from Newcastle-upon-Tyne to London. Laden with coal, she was a wooden sailing vessel.	1816-1913	1836	317925	5913807

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9466		1432550			1836 wreck of brig which foundered off Holmpton during a gale; a wooden sailing vessel.	1816-1913	1836	308322	5950936
9467		1364280		PROVIDENCE	BRITISH CRAFT, 1838	1816-1913	1838	310853	5939879
9468		1364292		EDGAR	BRITISH CRAFT, 1838	1816-1913	1838	310853	5939879
9469		1364294		LIBERTY	BRITISH CRAFT, 1838	1816-1913	1838	310853	5939879
9470		928933		THOMAS AND MARY	BRITISH CARGO VESSEL, 1841	1816-1913	1841	360941	5904005
9471		942817		POLLOCK	ENGLISH BRIG, 1841	1816-1913	1841	337049	5904757
9472		1306193		EDWARD	ENGLISH SNOW, 1841	1816-1913	1841	305843	5938788
9473		1306205		ROBERT	1841 wreck of English schooner which foundered off the Inner Dowsing following collision with the HUNTER, which also foundered. Bound from Goole to London with coal, she was a wooden sailing vessel.	1816-1913	1841	337049	5904757
9474		1306215		HUNTER	1841 wreck of English schooner which foundered off the Inner Dowsing following a collision with the ROBERT, which also foundered. Bound from London to Sunderland in ballast, she was a wooden sailing vessel.	1816-1913	1841	337049	5904757
9475		1435472			1841 wreck of craft which was burnt, presumed foundered, 5 miles SE of the Dudgeon Light Vessel. Constructed of wood, she was a sailing vessel.	1816-1913	1841	360941	5904005
9476		942818		FRANKEA	SLOOP, 1844	1816-1913	1844	323211	5891521
9477		1317395		CERES	ENGLISH CARGO VESSEL, 1848	1816-1913	1848	319406	5923488
9478		984088		CUMBERLAND	ENGLISH BRIG, 1850	1816-1913	1850	309206	5940136
9479		984096		NAPOLEON II	CARGO VESSEL, 1850	1816-1913	1850	300284	5943290
9480		1306793		ANN AND JANE	ENGLISH CRAFT, 1850	1816-1913	1850	312155	5936299
9481		984115		JANET	BRITISH SNOW, 1851	1816-1913	1851	309206	5940136
9482		984127		VENUS	BRITISH BRIG, 1851	1816-1913	1851	300284	5943290
9483		1238955			SCHOONER, 1851	1816-1913	1851	360941	5904005

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9484		1337295		VENUS	BRITISH SCHOONER, 1851	1816-1913	1851	360941	5904005
9485		1337529		BEE	ENGLISH SLOOP, 1851	1816-1913	1851	300683	5939562
9486		1337536		CHATHAM	ENGLISH SLOOP, 1851	1816-1913	1851	322329	5942400
9487		1337550			SCHOONER, 1851	1816-1913	1851	322329	5942400
9488		1349844			1851 wreck of galliot which foundered in the New Sand Hole; a wooden sailing vessel.	1816-1913	1851	322329	5942400
9489		1385807			1851 wreck of a French brig which foundered near the River Humber. This sailing vessel was constructed from wood.	1816-1913	1851	300284	5943290
9490		1385808		ISABELLA	1851 wreck of a craft which foundered near the River Humber. This wooden sailing vessel was en route from Castle Hill to London.	1816-1913	1851	300284	5943290
9491		927811		RIVAL	ENGLISH SLOOP, 1852	1816-1913	1852	360941	5904005
9492		927812			ENGLISH BILLYBOY, 1852	1816-1913	1852	360941	5904005
9493		927812			ENGLISH BILLYBOY, 1852	1816-1913	1852	360941	5904005
9494		942820		LA FORCE	FRENCH SCHOONER, 1852	1816-1913	1852	318930	5910979
9495		1235561		RAMBLER	ENGLISH SLOOP, 1852	1816-1913	1852	360941	5904005
9496		1240029		PATTISON	ENGLISH BRIG, 1852	1816-1913	1852	360941	5904005
9497		1349851		VENELIA	BRIG, 1852	1816-1913	1852	323211	5891521
9498		1349855		JOHN AND REBECCA	ENGLISH SLOOP, 1852	1816-1913	1852	308101	5931821
9499		1349860		JOHNS	ENGLISH SLOOP, 1852	1816-1913	1852	304644	5941991
9500		1359107		LOUISA	BRITISH BRIG, 1852	1816-1913	1852	309618	5939955
9501		1359111		VICTORIA	ENGLISH BRIG, 1852	1816-1913	1852	304740	5957586
9502		1359129		HUTTON	BRITISH SCHOONER, 1852	1816-1913	1852	304740	5957586

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9503		1359130		CATHERINE	SCOTTISH SLOOP, 1852	1816-1913	1852	309618	5939955
9504		1385823		PROTHEROE	1852 wreck of an English schooner which stranded at Dimlington in a gale. This wooden sailing vessel was en route from Dieppe to Whitby in ballast.	1816-1913	1852	309206	5940136
9505		942822		MARIA	ENGLISH SCHOONER, 1853	1816-1913	1853	318930	5910979
9506		942823		AGNES	1853 wreck of English barque which stranded on the Haile Sand en route from London to Hartlepool in ballast; a wooden sailing vessel.	1816-1913	1853	308101	5931821
9507		942824		ABOYNE	ENGLISH SNOW, 1853	1816-1913	1853	304862	5933814
9508		1341772		INDUSTRY	BRITISH CRAFT, 1853	1816-1913	1853	360941	5904005
9509		1349882		CHARLOTTE AND CARL	GERMAN SCHOONER, 1853	1816-1913	1853	313700	5933453
9510		1349884		JOHN	ENGLISH SLOOP, 1853	1816-1913	1853	305722	5941203
9511		1349895		ELIZABETH	SCOTTISH BRIG, 1853	1816-1913	1853	308101	5931821
9512		1349901		ANN AND ELIZABETH	ENGLISH CARGO VESSEL, 1853	1816-1913	1853	311305	5928909
9513		1359213		JAMES SAVILLE	ENGLISH BRIGANTINE, 1853	1816-1913	1853	304740	5957586
9514		1359217		GEORGE BOLTON	ENGLISH TRAWLER, 1853	1816-1913	1853	312155	5936299
9515		1359279		ADAM CLARK	ENGLISH BRIG, 1853	1816-1913	1853	304740	5957586
9516		1359284		ANN	ENGLISH SLOOP, 1853	1816-1913	1853	304740	5957586
9517		1359299		FREEDOM	BRITISH CRAFT, 1853	1816-1913	1853	302835	5938358
9518		1359326			CRAFT, 1853	1816-1913	1853	304740	5957586
9519		1359334		ANN	ENGLISH SNOW, 1853	1816-1913	1853	309618	5939955
9520		1359340		TARTER	SMACK, 1853	1816-1913	1853	309618	5939955
9521		1359402		OAK	BRITISH CRAFT, 1853	1816-1913	1853	296409	5943081
9522		942825		ATLANTA	ENGLISH BRIG, 1854	1816-1913	1854	323407	5896891

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9523		984164		ISLE OF THANET	BRITISH CARGO VESSEL, 1854	1816-1913	1854	309206	5940136
9524		1245421		BORNEO	BRITISH BARQUE, 1854	1816-1913	1854	360941	5904005
9525		1245444		JOSEPHINE	ENGLISH BARQUE, 1854	1816-1913	1854	360941	5904005
9526		1316635		AGATHA	1854 wreck of an English schooner which stranded on the Binks after being spotted at sea in distress, when assistance was given and she was taken in tow. However, the tow rope broke and the vessel was driven onto the Binks with the loss of all on board.	1816-1913	1854	310853	5939879
9527		1316673		FREEDOM	ENGLISH CRAFT, 1854	1816-1913	1854	318930	5910979
9528		1316705		IRON GEM	BARQUE, 1854	1816-1913	1854	305379	5933045
9529		1316730		VULCAN	FRENCH BRIG, 1854	1816-1913	1854	305379	5933045
9530		1316746		CHARLOTTE	DANISH YACHT, 1854	1816-1913	1854	305379	5933045
9531		1341774		HAPPY RETURN	ENGLISH LUGGER, 1854	1816-1913	1854	360941	5904005
9532		1349911		FREDERICA	BRITISH CARGO VESSEL, 1854	1816-1913	1854	317925	5913807
9533		1349916		LIBERAL	ENGLISH SCHOONER, 1854	1816-1913	1854	332681	5891179
9534		1349919		AMBROSIA	SWEDISH SCHOONER, 1854	1816-1913	1854	302835	5938358
9535		1349939		TANANGER	NORWEGIAN SCHOONER, 1854	1816-1913	1854	308101	5931821
9536		1359432		MARTHA ANNETTE	CRAFT, 1854	1816-1913	1854	312155	5936299
9537		1359474		ISABELLA	ENGLISH BRIG, 1854	1816-1913	1854	310853	5939879
9538		1359515		WALTER R JONES	AMERICAN CARGO VESSEL, 1854	1816-1913	1854	312155	5936299
9539		1379753		IODINE	1855 wreck of English craft which foundered off Dimlington after springing a leak two days earlier on her passage from Shields to London; a wooden sailing vessel.	1816-1913	1855	308322	5950936
9540		1507891		ROSEVILLE	1855 wreck of English craft which foundered after grounding on Cromer Knoll en route from Shields for Schiedam. It is not known whether she was	1816-1913	1855	386037	5907046

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					a sailing vessel or steamer.				
9541		1359615		BRACK	ENGLISH SNOW, 1856	1816-1913	1856	296409	5943081
9542		983809		PERSEVERANCE	ENGLISH SNOW, 1857	1816-1913	1857	309206	5940136
9543		1349950		ZORGALIA	BARQUE, 1857	1816-1913	1857	317925	5913807
9544		1349979		MARIA	ENGLISH SAILING VESSEL, 1857	1816-1913	1857	313810	5922316
9545		1341797		JESSIE	BRITISH BRIG, 1858	1816-1913	1858	360941	5904005
9546		1341812		DEVON	ENGLISH BRIG, 1858	1816-1913	1858	360941	5904005
9547		1349980			ENGLISH BILLYBOY, 1858	1816-1913	1858	317925	5913807
9548		1489535		TARSA	1858 wreck of English cargo vessel which foundered after being involved in a collision off the Dudgeon Shoal; at the time she was bound from Kingston-upon-Hull for the River Plate with coal. Constructed of wood, she was a sailing vessel.	1816-1913	1858	360941	5904005
9549		983825		HOPE	ENGLISH SCHOONER, 1859	1816-1913	1859	304740	5957586
9550		983827		CAPITAL	BRITISH SLOOP, 1859	1816-1913	1859	304740	5957586
9551		1341817		DEVONIAN	ENGLISH SNOW, 1859	1816-1913	1859	360941	5904005
9552		1341837		FOUR BROTHERS	BRITISH KETCH, 1859	1816-1913	1859	360941	5904005
9553		1349984		PROVIDENCE	BRITISH SLOOP, 1859	1816-1913	1859	313810	5922316
9554		1359888		SMILAX	BRITISH SMACK, 1859	1816-1913	1859	312155	5936299
9555		1359949		GLENCAIRN	ENGLISH BRIG, 1859	1816-1913	1859	311891	5957473
9556		943064		SARAH	ENGLISH SLOOP, 1860	1816-1913	1860	296409	5943081
9557		1349997		LARK	BRITISH BRIG, 1860	1816-1913	1860	304644	5941991
9558		1360194		LIBERTY	ENGLISH SMACK, 1860	1816-1913	1860	309618	5939955
9559		1361444		VALIANT	ENGLISH BRIG, 1860	1816-1913	1860	304740	5957586

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9560		983837		GIPSEY	BRITISH SCHOONER, 1861	1816-1913	1861	304740	5957586
9561		1302281		YARBOROUGH	ENGLISH CARGO VESSEL, 1861	1816-1913	1861	313700	5933453
9562		1361452		MARY CAROLINE	BRITISH SCHOONER, 1861	1816-1913	1861	308101	5931821
9563		1361514		OCEAN	BRITISH SCHOONER, 1861	1816-1913	1861	309618	5939955
9564		1363131		ESMERALDA	BRITISH CUTTER, 1861	1816-1913	1861	312155	5936299
9565		1350005		UGIE	BRITISH BRIG, 1863	1816-1913	1863	304644	5941991
9566		1350018		BETSY	1863 wreck of British sloop which stranded a mile east of Saltfleet with her cargo of railway track. Constructed of wood, she was a sailing vessel.	1816-1913	1863	313810	5922316
9567		1363220		PLOVER	BRITISH SCHOONER, 1863	1816-1913	1863	309618	5939955
9568		1363275		JOHANNA	ENGLISH BRIG, 1863	1816-1913	1863	309618	5939955
9569		943065		PERSEVERANCE	ENGLISH CARGO VESSEL, 1865	1816-1913	1865	324002	5897802
9570		943066		SPLENDID	ENGLISH CARGO VESSEL, 1865	1816-1913	1865	317925	5913807
9571		1341860		GEORGE	BRITISH CARGO VESSEL, 1865	1816-1913	1865	360941	5904005
9572		1350022		OLIVE	ENGLISH SMACK, 1865	1816-1913	1865	355610	5911584
9573		1363311		MARIA	ENGLISH SMACK, 1865	1816-1913	1865	304740	5957586
9574		1370570		H SMETHURST	An English dandy which burnt and foundered 22 miles east of Spurn Head. The wind conditions were north north east force 5. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1865.	1816-1913	1865	355610	5911584
9575		943068		HAZARD	ENGLISH CRAFT, 1866	1816-1913	1866	296894	5941573
9576		983846		FORESTER	ENGLISH SLOOP, 1866	1816-1913	1866	309206	5940136
9577		1363366		EFFORT	ENGLISH SMACK, 1866	1816-1913	1866	308322	5950936
9578		1363371		WILLIAM AND NANCY	BRITISH CARGO VESSEL, 1866	1816-1913	1866	308322	5950936

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9579		1432571			1866 weck of schooner or barque which foundered between the Dudgeon Shoal and the Outer Dowsing; a wooden sailing vessel.	1816-1913	1866	360941	5904005
9580		983847		ALKALI	BRITISH SCHOONER, 1867	1816-1913	1867	312155	5936299
9581		983848			SLOOP, 1867	1816-1913	1867	309206	5940136
9582		983849		SPRING RICE	BRITISH KETCH, 1867	1816-1913	1867	309206	5940136
9583		1303287		FLORA	BRITISH SMACK, 1867	1816-1913	1867	305843	5938788
9584		1350025		ALEXANDRA	SAILING VESSEL, 1867	1816-1913	1867	323211	5891521
9585		1350030		PRINCE SAXE COBOURG	BRIG, 1867	1816-1913	1867	304862	5933814
9586		943069		DAISY	ENGLISH CRAFT, 1868	1816-1913	1868	300284	5943290
9587		1341889		J AND S MARTIN	BRITISH SCHOONER, 1868	1816-1913	1868	360941	5904005
9588		1363357		SPEEDWELL	BRITISH SCHOONER, 1868	1816-1913	1868	319594	5928587
9589		942828		HAMSTERLEY HALL	1869 wreck of English snow which stranded on Haile Sand during a storm, while bound from Kronshstadt to Kingston-upon-Hull; a wooden sailing vessel.	1816-1913	1869	308101	5931821
9590		942938		RICHARD MOUNT	ENGLISH BRIG, 1869	1816-1913	1869	332378	5914196
9591		983855		TRYPHANA	BRITISH SLOOP, 1869	1816-1913	1869	309206	5940136
9592		983856		TRIUNE	BRITISH SNOW, 1869	1816-1913	1869	304740	5957586
9593		1302295		BLUE JACKET	ENGLISH SCHOONER, 1869	1816-1913	1869	311305	5928909
9594		1303198		MARSDEN	BRITISH BRIG, 1869	1816-1913	1869	310853	5939879
9595		1341961		TEST	BRITISH KETCH, 1869	1816-1913	1869	360941	5904005
9596		1363361		GOLDEN GLEAM	BRITISH DANDY, 1869	1816-1913	1869	309206	5940136
9597		1303209		SCIO	ENGLISH SCHOONER, 1870	1816-1913	1870	299525	5938490

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9598		1303281		ST JEAN BAPTISTE	FRENCH LUGGER, 1870	1816-1913	1870	305843	5938788
9599		1303293		GEORGE AND JANE	BRITISH BRIG, 1870	1816-1913	1870	305843	5938788
9600		1341964		MIRA	CANADIAN BARQUE, 1870	1816-1913	1870	360941	5904005
9601		1363459		WALKER MOODY	1870 wreck of English dandy which foundered off Spurn Point after a collision returning from the North Sea with fish; a wooden sailing vessel.	1816-1913	1870	309618	5939955
9602		1363520		PILGRIM	BRITISH CUTTER, 1870	1816-1913	1870	309206	5940136
9603		1383508		RING	1870 wreck of English cargo vessel which foundered off Spurn Head after springing a leak on her passage from Newcastle-upon-Tyne to London with bricks; a wooden sailing vessel.	1816-1913	1870	309206	5940136
9604		1383545		SANTINA	1870 wreck of cargo vessel which stranded on one of the Dowsing Shoals en route from Taganrog to Boston; a wooden sailing vessel.	1816-1913	1870	374813	5924027
9605		1341998		VENUS	ENGLISH BRIG, 1871	1816-1913	1871	360941	5904005
9606		1350074		ARROW	ENGLISH BRIG, 1871	1816-1913	1871	312155	5936299
9607		1350079		AGABUS	ENGLISH SLOOP, 1871	1816-1913	1871	311305	5928909
9608		1350947		JOHN AND MARY	ENGLISH SLOOP, 1871	1816-1913	1871	311305	5928909
9609		1350951		TRE SORELLE	ITALIAN BARQUE, 1871	1816-1913	1871	311305	5928909
9610		1350954		LEVANT	ENGLISH CARGO VESSEL, 1871	1816-1913	1871	374813	5924027
9611		1350987		LEONIE	FRECH CARGO VESSEL, 1871	1816-1913	1871	355610	5911584
9612		1363531		WANDERER	ENGLISH CARGO VESSEL, 1871	1816-1913	1871	304740	5957586
9613		1342072		PLACE	BRITISH DANDY, 1872	1816-1913	1872	360941	5904005
9614		928010		THETIS	ENGLISH BRIG, 1873	1816-1913	1873	360941	5904005
9615		942832		BEATITUDE	ENGLISH SCHOONER, 1873	1816-1913	1873	332681	5891179
9616		1363714		WENTWORTH	1873 wreck of English cargo vessel which foundered 23 miles SE of Spurn Head after springing a leak en route from Shields to London with coal.	1816-1913	1873	337049	5904757

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Constructed of iron in 1865 or 1866, she was a steam-driven vessel.				
9617		1303295		BRITISH QUEEN	1874 wreck of English schooner which sprang a leak and foundered 0.25 mile NNW of the Bull Light Vessel. En route from Newcastle-upon-Tyne to Rye with coal, she was a wooden sailing vessel.	1816-1913	1874	305843	5938788
9618		1342098		ALERT	ENGLISH CUTTER, 1874	1816-1913	1874	360941	5904005
9619		1351041		HESTER AND HANNAH	ENGLISH KETCH, 1874	1816-1913	1874	319406	5923488
9620		928012		DEBORAH	ENGLISH SCHOONER, 1875	1816-1913	1875	360941	5904005
9621		942833		TEMPLE	ENGLISH BARGE, 1875	1816-1913	1875	337843	5911788
9622		943071		ARCTIC	ENGLISH SMACK, 1875	1816-1913	1875	332378	5914196
9623		978164		LOUTH	ENGLISH KETCH, 1875	1816-1913	1875	284543	5954005
9624		1351047		JANE	ENGLISH FISHING VESSEL, 1875	1816-1913	1875	312155	5936299
9625		1351053		LAUREL	ENGLISH SCHOONER, 1875	1816-1913	1875	374813	5924027
9626		1363813		CATHERINE AND ELIZA	WELSH SCHOONER, 1875	1816-1913	1875	311891	5957473
9627		942834		YOUNG MANS ENDEAVOUR	ENGLISH SLOOP, 1876	1816-1913	1876	323021	5901550
9628		942835		PILGRIM	ENGLISH SNOW, 1876	1816-1913	1876	300284	5943290
9629	722; 159	943072		JOHN AND THOMAS	ENGLISH SLOOP, 1876	1816-1913	1876	309206	5940136
9630		943073		UNDAUNTED	ENGLISH SMACK, 1876	1816-1913	1876	312155	5936299
9631		1342101		SARAH JANE	ENGLISH BRIGANTINE, 1876	1816-1913	1876	360941	5904005
9632		1342107		TWEED	ENGLISH SCHOONER, 1876	1816-1913	1876	360941	5904005
9633		1351063		BEECHER STOWE	ENGLISH BARQUE, 1876	1816-1913	1876	317925	5913807
9634		1363870		FORTUNA	NORWEGIAN BRIG, 1876	1816-1913	1876	313700	5933453
9635		1363871		LION	ENGLISH KETCH, 1876	1816-1913	1876	291264	5946308

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9636		1363903		KAMMERDIRECTOR VON FLOTOW	1876 wreck of German barque which stranded at Easington en route from Sundsvall to Kingston-upon-Hull with timber and iron; a wooden sailing vessel.	1816-1913	1876	308322	5950936
9637		1363915		DOCTOR VON THUNEN YELLOW	GERMAN BARQUE, 1876	1816-1913	1876	304740	5957586
9638		1363924		ROBERT HELLYER	ENGLISH KETCH, 1876	1816-1913	1876	309206	5940136
9639		1363957		MARCO POLO	ENGLISH SCHOONER, 1876	1816-1913	1876	300683	5939562
9640		1363960		DARLINGTON	ENGLISH BRIG, 1876	1816-1913	1876	300683	5939562
9641		1363964		GRACE DARLING	1876 wreck of English sloop which stranded on the Binks near Spurn Head en route from Goole for London with stone. Constructed of wood in 1836, she was a sailing vessel.	1816-1913	1876	310853	5939879
9642		942836		VISION	ENGLISH BRIGANTINE, 1877	1816-1913	1877	313810	5922316
9643		942837		ONWARD	ENGLISH DANDY, 1877	1816-1913	1877	317454	5930522
9644		1303394		AUTUMNA	1877 wreck of English brigantine which foundered after a collision with the Bull light vessel on departing Kingston-upon-Hull with coal and potatoes for Exmouth. Built in 1866, she was a wooden sailing vessel.	1816-1913	1877	305843	5938788
9645		1303397		ELIZA	ENGLISH SCHOONER, 1877	1816-1913	1877	319594	5928587
9646		1351093		HOPEWELL	ENGLISH KETCH, 1877	1816-1913	1877	333963	5911920
9647		1351097		DON COLINO	CHANNEL ISLAND SCHOONER, 1877	1816-1913	1877	355610	5911584
9648		1364792		SALLY AND HANNAH	ENGLISH DANDY, 1877	1816-1913	1877	308101	5931821
9649		942838		EMPEROR	ENGLISH CUTTER, 1878	1816-1913	1878	296894	5941573
9650		942839		TICKLER	ENGLISH DANDY, 1878	1816-1913	1878	309130	5929924
9651		942840		REINDEER	ENGLISH KETCH, 1878	1816-1913	1878	303752	5933862
9652		942841		MATHILDA	NORWEGIAN BRIG, 1878	1816-1913	1878	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9653		942842		SEAFLOWER	ENGLISH BRIGANTINE, 1878	1816-1913	1878	308101	5931821
9654		942843		KRONA	1878 wreck of Russian schooner which stranded 2.75 miles NW of Donna Nook en route from Gavle for Kingston-upon-Hull with planks, battens, and iron. Constructed of wood in 1872, she was a sailing vessel. She belonged to Aland in Finland, which, at the ti	1816-1913	1878	319594	5928587
9655		942844		ANNE	SCOTTISH SCHOONER, 1878	1816-1913	1878	319594	5928587
9656		942940		WATT	ENGLISH TUG, 1878	1816-1913	1878	317198	5938150
9657		978183		DEERFOOT	ENGLISH BARQUE, 1878	1816-1913	1878	306307	5942104
9658		1302366		METEOR	ENGLISH DANDY, 1878	1816-1913	1878	308101	5931821
9659		1303479		ANTIAS	ENGLISH SCHOONER, 1878	1816-1913	1878	313700	5933453
9660		1321617			FULL RIGGED SHIP, 1878	1816-1913	1878	337049	5904757
9661		1351108		MERCY	ENGLISH SLOOP, 1878	1816-1913	1878	317925	5913807
9662		1351111		KRON PRINZ ERNST AUGUST	GERMAN SCHOONER, 1878	1816-1913	1878	355610	5911584
9663		1368588		VIOLET	ENGLISH SMACK, 1878	1816-1913	1878	304740	5957586
9664		1368678		MARTHAS	ENGLISH BRIG, 1878	1816-1913	1878	304740	5957586
9665		1368682		BITON	NORWEGIAN SCHOONER, 1878	1816-1913	1878	306422	5931338
9666		1385830		OWNERS PRIDE	1878 wreck of an English smack which foundered 25 miles off the River Humber. This wooden sailing vessel departed from Kingston upon Hull on a fishing and return trip.	1816-1913	1878	298036	5942265
9667		942941		QUEEN	ENGLISH BRIGANTINE, 1879	1816-1913	1879	323211	5891521
9668		943076		STORM	ENGLISH SMACK, 1879	1816-1913	1879	300674	5939563
9669		943077		WANDERER	ENGLISH KETCH, 1879	1816-1913	1879	310853	5939879
9670		978193		RELIANCE	ENGLISH SMACK, 1879	1816-1913	1879	310853	5939879

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9671		1347343		REPRISAL	ENGLISH KETCH, 1879	1816-1913	1879	360941	5904005
9672		1351119		RANGER	ENGLISH DANDY, 1879	1816-1913	1879	337843	5911788
9673		1368690		GAINSBRO LASS	ENGLISH CUTTER, 1879	1816-1913	1879	300284	5943290
9674		1368706		SNAPPER	ENGLISH DANDY, 1879	1816-1913	1879	304740	5957586
9675		1368709		HARMONIE	DUTCH GALLIOT, 1879	1816-1913	1879	313810	5922316
9676		1368751		FLORA	An English dandy, stranded at Withernsea in 1879. She was a wood built sailing vessel.	1816-1913	1879	304740	5957586
9677		942847		EVA	1880 wreck of Russian or Finnish schooner which stranded on Haile Sand on leaving Grimsby for Copenhagen with coal; a wooden sailing vessel.	1816-1913	1880	308101	5931821
9678		942848		ALDERMAN FERRIES	ENGLISH KETCH, 1880	1816-1913	1880	313810	5922316
9679		942849		RIGA	NORWEGIAN BARQUE, 1880	1816-1913	1880	300674	5939563
9680		942943		NEPTUNE	ENGLISH BRIG, 1880	1816-1913	1880	303752	5933862
9681		942944		JUPITER	ENGLISH BRIGANTINE, 1880	1816-1913	1880	308101	5931821
9682		942947		DISPATCH	ENGLISH BRIG, 1880	1816-1913	1880	303752	5933862
9683		942948		PETILLA	ENGLISH SCHOONER, 1880	1816-1913	1880	305379	5933045
9684		942949		ALMUTH CATHERINE	ENGLISH SCHOONER, 1880	1816-1913	1880	308101	5931821
9685		942950		WAVENEY	ENGLISH BRIG, 1880	1816-1913	1880	311305	5928909
9686		942951		VIDAR	SWEDISH SCHOONER, 1880	1816-1913	1880	318930	5910979
9687		942953		SPECULATOR	ENGLISH BRIG, 1880	1816-1913	1880	300674	5939563
9688		942954		SOPHIA	ENGLISH BRIG, 1880	1816-1913	1880	304862	5933814
9689		942956		SCEPTRE	ENGLISH BRIGANTINE, 1880	1816-1913	1880	305379	5933045
9690		942957		SARAH ANN	ENGLISH BRIGANTINE, 1880	1816-1913	1880	303752	5933862

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9691		942959		QUEEN ADELAIDE	ENGLISH SCHOONER, 1880	1816-1913	1880	311305	5928909
9692		942960		RECKLESS	ENGLISH SCHOONER, 1880	1816-1913	1880	300683	5939562
9693		942962		COSGROVE	ENGLISH BRIG, 1880	1816-1913	1880	308101	5931821
9694		942963		CHARLES LOUIS	ENGLISH KETCH, 1880	1816-1913	1880	313810	5922316
9695		942964		OCEAN	ENGLISH BRIGANTINE, 1880	1816-1913	1880	308101	5931821
9696		942965		DIANA	ENGLISH BRIG, 1880	1816-1913	1880	308101	5931821
9697		942966		WILLIAM AND MARY	ENGLISH KETCH, 1880	1816-1913	1880	311305	5928909
9698		1302399		VIVE	ENGLISH KETCH, 1880	1816-1913	1880	323021	5901550
9699		1302407		ELIZABETH	ENGLISH BRIGANTINE, 1880	1816-1913	1880	303762	5933861
9700		1303508		AGUIA	ENGLISH KETCH, 1880	1816-1913	1880	291264	5946308
9701		1303510		PEACE	ENGLISH BRIGANTINE, 1880	1816-1913	1880	299525	5938490
9702		1303512		BETSEY	ENGLISH SLOOP, 1880	1816-1913	1880	299525	5938490
9703		1303513		INDUSTRY	ENGLISH SNOW, 1880	1816-1913	1880	299525	5938490
9704		1303520		VERNON	ENGLISH SNOW, 1880	1816-1913	1880	299525	5938490
9705		1303526		SOPHIA	ENGLISH SCHOONER, 1880	1816-1913	1880	299525	5938490
9706		1303531		MAID OF KENT	ENGLISH SCHOONER, 1880	1816-1913	1880	299525	5938490
9707		1303539		NEW FAIR TRADER	ENGLISH BRIG, 1880	1816-1913	1880	299525	5938490
9708		1303544		JANE	ENGLISH SMACK, 1880	1816-1913	1880	298036	5942265
9709		1349140		PROGRESS	ENGLISH CARGO VESSEL, 1880	1816-1913	1880	299525	5938490
9710		1351122		IVY	ENGLISH CUTTER, 1880	1816-1913	1880	300683	5939562
9711		1351136		N/ANORDSTJERNEN	NORWEGIAN BARQUE, 1880	1816-1913	1880	374813	5924027

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9712		1351139		EARL OF SUNDERLAND	ENGLISH BRIG, 1880	1816-1913	1880	299525	5938490
9713		1351150		DORA	ENGLISH SMACK, 1880	1816-1913	1880	355610	5911584
9714		1368754		EDWARD	An English dandy which foundered in Hawke Roads following a collision with another vessel in 1880 in wind conditions east force 9. She left Grimsby on a fishing and return trip. This sailing vessel was wood built and made in 1871.	1816-1913	1880	306307	5942104
9715		1368785		GEORGINA	An English brig which was stranded near Withernsea in 1880 in wind conditions ENE force 10. She had departed from London for Newcastle upon Tyne in ballast. The wooden sailing vessel was built in Brockweir in 1841.	1816-1913	1880	304740	5957586
9716		1368806		HEBE	1880 wreck of English brig which stranded at Easington, en route from Trouville for Seaham in ballast; a wooden sailing vessel.	1816-1913	1880	308322	5950936
9717		1368814		BEE	An English schooner which stranded near Dimlington in 1880 in wind conditions ENE force 10. She departed from Harwich for Shields in ballast. The wooden sailing vessel was built in 1859.	1816-1913	1880	309618	5939955
9718		1368837		MAYVILLE	An English schooner which stranded at Waxholme in 1880 in wind conditions ENE force 9. She departed from Ipswich for Middlesbrough in ballast. The wooden sailing vessel was built in Leith in 1847.	1816-1913	1880	304740	5957586
9719		1368842		TOPSY	An English brig which stranded on Withernsea beach in 1880 in wind conditions ENE force 9. She departed from Newhaven to Sunderland in ballast. The wooden sailing vessel was built in Rye in 1861.	1816-1913	1880	304740	5957586
9720		1368875		UNA	An English brigantine which stranded at Tunstall in 1880 in wind conditions NNE force 10. She departed from Dunkirk for Sunderland in ballast. The wooden sailing vessel was built in 1844.	1816-1913	1880	304740	5957586
9721		1368877		TIBER	An English brig which stranded near Withernsea in 1880 in wind conditions ENE force 10. She departed from London for Shields in ballast. The wooden sailing vessel was built in Sunderland in 1857.	1816-1913	1880	304740	5957586
9722		942967		DUPUYTREN	FRENCH LUGGER, 1881	1816-1913	1881	315874	5918151
9723		942968		SHAMROCK	ENGLISH DANDY, 1881	1816-1913	1881	315820	5916822
9724		942969		ARTILLERYMAN	ENGLISH CUTTER, 1881	1816-1913	1881	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9725		942970		CHANTICLEER	ENGLISH KETCH, 1881	1816-1913	1881	289428	5947473
9726		942971		FOAM	ENGLISH DANDY, 1881	1816-1913	1881	300284	5943290
9727		943078		AQUILA	ENGLISH CUTTER, 1881	1816-1913	1881	304862	5933814
9728		1351155		SIRIUS	ENGLISH KETCH, 1881	1816-1913	1881	299525	5938490
9729		1368902		SHAMROCK	An English dandy which stranded at Withernsea in 1881 in wind conditions south force 9. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1867.	1816-1913	1881	304740	5957586
9730		1368931		INO	An English brigantine which stranded at Withernsea in 1881 in wind conditions NE force 12. She departed from Hartlepool for Cowes with a cargo of coal. The wooden sailing vessel was built in Guernsey in 1839.	1816-1913	1881	304740	5957586
9731		1368933		EVERGREEN	An English sloop which foundered 4 miles south east of Spurn Float in 1881 in wind conditions west force 11. She departed from Barton for Ipswich with a cargo of bricks and tiles for roofing and flooring. The wooden sailing vessel was built in 1856.	1816-1913	1881	313700	5933453
9732		1368961		HEINRICH AND EMIL	A German brig which stranded near Kilnsea in 1881 in wind conditions east force 6. She departed from Newcastle upon Tyne with a cargo of coal. The wooden sailing vessel was built in 1839.	1816-1913	1881	300284	5943290
9733		1377823		TABOR	1881 wreck of English collier presumed to have foundered off the Dudgeon while en route from the Tyne for London with coal. This steam vessel was built in 1871.	1816-1913	1881	360941	5904005
9734		942975		APHOPHIS	ENGLISH SCHOONER, 1882	1816-1913	1882	313810	5922316
9735		942976		LET ME ALONE	ENGLISH BRIGANTINE, 1882	1816-1913	1882	305379	5933045
9736		943079		WILLING MIND	ENGLISH TUG, 1882	1816-1913	1882	312155	5936299
9737		1347546		CANOMA	SCOTTISH BARQUE, 1882	1816-1913	1882	374813	5924027
9738		1351185		HANNAH	ENGLISH SLOOP, 1882	1816-1913	1882	332681	5891179
9739		1351189		FIONA	SCOTTISH CARGO VESSEL, 1882	1816-1913	1882	308101	5931821
9740		1368994		MARTIN	An English dandy which foundered 8 miles south east of Spurn Head light	1816-1913	1882	317454	5930522

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					vessel in 1882 in wind conditions south west force 9. She departed from Grimsby on a fishing and return trip. The wooden fishing vessel was built in 1873.				
9741		1369002		ACHILLE	A French sloop which foundered 12 miles SSE of Spurn Head in 1882 in wind conditions ESE force 5. She carried a cargo of coal. The wooden sailing vessel was built in 1857.	1816-1913	1882	319406	5923488
9742		1369016		HARMONIE	A Norwegian brig which stranded on Tunstall Beach in 1882 in wind conditions SSW force 4. She departed from Arendal for Grimsby with a cargo of pit props. The wooden sailing vessel was built in 1815.	1816-1913	1882	304740	5957586
9743		1369042		DEFENCE	An English dandy which stranded at Spurn Head in 1882 in wind conditions south east force 4. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1834.	1816-1913	1882	309618	5939955
9744		1369046		OTTERCAPS	An English barque which stranded at Withernsea in 1882 in wind conditions SSE force 4. She departed from Rotterdam for Newcastle upon Tyne in ballast. The wooden sailing vessel was built in Sunderland in 1868.	1816-1913	1882	304740	5957586
9745		1369051		MARY ANNE	An English dandy which stranded at Kilnsea Beacon in 1882 in wind conditions south east force 6. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1875.	1816-1913	1882	300284	5943290
9746		942977		MARY	ENGLISH BRIGANTINE, 1883	1816-1913	1883	313700	5933453
9747		942978		LIZZIE ELLA	ENGLISH LUGGER, 1883	1816-1913	1883	318930	5910979
9748		943080		RESCUE	CHANNEL ISLAND BRIGANTINE, 1883	1816-1913	1883	355610	5911584
9749		1351186		INDUSTRY	ENGLISH SLOOP, 1883	1816-1913	1883	318930	5910979
9750		1351199		ELLEN	ENGLISH SCHOONER, 1883	1816-1913	1883	305379	5933045
9751		1351202		WONDERFUL	ENGLISH KETCH, 1883	1816-1913	1883	355610	5911584
9752		1369067		RISING SUN	1883 wreck of English dandy, which stranded at Dimlington in wind condition ESE force 6, while on a fishing and return trip out of Kingston-upon-Hull. Constructed in 1866 of wood, she was a sailing vessel.	1816-1913	1883	309618	5939955
9753		1369078		CLOWN	An English schooner which collided with another vessel and foundered 20 miles SE of Flamborough Head in 1883. Wind conditions were ESE force	1816-1913	1883	317339	5955955

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					5. She departed from Fowey for Newcastle upon Tyne with a cargo of china clay. The wooden sailing vessel was buil				
9754		1369099		ERNEST WOOD	1883 wreck of English billyboy which foundered in the River Humber in 1883 in wind conditions S force 6, while carrying grain from Kingston-upon-Hull for Grimsby. Constructed of wood, she was a sailing vessel.	1816-1913	1883	300284	5943290
9755		1369118		CLIO	An English ketch which stranded on Burcom Sand in 1883 in wind conditions south east force 9. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1883.	1816-1913	1883	296409	5943081
9756		1369170		BENJAMIN	An English brig which foundered 5 miles off Tunstall in 1883 in wind conditions SE force 1. She departed from South Shields for Great Yarmouth with a cargo of coal. The wooden sailing vessel was built in 1835.	1816-1913	1883	311891	5957473
9757		1369200		JUMBO	An English dandy which stranded 1.5 miles south of Withernsea Pier in 1883 in wind conditions NNE force 6. She departed from Great Yarmouth on a fishing and return trip. The wooden fishing vessel was built in 1866.	1816-1913	1883	304740	5957586
9758		1369202		CALEDONIA	An English tug which foundered near Bull buoy in 1883 in wind conditions NW force 9. She departed from Kingston upon Hull on a tow and return trip. The wooden steam powered vessel was built in 1846.	1816-1913	1883	305150	5940762
9759		1369204		C M NORWOOD	An English ketch which stranded at The Binks in 1883 in wind conditions north force 5. She departed from Kingston upon Hull on a fishing and return trip. The wooden sailing vessel was built in 1878.	1816-1913	1883	310853	5939879
9760		1377829		FERVENT	1883 wreck of English collier which went missing, presumed foundered, on her passage from the Tyne to London with coal; a steam vessel, she was built of iron.	1816-1913	1883	332378	5914196
9761		943081		WINIFRED	ENGLISH SMACK, 1884	1816-1913	1884	313810	5922316
9762		1351204		WHIM	BRITISH KEEL, 1884	1816-1913	1884	300683	5939562
9763		1351209		PETREL	ENGLISH TUG, 1884	1816-1913	1884	311305	5928909
9764		1351215		HOPE	CHANNEL ISLAND SCHOONER, 1884	1816-1913	1884	374813	5924027
9765		943082		CATHERINE	ENGLISH DANDY, 1885	1816-1913	1885	300674	5939563
9766		1303370		OMELLEN	SWEDISH BRIG, 1885	1816-1913	1885	311891	5957473

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9767		1369256		FAVOURITE	An English smack which collided with another vessel and foundered near Spurn Head light vessel in 1885 in wind conditions WSW force 1. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1883.	1816-1913	1885	309206	5940136
9768		1369270		YTHAN	An English schooner which collided with another vessel and foundered 10 miles ENE of Spurn Head in 1885 in wind conditions NNE force 2. She departed from Hartlepool for Folkestone with a cargo of coal. The wooden sailing vessel was built in 1847.	1816-1913	1885	311891	5957473
9769		1370371		ORIENT	An English smack which stranded at Withernsea in 1885 in wind conditions east force 8. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1848.	1816-1913	1885	304740	5957586
9770		1370402		EMELIE	A Swedish brig which stranded 2 miles south of Withernsea pier in 1885 in wind conditions east south east force 6. She departed from Kotka for Grimsby with a cargo of wood. The wooden sailing vessel was built in 1839.	1816-1913	1885	304740	5957586
9771		1370409		WAKEFIELD	An English cargo vessel which collided with another vessel and foundered in 1885 in wind conditions south west force 5. She departed from Grimsby for Hamburg with general cargo. The iron steam vessel was built in 1866.	1816-1913	1885	296409	5943081
9772		942979		EMMA AND ELIZA	ENGLISH KETCH, 1886	1816-1913	1886	313810	5922316
9773		942981		ALFRED	ENGLISH SMACK, 1886	1816-1913	1886	313810	5922316
9774		1302055		ISABELLA PRATT	ENGLISH SCHOONER, 1886	1816-1913	1886	313810	5922316
9775		1351228		MERMAID	ENGLISH BRIG, 1886	1816-1913	1886	311305	5928909
9776		1370431		QUAY SIDE	An English brig which foundered 6 miles east south east of Spurn Head in 1886. The wind conditions were north north west force 7. She departed from South Shields for Lowestoft with a cargo of coal. The wooden sailing vessel was built in 1832.	1816-1913	1886	314871	5940840
9777		1370445		HUMBER	An English ketch which stranded on the Inner Binks in 1886 in wind conditions north west force 4. She departed from Kingston upon Hull on a fishing and return trip. The wooden sailing vessel was built in 1874.	1816-1913	1886	310853	5939879
9778		1370468		AUNT ALICE	An English tug which foundered in Whitebooth Roads in 1886 in wind conditions south west force 6. She departed from Kingston upon Hull	1816-1913	1886	300284	5943290

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					seeking towage and return. The wooden steam vessel was built in 1863.				
9779		942982		NETTLE	BRITISH SMACK, 1887	1816-1913	1887	323211	5891521
9780		942983		DAGNY	DANISH BARQUE, 1887	1816-1913	1887	303752	5933862
9781		942984		PARAGON	ENGLISH BARGE, 1887	1816-1913	1887	318977	5912369
9782		942985		JANE	ENGLISH BRIGANTINE, 1887	1816-1913	1887	308040	5930251
9783		1370519		BAND OF HOPE	An English smack which collided with another vessel and foundered near the Bull light vessel in the Humber estuary in 1887. The wind conditions were north west force 10. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel wa	1816-1913	1887	305150	5940762
9784		1370523		PEGGY	A British keel which foundered between Grimsby and Stallingborough in 1887 in wind conditions north west force 9. She departed from Grimsby for Kingston upon Hull with a cargo of oil and coal-tar. The sailing vessel is of wood.	1816-1913	1887	296894	5941573
9785		1370526		HANNA	A Norwegian schooner which stranded on the Binks Sand in 1887 in wind conditions north north east force 7. She departed from Risoer for Kingston upon Hull with a cargo of pit props. The wooden sailing vessel was built in 1856.	1816-1913	1887	310853	5939879
9786		942986		DARING	ENGLISH DANDY, 1888	1816-1913	1888	296894	5941573
9787		942988		ANN JONES	WELSH SCHOONER, 1888	1816-1913	1888	308101	5931821
9788		943083		GEM OF THE SEA	ENGLISH KETCH, 1888	1816-1913	1888	300674	5939563
9789		1347800		HASTINGS	ENGLISH CARGO VESSEL, 1888	1816-1913	1888	360941	5904005
9790		1370530		LAWRINA	An English ketch which stranded on the Inner Binks in 1888 in wind conditions north north east force 8. She departed from Kingston upon Hull on a fishing and return trip. The wooden sailing vessel was built in 1877.	1816-1913	1888	310853	5939879
9791		942989		BRITISH TAR	ENGLISH DANDY, 1889	1816-1913	1889	303752	5933862
9792		943084		ECHO	ENGLISH TUG, 1889	1816-1913	1889	296894	5941573
9793		1303400		NEVA	ENGLISH KETCH, 1889	1816-1913	1889	299525	5938490

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9794		1347838		MAGLONA	ENGLISH CARGO VESSEL, 1889	1816-1913	1889	360941	5904005
9795		1351250		WILLIAM	ENGLISH SCHOONER, 1889	1816-1913	1889	311305	5928909
9796		1351251		QUEEN VICTORIA	ENGLISH DANDY, 1889	1816-1913	1889	296894	5941573
9797		1351286		INDEFATIGABLE	SWEDISH BARQUE, 1889	1816-1913	1889	308101	5931821
9798		1370543		STAR OF THE EAST	A British sloop which stranded near Spurn Head in 1889. Wind conditions were west north west force 8. She departed from Sunderland for Tollesbury with a cargo of coal. The wooden sailing vessel was built in 1871.	1816-1913	1889	309618	5939955
9799		1370547		WILLIAM AND SUSANNAH	An English dandy which collided with another vessel and foundered 14 miles east of New Sand light vessel in 1889. Wind conditions were east north east force 2. She departed from Grimsby on a fishing and return trip. Wooden sailing vessel.	1816-1913	1889	355610	5911584
9800		942993		QUESTOR	ENGLISH DANDY, 1890	1816-1913	1890	313810	5922316
9801		943089		BLOSSOM	ENGLISH SMACK, 1890	1816-1913	1890	298036	5942265
9802		1348216			UNKNOWN, 1890	1816-1913	1890	348363	5893260
9803		1351259		SMELT	ENGLISH DANDY, 1890	1816-1913	1890	310853	5939879
9804		1351281		RICHARD AND FRANCES	ENGLISH SLOOP, 1890	1816-1913	1890	360941	5904005
9805		1370572		GENESTA	An English dandy which stranded between Withernsea and Dimlington in 1890 in wind conditions north east force 6. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1885.	1816-1913	1890	304740	5957586
9806		1370577		VACUNA	An English ketch which stranded at the Inner Binks in 1890 in wind conditions south force 7. She departed from London for Portsoy with a cargo of whiting fish. The wooden sailing vessel was built in 1855.	1816-1913	1890	310853	5939879
9807		1370579		JEHANNE	A French craft which collided and foundered in the River Humber in 1890. The iron steam vessel departed from Grimsby for Dieppe.	1816-1913	1890	300284	5943290
9808		1370583		IRIS	A Norwegian barque which stranded 1 mile south of Kilnsea Beacon in 1890 in wind conditions east force 8. She departed from London for Grimstad in ballast. The wooden sailing vessel was built in 1850.	1816-1913	1890	309618	5939955

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9809		1348394		CLAREMONT	ENGLISH CARGO VESSEL, 1891	1816-1913	1891	360941	5904005
9810		1351301		PRESENT HELP	ENGLISH DANDY, 1891	1816-1913	1891	308101	5931821
9811		1351315		VIBILIA	NORWEGIAN SCHOONER, 1891	1816-1913	1891	323021	5901550
9812		1351323		ADMIRAL	1891 wreck of Scottish trawler which foundered 14 miles east of Spurn Head while en route from Grimsby for Swansea. Built in 1866, she was an iron screw steamer.	1816-1913	1891	317925	5913807
9813		1351358		JOHN WRAY	ENGLISH SCHOONER, 1891	1816-1913	1891	313810	5922316
9814		1370594		PETREL	An English dandy which stranded on the Middle Binks in 1891 in wind conditions south south east force 10. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1869.	1816-1913	1891	310853	5939879
9815		1370602		SARAH	An English schooner which foundered 18 miles south east of Spurn Head in 1891; wind conditions were west north west force 10. She departed from King's Lynn for Stockton on Tees with a cargo of wheat. The wooden sailing vessel was built in 1861.	1816-1913	1891	355610	5911584
9816		1370606		ELIZABETH	1891 wreck of English ketch which collided with another vessel and foundered 12 miles north and 0.5 miles east of Spurn Head. She departed from Kingston upon Hull on a fishing and return trip. The wooden sailing vessel was built in 1875.	1816-1913	1891	311891	5957473
9817		942994		ESMERALDA	ENGLISH KETCH, 1892	1816-1913	1892	308040	5930251
9818		1351364		UNITY	ENGLISH SLOOP, 1892	1816-1913	1892	286930	5953155
9819		1351369		ALBERT	FINNISH CARGO VESSEL, 1892	1816-1913	1892	308101	5931821
9820		1351374		NIO	ENGLISH BRIG, 1892	1816-1913	1892	313810	5922316
9821		1370609		EVA	An English cargo vessel which collided with another vessel and foundered 15 miles north east of Spurn Head in 1892; wind conditions were south south east force 1. She departed from Newcastle upon Tyne for London with a cargo of coal. Iron steam vessel.	1816-1913	1892	311891	5957473
9822		1370639		VIXEN	A British survey vessel which foundered 3 miles off Spurn Head in 1892 in wind conditions north east force 5. She departed from Stockton on Tees for Kingston upon Hull. The wooden sailing vessel was built in 1890.	1816-1913	1892	309618	5939955

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9823		1370944		SUNBEAM	An English barge which collided and foundered off Spurn Head in 1892. She departed from Hartlepool for Harwich with a cargo of coal. The wooden sailing vessel was built in Harwich in 1889.	1816-1913	1892	298036	5942265
9824		1370947		ARENTGOTT AND THORA	1892 wreck of Danish schooner which foundered 30 miles SE of Flamborough Head, after a collision en route from London for Leith with a cargo of bagged cement. Constructed of wood in 1877, she was a sailing vessel.	1816-1913	1892	311891	5957473
9825		942995		FRANK	BRITISH DANDY, 1893	1816-1913	1893	332681	5891179
9826		1348470		WAVE	ENGLISH KEEL, 1893	1816-1913	1893	360941	5904005
9827		1348583		SAMUEL AND ANN	ENGLISH SLOOP, 1893	1816-1913	1893	312155	5936299
9828		1351581		ELBA	ENGLISH CARGO VESSEL, 1893	1816-1913	1893	374813	5924027
9829		1351772		SHANNON	BRITISH DANDY, 1893	1816-1913	1893	332681	5891179
9830		1351775		CHARLES	ENGLISH SMACK, 1893	1816-1913	1893	311305	5928909
9831		1351787		EVA MARIA	ENGLISH SCHOONER, 1893	1816-1913	1893	303762	5933861
9832		1351804		AGRICOLA	SCOTTISH BRIG, 1893	1816-1913	1893	299525	5938490
9833		1351807		ANN WALTERS	ENGLISH SCHOONER, 1893	1816-1913	1893	299525	5938490
9834		1351813		SIR HENRY HAVELOCK	ENGLISH BRIG, 1893	1816-1913	1893	299525	5938490
9835		1351818		WILLIAM AND SARAH ANN	ENGLISH KETCH, 1893	1816-1913	1893	296894	5941573
9836		1351824		ANNIE FLORENCE	ENGLISH SCHOONER, 1893	1816-1913	1893	313810	5922316
9837		1351826		LIZZIE LEE	ENGLISH SCHOONER, 1893	1816-1913	1893	318930	5910979
9838		1351827		AMAZON	CHANNEL ISLAND KETCH, 1893	1816-1913	1893	305379	5933045
9839		1351834		OLIVE BRANCH	ENGLISH BARQUE, 1893	1816-1913	1893	313810	5922316
9840		1351840		BLUE JACKET	WELSH SCHOONER, 1893	1816-1913	1893	305379	5933045

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9841		1351844		MARY ANN	ENGLISH KETCH, 1893	1816-1913	1893	308101	5931821
9842		1371027		HARRY SINCLAIR	An English dandy which stranded near Withernsea in 1893; wind conditions were south south east force 6. She departed from Grimsby on a fishing and return trip. The wooden sailing vessel was built in 1878.	1816-1913	1893	304740	5957586
9843		1371031		VENTOR	An English cargo vessel which stranded at Kilnsea in 1893. She departed from Woodbridge for Hartlepool in ballast. The wooden steam vessel was built in 1873.	1816-1913	1893	309618	5939955
9844		1371037		BRITANNIA	A Scottish schooner which stranded at Dimlington in 1893; wind conditions were north north east force 10. She departed from Berwick upon Tweed for London with a cargo of barley. The wooden sailing vessel was built in 1869.	1816-1913	1893	309618	5939955
9845		1371128		EQUITY	An English ketch which stranded near Withernsea in 1893; wind conditions were north east force 9. She departed from Teignmouth for Leith with a cargo of pipe clay. The wooden sailing vessel was built in 1871.	1816-1913	1893	304740	5957586
9846		1371141		EMMA	An English brig which stranded at Spurn Head in 1893. She departed from Southampton for Sunderland in ballast. The wooden sailing vessel was built in 1865.	1816-1913	1893	309206	5940136
9847		1371208		ANNA	1893 wreck of German brig which collided with a sunken wreck and stranded on the shore near Spurn Head en route from Gdansk for Wisbech with a cargo of timber. Constructed of wood in 1864, she was a sailing vessel.	1816-1913	1893	309206	5940136
9848		1371272		ALMA	A Norwegian brig which stranded at Dimlington in 1893. She departed from Sundsvall for Grangemouth with a cargo of timber. The wooden sailing vessel was built in 1857.	1816-1913	1893	309206	5940136
9849		1371338		MARY LOUISA	1893 wreck of English schooner which stranded on the Middle Binks Sand. This wooden sailing vessel, built 1866, was en route from Flushing to South Shields with vegetables.	1816-1913	1893	310853	5939879
9850		1371352		CROWN	1893 wreck of English ketch which foundered 20 miles south east of Flamborough Head following collision. This wooden sailing vessel, built 1877, was on a fishing and return trip.	1816-1913	1893	311891	5957473
9851		942996		LONDON PACKET	ENGLISH SCHOONER, 1894	1816-1913	1894	315874	5918151

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9852		942997		HERO	ENGLISH CARGO VESSEL, 1894	1816-1913	1894	360941	5904005
9853		942998		ALFRED AND EDWIN	ENGLISH SLOOP, 1894	1816-1913	1894	332681	5891179
9854		942999		CAROLINE	BRITISH KETCH, 1894	1816-1913	1894	296894	5941573
9855		943002		SHOAYNYO	ENGLISH KETCH, 1894	1816-1913	1894	337049	5904757
9856		1351864		FRANCIS	ENGLISH KETCH, 1894	1816-1913	1894	360941	5904005
9857		1371421		SAVILLS	1894 wreck of English ketch which foundered 20 miles east south east of Spurn Head in a gale. This wooden sailing vessel, built 1860, was en route from Wisbech to Middlesbrough with wheat.	1816-1913	1894	355610	5911584
9858		1371471		HAABET	1894 wreck of Norwegian barque which stranded 3.5 miles south of Withernsea. This wooden sailing vessel, built 1866, was en route from Halden to King's Lynn with timber.	1816-1913	1894	304740	5957586
9859		1371494		CRUSADER	1894 wreck of English dandy which foundered 15 miles east of Spurn Head following collision. This wooden sailing vessel, built 1894, departed from Grimsby on a fishing and return trip.	1816-1913	1894	322329	5942400
9860		1371842		VALKYRIE	1894 wreck of English lugger which stranded on the Middle Binks. This wooden sailing vessel, built 1894, was on a fishing and return trip.	1816-1913	1894	310853	5939879
9861		1371890		ARTHUR AND FANNY	1894 wreck of English dandy which foundered 15 miles north east of Spurn Head in a gale. This wooden sailing vessel, built 1883, departed from Grimsby on a fishing and return trip.	1816-1913	1894	311891	5957473
9862		943003		SATIS	ENGLISH BRIGANTINE, 1895	1816-1913	1895	308101	5931821
9863		943004		PRINCESS OF WALES	BRITISH PASSENGER VESSEL, 1895	1816-1913	1895	332641	5890180
9864		943005		PACIFIQUE	FRENCH BARQUE, 1895	1816-1913	1895	360941	5904005
9865		943006		ROBERT AND JOHN	BRITISH SLOOP, 1895	1816-1913	1895	300284	5943290
9866		1302111		WIDE AWAKE	ENGLISH DANDY, 1895	1816-1913	1895	348363	5893260
9867		1302118		J MURRELL	ENGLISH KETCH, 1895	1816-1913	1895	306422	5931338
9868		1351865		USEFUL	ENGLISH BRIG, 1895	1816-1913	1895	309130	5929924

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9869		1351872		ISIS	ENGLISH DANDY, 1895	1816-1913	1895	312155	5936299
9870		1351879		SUNBEAM	BRITISH KEEL, 1895	1816-1913	1895	300284	5943290
9871		1372094		MICHAEL	1895 wreck of Russian schooner which foundered 2 miles SSE of Spurn Head, bound from Borrowstounness to Riga. Laden with coal, she was a wooden sailing vessel. The nationality of the vessel was given at the time as Russian.	1816-1913	1895	309206	5940136
9872		1372136		MARIAN FRANCIS	1895 wreck of English dandy which foundered 4-5 miles east north east of Withernsea following collision. This wooden sailing vessel, built 1890, departed from Grimsby on a fishing and return trip.	1816-1913	1895	311891	5957473
9873		1372238		NANTES	1895 wreck of English cargo vessel which foundered 2 miles south south west of Spurn Head following collision. This iron steam vessel, built 1873, was en route from London to Kingston upon Hull with general cargo.	1816-1913	1895	312155	5936299
9874		1372261		PLOVER	1895 wreck of English ketch which foundered at the entrance of the River Humber following collision. This wooden sailing vessel, built 1885, departed from Kingston upon Hull on a fishing and return trip.	1816-1913	1895	312155	5936299
9875		1372306		TWIGGS	1895 wreck of English schooner which foundered 20 miles east of Spurn Head in a gale. This wooden sailing vessel, built 1860, was en route from Middlesbrough to Grimsby with salt.	1816-1913	1895	355610	5911584
9876		1372313		EMMA	1895 wreck of English ketch which foundered 30 miles south east of Spurn Head in a gale. This wooden sailing vessel, built 1863, was en route from Ipswich for Newcastle upon Tyne with timber.	1816-1913	1895	337843	5911788
9877		1372322		ISABELLA	1895 wreck of English schooner which stranded near Kilnsea in a gale. This wooden sailing vessel, built 1848, was en route from South Shields to Poole with coal.	1816-1913	1895	309206	5940136
9878		943009		TIGER	ENGLISH KETCH, 1896	1816-1913	1896	337049	5904757
9879		943010		GEORGE REYNOLDS	ENGLISH BRIGANTINE, 1896	1816-1913	1896	299525	5938490
9880		943011			BRITISH CRAFT, 1896	1816-1913	1896	296894	5941573
9881		943012		GUIDING STAR	BRITISH KEEL, 1896	1816-1913	1896	291264	5946308
9882		1372402		ACHIEVEMENT	1896 wreck of English dandy which stranded near Spurn Head. This wooden sailing vessel, built 1869, departed from Grimsby on a fishing and	1816-1913	1896	309206	5940136

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					return trip.				
9883		928324		JUANITA	ENGLISH BRIG, 1897	1816-1913	1897	360941	5904005
9884		943014		MOONLIGHT	ENGLISH CRAFT, 1897	1816-1913	1897	337049	5904757
9885		943015		IVY	ENGLISH KETCH, 1897	1816-1913	1897	287309	5949428
9886		943018		NO 41	BRITISH BARGE, 1897	1816-1913	1897	306422	5931338
9887		943019		PEARSONS	ENGLISH SCHOONER, 1897	1816-1913	1897	311305	5928909
9888		1303519		WILLIAM	BRITISH SLOOP, 1897	1816-1913	1897	284543	5954005
9889		943020		TRIO	ENGLISH KETCH, 1898	1816-1913	1898	303752	5933862
9890		1348708		OBEDIENT	ENGLISH CARGO VESSEL, 1898	1816-1913	1898	360941	5904005
9891		1351915		SEA KING	ENGLISH TRAWLER, 1898	1816-1913	1898	298036	5942265
9892		1351917		GLENCAIRN	ENGLISH BRIG, 1898	1816-1913	1898	360941	5904005
9893		1351919		DUDGEON LIGHTSHIP	ENGLISH LIGHTSHIP, 1898	1816-1913	1898	360941	5904005
9894		1372493		FRIVOLD	1898 wreck of Norwegian barque which stranded at Kilnsea in a gale. This wooden sailing vessel, built 1857, was en route from Boston to Arendal with coal.	1816-1913	1898	309206	5940136
9895		1372508		ELIZABETH	1898 wreck of English ketch which stranded at Kilnsea. This wooden sailing vessel, built 1864, was en route from Sutton Bridge to Newcastle upon Tyne with wheat.	1816-1913	1898	309206	5940136
9896		943021		EDWIN	1899 wreck of English cargo vessel which foundered 8 miles NW of the Outer Dowsing Light Vessel, en route from Annaba for Leith with phosphates and esparto grass. Constructed in 1878 of iron, she was a steam-driven vessel.	1816-1913	1899	355610	5911584
9897		943022		CHARLES THOMPSON	ENGLISH SCHOONER, 1899	1816-1913	1899	303752	5933862
9898		943023		MARMADUKE	ENGLISH KETCH, 1899	1816-1913	1899	298036	5942265
9899	882; 78	943095		EXPRESS	ENGLISH SMACK, 1899	1816-1913	1899	337049	5904757

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9900		943096		WILLIAM	ENGLISH SLOOP, 1899	1816-1913	1899	287309	5949428
9901		1348780		YOUNG JACK	ENGLISH DANDY, 1899	1816-1913	1899	386037	5907046
9902		1372533		GOOD INTENT	1899 wreck of British sloop which stranded on the Paull Holme Sand in a gale. This wooden sailing vessel, built 1829, was en route from Paull to Kingston upon Hull in ballast.	1816-1913	1899	286994	5954644
9903		943025		TRY	Wreck of English sloop. The Try was built in 1866, and carrying a cargo of coal was lost at the entrance to Saltfleet Haven in a force 6 wind on 26th June 1900.	1816-1913	1900	315959	5920371
9904		943027		RANSOM	BRITISH KEEL, 1900	1816-1913	1900	303752	5933862
9905		943028		COUNTESS OF ERROLL	ENGLISH CARGO VESSEL, 1900	1816-1913	1900	306307	5942104
9906		943029		THOMAS AND MARY	ENGLISH KETCH, 1900	1816-1913	1900	296894	5941573
9907		943031		MALCOLM	ENGLISH SMACK, 1900	1816-1913	1900	299525	5938490
9908		978225		MINERVA	NORWEGIAN BRIG, 1900	1816-1913	1900	309206	5940136
9909		1372559		MIGNONETTE	1900 wreck of English cargo vessel which stranded near Withernsea. This wooden steam vessel, built 1889, was en route from Middlesbrough to Kings Lynn with salt.	1816-1913	1900	304740	5957586
9910		1372569		HELEN	1900 wreck of British yacht which stranded near Hilston. This wooden steam vessel, built 1895, was en route from Bridlington to Goole.	1816-1913	1900	304740	5957586
9911		943032		CELERITY	ENGLISH CARGO VESSEL, 1901	1816-1913	1901	300284	5943290
9912		943034		ISABELLA	ENGLISH SCHOONER, 1901	1816-1913	1901	303752	5933862
9913		943035		ALICE LOUISA	ENGLISH SCHOONER, 1901	1816-1913	1901	311305	5928909
9914		943037		ACORN	ENGLISH SLOOP, 1901	1816-1913	1901	286994	5954644
9915		978238		SULTAN	ENGLISH KETCH, 1901	1816-1913	1901	309206	5940136
9916		1372611		PRESTO NO 1	1901 wreck of English dandy which foundered 25 miles east south east of Spurn Head. This wooden sailing vessel departed from Grimsby on a fishing and return trip.	1816-1913	1901	355610	5911584

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9917		1372625		CALCUTTA	1901 wreck of English trawler which foundered near the Bull lightship following collision in fog. This iron steam vessel, built 1894, departed from Kingston upon Hull on a fishing and return trip.	1816-1913	1901	312155	5936299
9918		928726		DUDGEON LIGHTSHIP	ENGLISH LIGHT VESSEL, 1902	1816-1913	1902	360941	5904005
9919		943038		JANE DYSON	ENGLISH SCHOONER, 1902	1816-1913	1902	308101	5931821
9920		943039		VENUS	ENGLISH DANDY, 1902	1816-1913	1902	305843	5938788
9921		943040		MARIE THERESE	FRENCH KETCH, 1902	1816-1913	1902	299525	5938490
9922		984009		TWO BROTHERS	BRITISH FISHING VESSEL, 1902	1816-1913	1902	309206	5940136
9923		1372653		AGUILA	1902 wreck of English schooner which stranded 1.5 miles south east of Spurn Head light house. This wooden sailing vessel, built 1866, was en route from Portsmouth for Kingston upon Hull with scrap iron.	1816-1913	1902	309206	5940136
9924		943042		LILY	1903 wreck of English lugger which foundered following collision in Grimsby Roads, while seeking pilotage on a fishing and return trip out of Grimsby. Constructed of wood, she was a sailing vessel.	1816-1913	1903	296894	5941573
9925		943043		VIOLETTE	BRITISH SMACK, 1903	1816-1913	1903	313810	5922316
9926		943097		ESTOILE	ENGLISH KETCH, 1903	1816-1913	1903	312155	5936299
9927		1372676		MAGGIE	1903 wreck of Scottish cargo vessel which foundered 25 miles SE of Flamborough Head following collision in fog, en route from Middlesbrough to London with railway track. Constructed of iron in 1870, she was a steam-driven vessel.	1816-1913	1903	311891	5957473
9928		1461383		PRIDE OF ESSEX	1903 wreck of Danish dandy or sloop, which foundered near Burcom Sand, following a collision en route from her home port of Torshavn to Grimsby with fish. Torshavn in the Faroe Islands was ruled directly from Denmark at the time of loss.	1816-1913	1903	296409	5943081
9929		943045		MINSTREL	ENGLISH SCHOONER, 1904	1816-1913	1904	323021	5901550
9930		943046		WAVE	ENGLISH SCHOONER, 1904	1816-1913	1904	360941	5904005
9931		943047		QUIVER	ENGLISH SMACK, 1904	1816-1913	1904	324375	5889806

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9932		984028		BUCKINGHAM	ENGLISH FISHING VESSEL, 1904	1816-1913	1904	304740	5957586
9933		984030		AQUARIUS	ENGLISH TRAWLER, 1904	1816-1913	1904	304740	5957586
9934		1302213		SEAGULL	BRITISH LUGGER, 1904	1816-1913	1904	355610	5911584
9935		1351949		RIVER THAMES	ENGLISH BARGE, 1904	1816-1913	1904	337049	5904757
9936		1372724		BRITANNIA	1904 wreck of Scottish cargo vessel which foundered off Spurn Head following collision. This iron steam vessel, built 1867, was en route from Leith to Dunkirk with general cargo.	1816-1913	1904	298036	5942265
9937		1373450		TANCREP	1905 wreck of Norwegian barque which foundered 19 miles east north east of Spurn Head following collision. This wooden sailing vessel, built 1872, was en route from Goole to Gaspe.	1816-1913	1905	311891	5957473
9938		1373482		JULIEN	1905 wreck of British barge which foundered 8 miles north east of Dimlington. This wooden engine vessel foundered whilst under tow.	1816-1913	1905	311891	5957473
9939		1373483		KATE	1905 wreck of Scottish fishing vessel which foundered 13 miles east north east of Spurn Head. This wooden steam vessel, built 1893, departed from Grimsby on a fishing and return trip.	1816-1913	1905	311891	5957473
9940		1384793		FRED CARTER	1905 wreck of an English dandy which foundered in Grimsby Roads following collision. This wooden sailing vessel, built in 1886, was at moorings.	1816-1913	1905	298036	5942265
9941		943099		GEORGETTE	FRENCH CARGO VESSEL, 1906	1816-1913	1906	298036	5942265
9942		1349159		KATE AND MARY	ENGLISH CUTTER, 1906	1816-1913	1906	348363	5893260
9943		1373602		HUMBER	1906 wreck of British barge which foundered 1.5 miles west north west of the Bull light vessel. This steel towed vessel, built 1886, was en route from London to Inverkeithing with machinery.	1816-1913	1906	305150	5940762
9944		1373611		MARIE BECKER	1906 wreck of Swedish barque which stranded on the Clee Ness Sand in a gale. This wooden sailing vessel, built 1871, was en route from Hernosand to Kingston upon Hull with firewood.	1816-1913	1906	300683	5939562
9945		1373615		URDA	1906 wreck of Norwegian schooner which stranded at Withernsea in a gale, en route from Sandefjord for Newcastle-upon-Tyne with pit props and railway sleepers. Built in 1852 of wood, she was a sailing vessel.	1816-1913	1906	304740	5957586

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9946		1373700		ORION	1906 wreck of Swedish cargo vessel which foundered 1 mile north west of the Humber Middle Light Vessel following collision. This iron steam vessel, built 1870, was en route from Kingston upon Hull to Malmo with coal.	1816-1913	1906	300284	5943290
9947		1384796		HEATHPOOL	1906 wreck of an English cargo vessel which stranded at the Outer Dowsing. This steel steam vessel, built in 1906, was en route from Kingston upon Hull to Buenos Aires with coal.	1816-1913	1906	374813	5924027
9948		943100		HILDING	1907 wreck of Norwegian brig which stranded 3 miles north of Donna Nook en route from Bergen for Kingston-upon-Hull with salt. Constructed of wood in 1870, she was a sailing vessel.	1816-1913	1907	311305	5928909
9949		1373769		HARMONY	1907 wreck of English schooner which foundered 21 miles north east of Spurn Head in a gale. This wooden sailing vessel, built 1868, was en route from Par to Sunderland with china clay.	1816-1913	1907	311891	5957473
9950		1373785		BLENHEIM	1907 wreck of British launch which foundered 1 mile north west of the Bull light vessel in a gale. This wooden steam vessel, built 1888, was en route from Gravesend to Kingston upon Hull in ballast.	1816-1913	1907	305150	5940762
9951		1373795		MY PRETTY LOVE	1907 wreck of English dandy which stranded near Tunstall. This wooden sailing vessel, built 1886, departed from Grimsby on a fishing and return trip.	1816-1913	1907	304740	5957586
9952		1373812		ALICE	1907 wreck of British cutter which stranded at Kilnsea. This wooden sailing vessel, built 1902, was en route from Grimsby to Immingham in ballast.	1816-1913	1907	309206	5940136
9953		943103		JOHN PICKARD	ENGLISH SCHOONER, 1908	1816-1913	1908	298036	5942265
9954		927539		SILVER SPRAY	ENGLISH KETCH, 1909	1816-1913	1909	360941	5904005
9955		943106		SUSAN ROBERTS	ENGLISH KETCH, 1909	1816-1913	1909	313810	5922316
9956		1302227		STOCKTON	ENGLISH CARGO VESSEL, 1909	1816-1913	1909	337049	5904757
9957		1351931		ELFRIDA	ENGLISH SCHOONER, 1909	1816-1913	1909	298036	5942265
9958		1373982		FOXHOUND	1909 wreck of British trawler which foundered near Spurn Head following collision. This iron steam vessel was on a fishing trip.	1816-1913	1909	309206	5940136
9959		1463809		BERNADOTTE	1909 wreck of Norwegian cargo vessel which foundered 35 miles ENE of Spurn Head following a collision with a submerged wreck. At the time she was en route from Kingston-upon-Hull for Stromstad in ballast.	1816-1913	1909	374813	5924027

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Constructed of iron in 1889, she was a steam-driv				
9960		943111		HADRIAN	ENGLISH CARGO VESSEL, 1910	1816-1913	1910	298036	5942265
9961		1302242		IVY	ENGLISH CUTTER, 1910	1816-1913	1910	313810	5922316
9962		1302268		ANACONDA	ENGLISH DANDY, 1910	1816-1913	1910	360941	5904005
9963		1352059		ENAR	SWEDISH CARGO VESSEL, 1910	1816-1913	1910	374813	5924027
9964		1374534		EUROPE	1910 wreck of British trawler which foundered 30 miles off Spurn Head following collision. This iron steam vessel was on a fishing and return trip.	1816-1913	1910	298036	5942265
9965		1374545		SILVERDALE	1910 wreck of English trawler which foundered near Spurn Head following collision. This iron steam vessel, built 1898, was on a fishing and return trip.	1816-1913	1910	309206	5940136
9966		943113		REINDEER	ENGLISH KETCH, 1911	1816-1913	1911	337049	5904757
9967		1374567		EASTERN COUNTIES	1911 wreck of English cargo vessel which foundered near Spurn Head after capsizing. This iron and steel steam vessel, built 1890, was en route from Great Yarmouth to Kingston upon Hull with general cargo and herring.	1816-1913	1911	309206	5940136
9968		1374596		AMARANTH	1911 wreck of Scottish lugger which foundered 1 mile west north west of Spurn Head light vessel. This wooden sailing vessel, built 1902, was en route to Grimsby following a fishing trip.	1816-1913	1911	309206	5940136
9969		1463841		RICHARD	1911 wreck of Norwegian cargo vessel which foundered off the Spurn Light Vessel, following a collision on her passage from Antwerp to Grimsby in ballast. Constructed of iron in 1882, she was a steam-driven vessel.	1816-1913	1911	309206	5940136
9970		943115		ANNIE	ENGLISH KETCH, 1912	1816-1913	1912	298036	5942265
9971		943116		WILLIAM PORTER	ENGLISH BARGE, 1912	1816-1913	1912	313810	5922316
9972		943117		AZHA	1912 wreck of Norwegian brig which stranded on Skegness Middle Sand, after springing a leak in a gale which appears to have forced her to overshoot her intended port of South Shields. By the time she arrived at the Humber she was in a distressed condition.	1816-1913	1912	324375	5889806
9973		943118		PROVIDENCE III	ENGLISH LUGGER, 1912	1816-1913	1912	313810	5922316

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9974		1225550		GERTRUDE	ENGLISH CARGO VESSEL, 1912	1816-1913	1912	360941	5904005
9975	622; 301	1374609		CRUX	1912 wreck of English trawler which stranded at Holmpton. This steel steam vessel, built 1896, was on a fishing and return trip.	1816-1913	1912	304740	5957586
9976		1374649		FRIENDSHIP	1912 wreck of English schooner which foundered in the Humber Estuary following a collision. This wooden sailing vessel, built 1890, was en route from Dover to Kingston upon Hull in ballast.	1816-1913	1912	312155	5936299
9977		1374663		WALTER GERVASE	1912 wreck of British cargo vessel which foundered near Chequer buoy after capsizing. This steel steam vessel departed from Goole with coal.	1816-1913	1912	309206	5940136
9978		929012		SCOTS GREYS	SCOTTISH FISHING DRIFTER, 1913	1816-1913	1913	360941	5904005
9979		943120		LORD MORETON	ENGLISH BARGE, 1913	1816-1913	1913	300674	5939563
9980		943123		ZUNA	ENGLISH SCHOONER, 1913	1816-1913	1913	313810	5922316
9981		1374670		JAMES GARFIELD	1913 wreck of English ketch which foundered in White Booth Road following collision. This wooden sailing vessel, built 1871, was at moorings.	1816-1913	1913	300284	5943290
9982		1374683		UMBE	1913 wreck of Spanish cargo vessel which foundered 20 miles east of Spurn Head light vessel following collision. This steel steam vessel, built 1907, was en route from Bilbao to Middlesbrough with iron ore.	1816-1913	1913	355610	5911584
9983		1374689		SPEEDWELL	1913 wreck of English brigantine which foundered 7.5 miles north east of Spurn Head light vessel following collision. This wooden sailing vessel, built 1878, was en route from London to Hebburn with copper ore.	1816-1913	1913	322329	5942400
9984		1302298		ACHILLES	ENGLISH KETCH, 1914	1914-1945	1914	337049	5904757
9985		1302304		TORQUAY	1914 wreck of Norwegian cargo vessel which foundered 15 miles east of the Inner Dowsing Light Vessel, following a collision on her passage from South Shields for Bordeaux with coal. Constructed of iron in 1883, she was a steam-powered vessel.	1914-1945	1914	355610	5911584
9986		1302306		LORD STANHOPE	ENGLISH TRAWLER, 1914	1914-1945	1914	337843	5911788
9987		1303593		BARRACOUTA	ENGLISH CARGO VESSEL, 1914	1914-1945	1914	332378	5914196
9988		1351952		HMS EYRIE	BRITISH DRIFTER, 1914	1914-1945	1914	374813	5924027

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
9989		1351979		HMS LINSDELL	BRITISH DRIFTER, 1914	1914-1945	1914	374813	5924027
9990		1374738		AJAX	1914 wreck of English trawler which foundered off the River Humber after being mined. This iron steam vessel departed from Grimsby on a fishing and return trip.	1914-1945	1914	298036	5942265
9991		984042		HMS C29	BRITISH SUBMARINE, 1915	1914-1945	1915	309206	5940136
9992		984043		ROMAN	ENGLISH TRAWLER, 1915	1914-1945	1915	309206	5940136
9993		1374812		WILLIAM AND ALICE	1915 wreck of English schooner which stranded on the Inner Binks. This wooden sailing vessel, built 1862, was en route from London to Kingston upon Hull with scrap iron.	1914-1945	1915	310853	5939879
9994		1374818		PET	1915 wreck of English schooner which stranded on the Inner Binks. This wooden sailing vessel, built 1863, was en route from London to Grimsby with manure.	1914-1945	1915	310853	5939879
9995		1374839		CLANSMAN	1915 wreck of English tug which stranded on the Inner Binks. This steel steam vessel, built 1902, was en route from Kingston upon Hull in ballast.	1914-1945	1915	310853	5939879
9996		1374864		CITO	1915 wreck of Norwegian barque which foundered 12.5 miles north east of Dimlington High Land following collision. This wooden sailing vessel was built in 1879.	1914-1945	1915	311891	5957473
9997		1374867		THOMAS STRATTEN	1915 wreck of English ketch which stranded on The Binks. This wooden sailing vessel, built 1871, was en route from Redbridge to Stockton on Tees with scrap iron.	1914-1945	1915	310853	5939879
9998		1374873		COMMANDER FULLERTON	1915 wreck of English trawler which stranded at Kilnsea. This steel steam vessel, built 1915, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1915	309206	5940136
9999		943131		HMS ALBERTA	1916 wreck of British trawler which foundered after being mined while on minesweeping duties. HMS ORCADES, her "sweeping mate", was likewise lost in coming to her assistance [see TA 21 SE 36 / 943133]. Constructed of steel in 1907, she was steam-driven.	1914-1945	1916	296894	5941573
10000		943133		HMS ORCADES	1916 wreck of British trawler which foundered off Grimsby after being mined while coming to the assistance of her "sweeping mate" HMS ALBERTA [see TA 21 SE 35 / 943131]. Constructed of steel in 1911, she was a steam-driven vessel.	1914-1945	1916	296894	5941573

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
10001		1374933		HAWTHORN	1916 wreck of English trawler which foundered 4.5 miles north north east of Spurn light vessel. This iron steam vessel, built 1902, departed from Grimsby on a fishing and return trip.	1914-1945	1916	309206	5940136
10002		1374944		VALPA	1916 wreck of British trawler which foundered off Spurn Head after detonating a mine. This steel steam vessel was performing auxiliary duties for the Admiralty.	1914-1945	1916	298036	5942265
10003		1374948		LAVINIA WESTOLL	1916 wreck of Engish cargo vessel which foundered about 30 miles south east of Spurn Head light vessel after detonating a mine, in a snow storm. This steel steam vessel was en route from Almeria to Middlesbrough with iron ore.	1914-1945	1916	360941	5904005
10004		1374957		HAWK	1916 wreck of English trawler which foundered 5 miles north east of Spurn Head light vessel following collision. This iron steam vessel, built 1898, was en route from Kingston upon Hull to Iceland on a fishing and return trip.	1914-1945	1916	309206	5940136
10005		1374959		OSPREY	1916 wreck of British trawler which foundered 9 miles north east of Spurn Head light vessel. This steam vessel was on a fishing and return trip.	1914-1945	1916	311891	5957473
10006		1375087		BATTLE ABBEY	1916 wreck of English trawler which foundered in the River Humber following collision. This iron steam vessel, built 1900, departed from Grimsby on a fishing and return trip.	1914-1945	1916	300284	5943290
10007		1375116		CHARLOTTE KILNER	1916 wreck of English ketch which foundered in the Humber following collision. This wooden sailing vessel was en route from Alderney to Hull with granite.	1914-1945	1916	300284	5943290
10008		1487784		HMS COURTIER	1916 wreck of British trawler which foundered off Kilnsea after being mined on minesweeping duties. Constructed of steel in 1910, she was steam-driven; she had originally been a fishing vessel before being requisitioned for Admiralty service.	1914-1945	1916	309206	5940136
10009	917; 185	943135		FANE	1917 wreck of Norwegian cargo vessel which foundered 2.5 miles east of the Inner Dowsing Light Vessel after being mined en route from Rouen for Sunderland in ballast. Constructed in 1901 of steel, she was a steam-driven vessel.	1914-1945	1917	337049	5904757
10010		1302345			1917 or earlier wreck of sailing vessel which foundered approximately 0.75 miles NNE of the Inner Dowsing Light Vessel, as given in a contemporary report (see TF 78 NW 3 for the wreck site reported in this position).	1914-1945	1917	337843	5911788

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
10011		1302364		ONESTA	ITALIAN CARGO VESSEL, 1917	1914-1945	1917	337049	5904757
10012		1352068		KING HARALD	ENGLISH TRAWLER, 1917	1914-1945	1917	296894	5941573
10013		1375335		HANNA LARSEN	The wreck of an English collier which foundered on the 8th of February 1917, at 20 miles east of Spurn Head, after being scuttled by gunfire and explosives. This steel steam vessel, built 1903, was captured as a German vessel and requisitioned by the Admiralty.	1914-1945	1917	355610	5911584
10014		1375398		MARGATE	1917 wreck of British trawler which foundered off Spurn Head after being attacked. This wooden steam vessel was built in 1896 and was hired by the Admiralty in 1916.	1914-1945	1917	298036	5942265
10015	594; 47	1464743		WEST	1917 wreck of Norwegian schooner which foundered 3 miles west of the northern part of the Dudgeon Shoal, after being stopped and scuttled by a U-boat; her position of loss is also stated as 3 miles off the Dudgeon Light Vessel. She was en route from Kingston-upon-Hull.	1914-1945	1917	360941	5904005
10016		1467435		REN	1917 wreck of Norwegian cargo vessel which disappeared, presumed foundered, between the Downs and her destination port of the Tyne. At the time of loss she was on passage from Rouen in ballast, the cause of loss being attributed variously to a collision,	1914-1945	1917	332378	5914196
10017		1352073		GAMESTER	BRITISH DRIFTER, 1918	1914-1945	1918	315874	5918151
10018		1352084		RENOWN	ENGLISH TUG, 1918	1914-1945	1918	296894	5941573
10019		1352085		LORD MARCH	ENGLISH SCHOONER, 1918	1914-1945	1918	313700	5933453
10020		1377033		WILLIAM TENNANT	1918 wreck of British drifter which foundered in the River Humber following collision. This steel steam vessel was built in 1893.	1914-1945	1918	300284	5943290
10021		1377147		WAYSIDE FLOWER	1918 wreck of British trawler which foundered 20 miles north north east of Spurn Head after being scuttled. This wooden engine vessel departed from the River Humber on a fishing and return trip.	1914-1945	1918	311891	5957473
10022		1377215		EROS	1918 wreck of British trawler which foundered 36 miles ENE of Spurn Head after detonating a mine. This steel steam vessel was on a fishing and return trip.	1914-1945	1918	355610	5911584
10023		1377242		KIELDRECHT	1918 wreck of English armed cargo vessel which foundered 21 miles south east of Flamborough Head after being torpedoed. This steel steam vessel, built 1916, was en route from the River Humber to the River Tyne	1914-1945	1918	311891	5957473

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					in ballast.				
10024		1377556		JOHN RETTIG	1918 wreck of Swedish cargo vessel which foundered 18 miles south of Flamborough Head after being torpedoed. This steel steam vessel, built 1915, was en route from Gothenburg to Kingston upon Hull with general cargo.	1914-1945	1918	304740	5957586
10025		1381286		P I	1918 wreck of an English barge which foundered 1 mile south west of the Bull light vessel in the River Humber. This steel engine vessel was en route from Kingston upon Hull to Le Treport with coal.	1914-1945	1918	305150	5940762
10026		1384916		ODESSA	1918 wreck of a British craft which stranded near Northcoates Point. This steel steam vessel was salvaged after she stranded.	1914-1945	1918	305379	5933045
10027		1377843		FRIESLAND	1921 wreck of English fishing vessel which was lost about 30 miles off Spurn Head. This steel steam vessel, built 1899, departed from Grimsby on a fishing and return trip.	1914-1945	1921	298036	5942265
10028		1377912		COBDEN	1923 wreck of a British schooner which foundered in the Humber Roads following a collision. This wooden sailing vessel was en route from Kingston upon Hull to Guernsey with coal.	1914-1945	1923	300284	5943290
10029		1377930		KULLABURG	1923 wreck of a Swedish craft which was lost in the River Humber. This iron steam vessel was built in 1877.	1914-1945	1923	300284	5943290
10030		1378160		DEERHOUND	1930 wreck of a Belgian cargo vessel which stranded in the River Humber. This iron steam vessel, built in 1882, carried a cargo of coal.	1914-1945	1930	300284	5943290
10031		943146		BROOMFLEET	BRITISH CARGO VESSEL, 1934	1914-1945	1934	312155	5936299
10032		1381348		EDGAR WALLACE	1935 wreck of a trawler which stranded in the River Humber roads. This steel steam vessel departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1935	300284	5943290
10033		929142		BORCE	FRENCH CARGO VESSEL, 1936	1914-1945	1936	360941	5904005
10034		1381377		NADOD	1936 wreck of a Norwegian vessel which foundered in the River Humber following collision. This steel steam vessel, built in 1904, was en route from Goole to Calais with coal.	1914-1945	1936	300284	5943290
10035		1381428		KINGSTON CAMEO	1937 wreck of an English trawler which foundered 20 miles north east of Spurn Head following collision. This steel steam vessel, built in 1936, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1937	311891	5957473

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
10036		943063		DUSTY MILLER	ENGLISH TRAWLER, 1938	1914-1945	1938	332681	5891179
10037		1381443		REEFFLOWER	1938 wreck of an English trawler which foundered in the River Humber roads following collision. This steel steam vessel, built in 1934, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1938	300284	5943290
10038		1378206		HORSTED	1939 wreck of English collier which foundered 9.5 miles ENE of Withernsea after being mined or torpedoed en route from London for Sunderland in ballast. Constructed of steel in 1936, she was a steam-driven vessel. Her possible remains are thought to be t	1914-1945	1939	311891	5957473
10039	1400; 381	1381448		KATINA BULGARIS	1939 wreck of a Greek cargo vessel which foundered 7 miles south of the River Humber following collision in fog. This steel steam vessel, built in 1912, was en route from Kingston upon Hull to Buenos Aires with coal.	1914-1945	1939	311305	5928909
10040		1381493		LADY JEANETTE	1939 wreck of an English trawler which stranded in the River Humber. This steel steam vessel, built in 1937, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1939	300284	5943290
10041		1381495		ST DELPHINE	1939 wreck of an English trawler which foundered in the River Humber following a collision. This steel steam vessel, built in 1928, departed from Kingston upon Hull on a fishing and return trip.	1914-1945	1939	300284	5943290
10042		943158		DERVISH	1940 wreck of a British trawler which foundered off the River Humber after detonating a German laid mine. This steel steam vessel, built in 1911, was hired by the Admiralty as a patrol boat.	1914-1945	1940	302493	5943195
10043		943159		GURTH	ENGLISH TRAWLER, 1940	1914-1945	1940	298036	5942265
10044		1378311		ALBATROSS	1940 wreck of a British fishing vessel which foundered off the River Humber after detonating a mine. This wooden engine vessel departed from Grimsby on a fishing and return trip.	1914-1945	1940	298036	5942265
10045		1380191		CORTINA	1940 wreck of a British trawler which foundered off the River Humber following a collision. This steel steam vessel, built in 1913, was hired by the Admiralty as a minesweeper.	1914-1945	1940	298036	5942265
10046		1383889		JEVINGTON COURT	1940 wreck of an English cargo vessel which foundered 8.25 miles and 161 degrees off Cromer Knoll lightship. This steel steam vessel, built in 1925, was en route from the River Tyne to London with coal.	1914-1945	1940	386037	5907046
10047		1385745		CLAN MORRISON	1940 wreck of a Scottish cargo vessel which foundered near Skegness Middle Sand after being mined. This steel steam vessel was en route from	1914-1945	1940	324375	5889806

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Southampton to Blyth in ballast.				
10048		943161		MAMARI III	BRITISH TENDER, 1941	1914-1945	1941	355610	5911584
10049	1138; 86	1349633		HERPORT	ENGLISH CARGO VESSEL, 1941	1914-1945	1941	360941	5904005
10050		1349644		AMBROSE FLEMMING	ENGLISH CARGO VESSEL, 1941	1914-1945	1941	360941	5904005
10051		1349656		TRAJAN	NORWEGIAN CARGO VESSEL, 1941	1914-1945	1941	348363	5893260
10052		1349669		CZESTOCHOWA	POLISH CARGO VESSEL, 1941	1914-1945	1941	348363	5893260
10053		1349672		ANTIOPE	ENGLISH CARGO VESSEL, 1941	1914-1945	1941	348363	5893260
10054	1195; 211	1349703		FIREGLOW	1941 wreck of English collier which foundered near the Dudgeon Shoal after being mined en route from London for the Tyne in ballast. Built in 1925, she was a steel steamer. The two sites claimed as being the possible remains of the FIREGLOW are at TB 00	1914-1945	1941	360941	5904005
10055	1461; 345	1352132		GWNWOOD	ENGLISH CARGO VESSEL, 1941	1914-1945	1941	300683	5939562
10056		1352176		OUZEL	BRITISH DRIFTER, 1941	1914-1945	1941	317925	5913807
10057		1379852		KIMBERLEY	1941 wreck of an English trawler which foundered 22 miles south east of Flamborough Head after being bombed. This iron steam vessel, built in 1902, was en route from Grimsby to Hartlepool in ballast.	1914-1945	1941	311891	5957473
10058		1379860		HMS LORD SELBORNE	1941 wreck of a British trawler which foundered in the River Humber after detonating a mine. This steel steam vessel, built in 1917, was hired by the Admiralty as a patrol boat.	1914-1945	1941	300284	5943290
10059		1380429		BRITISH PRINCE	1941 wreck of an English cargo vessel which foundered 16 miles north east of Dimlington High Land after being bombed. This steel engine vessel, built in 1935, was en route from New York to London with general cargo.	1914-1945	1941	311891	5957473
10060		1380644		MARIE DAWN	1941 wreck of a Welsh cargo vessel which foundered in the River Humber after being bombed. This steel steam vessel, built in 1911, was en route from Middlesbrough to London with coal.	1914-1945	1941	300284	5943290
10061		1380685		BENMACDHUI	1941 wreck of British cargo vessel which foundered 15 miles ENE Spurn Head after detonating a mine en route from London to Immingham and Hong Kong with general cargo and explosives, and was said to have been	1914-1945	1941	311891	5957473

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					dispersed. Constructed of steel in 1911, she w				
10062		1385765		STRATHBORVE	1941 wreck of a British trawler which foundered 6 miles south east of Spurn Head after detonating a mine. This steel steam vessel, built in 1930, was hired as a minesweeper.	1914-1945	1941	311305	5928909
10063	463; 186	1352220		HMS CAPE SPARTEL	ENGLISH TRAWLER, 1942	1914-1945	1942	374813	5924027
10064		1380710		CLOUGHTON WYKE	1942 wreck of a British trawler which foundered off the River Humber after being attacked by aircraft. This steel steam vessel, built in 1918, was hired by the Admiralty as a minesweeper.	1914-1945	1942	298036	5942265
10065		1380717		HMS WARLAND	1942 wreck of a British trawler which foundered off number 62D buoy near Spurn Head after being bombed. This steel steam vessel, built in 1913, was hired by the Admiralty as an anti submarine vessel.	1914-1945	1942	309206	5940136
10066		1380757		PRIDE OF HUMBER	1942 wreck of a British fishing vessel which foundered close to the Sunk Sand after detonating a mine. This engine vessel was made from steel.	1914-1945	1942	300284	5943290
10067		1349717		GLENDALOUGH	BRITSH CARGO VESSEL, 1943	1914-1945	1943	348363	5893260
10068		1377722		PACIFIC	1943 wreck of British cargo vessel which foundered in severe weather while en route from Sunderland to London with coal. This vessel was a metal steamer.	1914-1945	1943	332378	5914196
10069		1352230		HMS DALEMOOR	ENGLISH CARGO VESSEL, 1945	1914-1945	1945	355610	5911584
10070		1525187		SERAPION	1946 wreck of an iron steam trawler, which foundered 4miles from the River Humber lightship, 11 miles east of Kinsey after a collision with another vessel. She was built in 1900 by Cook, Welton and Gemmel of Hull.	post 1946	1946	332389	5945742
10071		1525193		PAUL M	1951 wreck of English cargo coaster which foundered approximately 6 miles ENE of Spit Head following a collision with another vessel. Built of steel in Waterhuizen in 1937, she was an engine driven vessel.	post 1946	1951	323430	5942363
10072		1525170		GLADETO	1975 wreck of an English fishing vessel which stranded just north of the mouth of the Saltfleet. Built of wood, she was an engine-driven vessel. Her possible remains are recorded as 1525171.	post 1946	1975	319406	5923488
10073		1368594		FREEDOM	ENGLISH SCHOONER, 1978	post 1946	1978	309618	5939955
10074		1494644			1091 wreck of "nearly all" the English fleet before they "could reach	pre 1508	1091	332378	5914196

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
					Scotland", involving an unknown number of vessels lost off the North Sea coasts of England. Constructed of wood, these vessels are likely to have been powered by both sail and oar.				
10075		1446341		JACOBUS	1255 wreck of German cargo vessel which stranded in a storm in the Lindsey area of Lincolnshire. Constructed of wood, she was a sailing vessel.	pre 1508	1255	324002	5897802
10076		1446353			Wreck, reported 1256, of cargo vessel which stranded at Mablethorpe. Constructed of wood, she was a sailing vessel.	pre 1508	1256	317925	5913807
10077		1446364			1269 wreck of cargo vessel which stranded on the Lincolnshire coast at a place called "Emesdale", not now identified. Constructed of wood, she was a sailing vessel.	pre 1508	1269	324002	5897802
10078		1455889			1280 wreck of craft which stranded at "Cotes", with the loss of all hands. Constructed of wood, she was a sailing vessel.	pre 1508	1280	305379	5933045
10079		1455889			1280 wreck of craft which stranded at "Cotes", with the loss of all hands. Constructed of wood, she was a sailing vessel.	pre 1508	1280	305379	5933045
10080		1507201			1296 wreck of cargo vessel which stranded at Spurn Head, after being blown off course in a storm on her passage from Elblag to Brabant. Constructed of wood, she was a sailing vessel.	pre 1508	1296	309206	5940136
10081		1507202			1301 wreck of Norwegian cargo vessel which stranded near Spurn Head en route from England to Norway. Constructed of wood, she was a sailing vessel.	pre 1508	1301	309206	5940136
10082		1446389			1353 wreck of craft which stranded at Grainthorpe, to be systematically plundered and broken up by the locals. Constructed of wood, she was a sailing vessel.	pre 1508	1353	308040	5930251
10083		1447414		LA MARIE DE LESCLUSES	1353 wreck of Flemish cargo vessel which stranded at Saltfleet Haven as a result of a storm, while en route from Sluis to Berwick-upon-Tweed. Laden with provisions and goods, she was a wooden sailing vessel. Locals plundered the cargo, which caused the m	pre 1508	1353	313810	5922316
10084		1447426			1353 wreck of cargo vessel, apparently Scottish, which appears to have stranded on the coast of Lincolnshire. Her goods were claimed by Edward III as belonging to "Scots or other[s] [of] the King's enemies or rebels". Constructed of wood, she was a sailing vessel.	pre 1508	1353	324002	5897802

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
10085		1456128			1357 or earlier wreck of craft which foundered off Fulstow, as evidenced by wreckage which came ashore. Constructed of wood, she was a sailing vessel. See also TA 40 SW 52.	pre 1508	1357	308040	5930251
10086		1451036			1373 wreck of Flemish cargo vessel, which foundered in the North Sea after being "maliciously" rammed by one of her compatriots, who was voyaging from Yarm to London, leading to the loss of her wheat cargo. Constructed of wood, she was a sailing vessel.	pre 1508	1373	332378	5914196
10087		1450796		MARIE KNYGHT	1386 wreck of German cargo vessel which stranded at the mouth of the Humber on her passage from Skane to Kingston-upon-Hull and thence to Zeeland. Laden with herring, she was a wooden sailing vessel.	pre 1508	1386	312155	5936299
10088		1446366			1388 wreck of Scottish cargo vessel which stranded in the Lindsey area during a storm. Constructed of wood, she was a sailing vessel.	pre 1508	1388	324002	5897802
10089		1448320			1391 wreck of Prussian cargo vessel which was wrecked "off the coast of Lindsey". Constructed of wood, she was a sailing vessel, and the surviving mariners were awarded the goods from the wreck, which would otherwise have passed to the King.	pre 1508	1391	324002	5897802
10090		1449053		MARIE KNYGHT	1392 wreck of cargo vessel which was wrecked "by storm" near Withernsea, on her passage from Gdansk to England. Laden with "divers goods and merchandise", she was a wooden sailing vessel.	pre 1508	1392	304740	5957586
10091		1456122			1344 or 1345 wreck of craft which foundered off the area around Grainthorpe or Marshchapel, as evidenced by a mast which came ashore from her at Fulstow. Constructed of wood, she was a sailing vessel.	pre 1508	1344 or 1345	308040	5930251
10092		1456115			1346 or 1347 wreck of craft which foundered off Grainthorpe, as evidenced by a boat which came ashore from her at that place. Constructed of wood, she would have been a sailing vessel. See also TA 30 SE 192.	pre 1508	1346 or 1347	308040	5930251
10093		1456125			1346 or 1347 wreck of cargo vessel which foundered off Fulstow, i.e. in the area around Grainthorpe or Marshchapel, as evidenced by the sacks of wool which came ashore from her. Constructed of wood, she was a sailing vessel. See also TA 30 SE 190.	pre 1508	1346 or 1347	308040	5930251
10094		1456119			1356 or 1357 wreck of cargo vessel which foundered off Somercotes, as evidenced by the wool, cloth, and clothing cast ashore from her at Grainthorpe and Somercotes. Constructed of wood, she was a sailing vessel. See also TA 30 SE 193.	1508	1356 or 1357	309130	5929924

WA_ID	SeaZone ID	NRHE_ID	HER_ID	Name	Description	Date_Period	DATSNK	UTM31N_East	UTM31N_North
10095			MLI97884		Unlocated wreck, Sutton on Sea	Unknown		319204	5910652
10096		1144435			Probable Post Medieval wreck.		Unknown		

13.8 APPENDIX VIII-GAZETTEER OF KNOWN AIRCRAFT CRASH SITES (ON CD-ROM ONLY)

WA ID	Other sources	Description	Period	UTM31N Easting	UTM31N Northing	Source
5569	NRHE 892330	Unknown, POSSIBLY AN AIRCRAFT	Unknown	361249	5876168	NRHE
5570	HER 1478	Maritime Wreck Site W32, AIRCRAFT	Unknown	295242	5941647	NE Lincolnshire
5571	Seazone 177	USAF 5 15 AIRCRAFT Sunk 25/04/1990. Charted as foul ground.	post 1945	355690	5950544	Seazone
5572	Seazone 88	Reported sinking of an aircraft of unknown date. Charted as a live wreck	Unknown	323549	5891694	Seazone
5573	Seazone 81	German Aircraft. Charted as a live wreck.	Unknown	311122	5960169	Seazone
5574	Seazone 242	Acoustic sensor identification of an aircraft wreck, charted as a live, dangerous wreck	Unknown	369944	5922168	Seazone

13.9 APPENDIX IX - GAZETTEER OF AIRCRAFT LOSSES (ON CD-ROM ONLY)

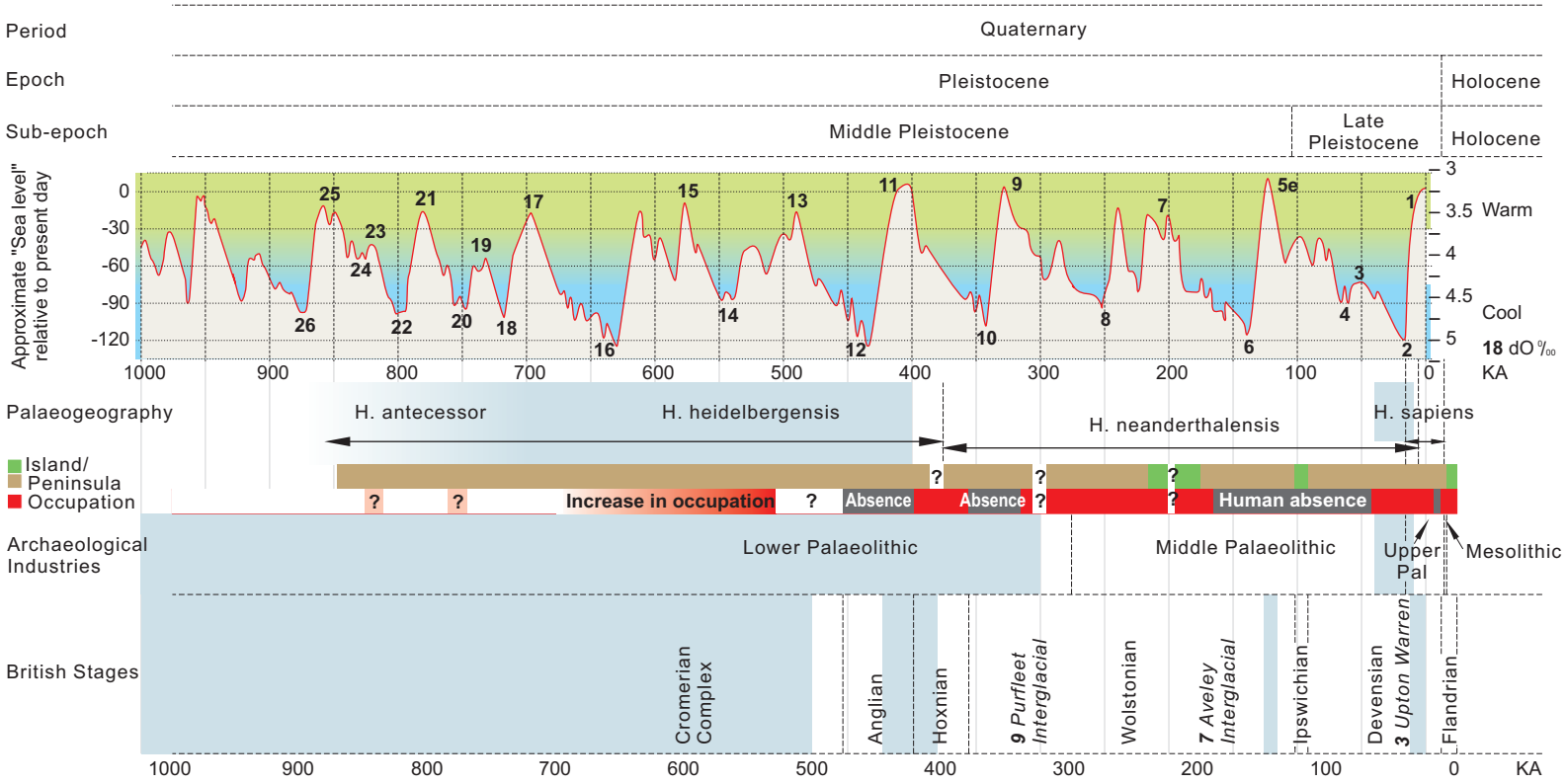
WA ID	NRHE ID	Description	Period	UTM31N Easting	UTM31N Northing	Source	Named Location
5501	1356378	LANCASTER MK III JB229, BRITISH HEAVY BOMBER, 1943	1939-1945	323021	5901550	NRHE	Chapel St Leonards
5502	1401347	HEINKEL HE111H-5 (3554) A1+CH, 1940 wreck of a German Heinkel He111 reconnaissance aircraft which ditched off Chapel St. Leonards following gun action. It was part of Squadron 1/KG53.	1939-1945	323021	5901550	NRHE	Chapel St Leonards
5503	1352842	BEAUFIGHTER MK IIF V8198, BRITISH NIGHTFIGHTER, 1942	1939-1945	311305	5928909	NRHE	Donna Nook
5504	1354729	LANCASTER MK I LL834, BRITISH HEAVY BOMBER, 1944	1939-1945	311305	5928909	NRHE	Donna Nook
5505	1357313	WELLINGTON MK II W5437, BRITISH HEAVY BOMBER, 1942	1939-1945	311305	5928909	NRHE	Donna Nook
5506	1328998	WELLINGTON MK IA N2983, BRITISH BOMBER, 1939	1939-1945	296894	5941573	NRHE	Grimsby
5507	1318608	HAMPDEN MK I P1354, BRITISH BOMBER, 1940	1939-1945	298036	5942265	NRHE	Grimsby Roads
5508	1354561	WHITLEY MK V Z9211, BRITISH HEAVY BOMBER, 1941	1939-1945	298036	5942265	NRHE	Grimsby Roads
5509	1342848	WELLINGTON MK III BJ595, BRITISH BOMBER, 1942	1939-1945	313700	5933453	NRHE	Haile Sand Flat
5510	1354846	BEAUFIGHTER MK X LX826, BRITISH FIGHTER, 1943	1939-1945	312155	5936299	NRHE	Humber Estuary
5511	1355191	HALIFAX MK II HR924, BRITISH HEAVY BOMBER, 1943	1939-1945	312155	5936299	NRHE	Humber Estuary
5512	1393567	HE111 5J+EL, 1940 wreck of German Heinkel bomber which was shot down off the Humber on a sortie to Kingston-upon-Hull.	1939-1945	312155	5936299	NRHE	Humber Estuary

WA ID	NRHE ID	Description	Period	UTM31N Easting	UTM31N Northing	Source	Named Location
5513	1356842	STIRLING MK III EF246, BRITISH HEAVY BOMBER, 1944	1939-1945	300284	5943290	NRHE	Humber River
5514	1354050	HAMPDEN MK I X3062, BRITISH BOMBER, 1941	1939-1945	333839	5908580	NRHE	Inner Dowsing Overfalls
5515	1322717	WELLINGTON MK IC R1271, BRITISH BOMBER, 1941	1939-1945	332378	5914196	NRHE	Lincolnshire Coastal Waters
5516	1323080	BLENHEIM MK IV R3838, BRITISH BOMBER, 1942	1939-1945	332378	5914196	NRHE	Lincolnshire Coastal Waters
5517	1340427	LANCASTER MK III PB294, BRITISH BOMBER, 1944	1939-1945	332378	5914196	NRHE	Lincolnshire Coastal Waters
5518	1354740	WELLINGTON MK X LN653, BRITISH BOMBER, 1945	1939-1945	332378	5914196	NRHE	Lincolnshire Coastal Waters
5519	1343062	HURRICANE MK IIC BN232, BRITISH FIGHTER, 1942	1939-1945	317925	5913807	NRHE	Mablethorpe
5520	1356754	LANCASTER MK III ED648, BRITISH HEAVY BOMBER, 1943	1939-1945	317925	5913807	NRHE	Mablethorpe
5521	1354839	BEAUFIGHTER MK X LX806, BRITISH FIGHTER, 1944	1939-1945	305379	5933045	NRHE	Northcoates Point
5522	1354851	BEAUFIGHTER MK X LX858, BRITISH FIGHTER, 1943	1939-1945	305379	5933045	NRHE	Northcoates Point
5523	1356417	BEAUFIGHTER MK VI JL651, BRITISH FIGHTER, 1943	1939-1945	305379	5933045	NRHE	Northcoates Point
5524	1356434	BEAUFIGHTER MK X JM216, BRITISH FIGHTER, 1943	1939-1945	305379	5933045	NRHE	Northcoates Point
5525	1356451	BEAUFIGHTER MK X JM333, BRITISH FIGHTER, 1944	1939-1945	305379	5933045	NRHE	Northcoates Point
5526	1356562	BEAUFIGHTER MK X NE223, BRITISH FIGHTER, 1944	1939-1945	305379	5933045	NRHE	Northcoates Point
5527	1356571	BEAUFIGHTER MK X NE778, BRITISH FIGHTER, 1944	1939-1945	305379	5933045	NRHE	Northcoates Point
5528	1356648	BEAUFIGHTER MK X NV118, BRITISH FIGHTER, 1945	1939-1945	305379	5933045	NRHE	Northcoates Point
5529	1354370	WHITLEY MK V Z6802, BRITISH HEAVY BOMBER, 1941	1939-1945	311891	5957473	NRHE	Off Withernsea
5530	1327771	BATTLE MK I L5027, BRITISH BOMBER, 1940	1939-1945	319594	5928587	NRHE	Offshore Donna Nook
5531	1321029	HAMPDEN MK I P4351, BRITISH BOMBER, 1940	1939-1945	332681	5891179	NRHE	Offshore Skegness
5532	1327572	HAMPDEN MK I L4065, BRITISH BOMBER, 1940	1939-1945	332681	5891179	NRHE	Offshore Skegness
5533	1340440	LANCASTER MK III PB702, BRITISH BOMBER, 1944	1939-1945	332681	5891179	NRHE	Offshore Skegness
5534	1340787	LANCASTER MK III ME 357, BRITISH BOMBER, 1945	1939-1945	332681	5891179	NRHE	Offshore Skegness
5535	1340797	LANCASTER MK I ME788, BRITISH BOMBER, 1944	1939-1945	332681	5891179	NRHE	Offshore Skegness
5536	1343364	BOSTON MK IIIA BZ376, BRITISH BOMBER, 1943	1939-1945	332681	5891179	NRHE	Offshore Skegness
5537	1352850	LYSANDER MKIIIA V9797, BRITISH ARMY COOPERATION, 1943	1939-1945	332681	5891179	NRHE	Offshore Skegness
5538	1354033	HAMPDEN MK I X2897, BRITISH BOMBER, 1940	1939-1945	332681	5891179	NRHE	Offshore Skegness
5539	1354043	HAMPDEN MK I X3027, BRITISH BOMBER, 1940	1939-1945	332681	5891179	NRHE	Offshore Skegness
5540	1354724	HALIFAX MK V LL120, BRITISH HEAVY BOMBER, 1943	1939-1945	332681	5891179	NRHE	Offshore Skegness
5541	1356835	STIRLING MK III EE914, BRITISH HEAVY BOMBER, 1944	1939-1945	332681	5891179	NRHE	Offshore Skegness

WA ID	NRHE ID	Description	Period	UTM31N Easting	UTM31N Northing	Source	Named Location
5542	1357388	SPITFIRE MK I X4594, BRITISH FIGHTER, 1941	1939-1945	332681	5891179	NRHE	Offshore Skegness
5543	1400253	DORNIER DO17Z-E, 1940 wreck of a German Dornier Do17 which was shot down off Skegness. It was part of Squadron KG3.	1939-1945	332681	5891179	NRHE	Offshore Skegness
5544	1404890	HEINKEL HE177A-3 (2375) 6N+OK, 1944 wreck of a German Heinkel He177 which was shot down and crashed off Skegness. It was part of Squadron 2/KG100.	1939-1945	332681	5891179	NRHE	Offshore Skegness
5545	1354263	HURRICANE MK IIB Z3670, BRITISH FIGHTER, 1941	1939-1945	314871	5940840	NRHE	Outer Binks
5546	1399685	HEINKEL HE 1115B S4+EH, 1939 wreck of a German Heinkel He 111 bomber which was shot down 5 miles east of Spurn Head. It was part of the coast flying corps.	1939-1945	310901	5940989	NRHE	Outer Binks
5547	1323066	BLENHEIM MK IV R3765, BRITISH BOMBER, 1940	1939-1945	355610	5911584	NRHE	Outer Dowsing Shoal
5548	1354038	HAMPDEN MK I X3021, BRITISH BOMBER, 1941	1939-1945	355610	5911584	NRHE	Outer Dowsing Shoal
5549	1354383	WHITLEY MK VII Z6960, A British Armstrong Whitworth Whitely, which crashed in 1942: the crash was due to mechanical failure.	1939-1945	355610	5911584	NRHE	Outer Dowsing Shoal
5550	1404778	DORNIER DO217K-1 (4412) U5+BA, 1943 wreck of a German Dornier Do217 which was shot down and crashed 15 miles east of Spurn Head. It was part of Stab/KG2.	1939-1945	355610	5911584	NRHE	Outer Dowsing Shoal
5551	1404780	DORNIER DO217M-1 (6045) U5+GK, 1943 wreck of a German Dornier Do217 which was shot down and crashed off Spurn Head. It was part of Squadron 2/KG2.	1939-1945	355610	5911584	NRHE	Outer Dowsing Shoal
5552	1357534	LANCASTER MK I LL952, BRITISH HEAVY BOMBER, 1945	1939-1945	317454	5930522	NRHE	Rosse Spit
5553	1318526	HAMPDEN MK I P1161, BRITISH BOMBER, 1942	1939-1945	319406	5923488	NRHE	Saltfleet Overfalls
5554	1357711	HURRICANE MK I V7606, BRITISH FIGHTER, 1941	1939-1945	323211	5891521	NRHE	Skegness
5555	1401883	JUNKERS JU88A-5 (0404) F6+BM, 1941 wreck of a German Junkers Ju88 which was shot down and crashed off Skegness. It was part of Squadron 4(F)/122.	1939-1945	323211	5891521	NRHE	Skegness
5556	1401897	DORNIER DO17Z-2 (4248) U5+DA, 1941 wreck of a German Dornier Do17 which was shot down and crashed south east of Skegness Pier. It was part of Stab KG2.	1939-1945	323211	5891521	NRHE	Skegness
5557	1322724	WELLINGTON MK IC R1288, BRITISH BOMBER, 1941	1939-1945	309618	5939955	NRHE	Spurn Head
5558	1322963	WELLINGTON MK IC R3169, BRITISH BOMBER, 1941	1939-1945	309618	5939955	NRHE	Spurn Head
5559	1327607	HAMPDEN MK I L4093, BRITISH BOMBER, 1940	1939-1945	309618	5939955	NRHE	Spurn Head
5560	1354500	WELLINGTON MK II Z8537, BRITISH HEAVY BOMBER, 1942	1939-1945	309618	5939955	NRHE	Spurn Head
5561	1356748	LANCASTER MK I ED392, BRITISH HEAVY BOMBER, 1943	1939-1945	309206	5940136	NRHE	Spurn Head
5562	1357392	WELLINGTON MK IC X9811, BRITISH HEAVY BOMBER, 1941	1939-1945	309618	5939955	NRHE	Spurn Head
5563	1402776	JUNKERS JU88A-5 (6263) V4+GP, 1941 wreck of a German Junkers Ju88 which was shot down and crashed off Spurn Head. It was part of Squadron 6/KG1.	1939-1945	309206	5940136	NRHE	Spurn Head
5564	1404791	JUNKERS JU188E-1 (260175) Z6+GK, 1943 wreck of a German Junkers Ju188 which crashed near Spurn lighthouse. It was part of Squadron 2/KG66.	1939-1945	309206	5940136	NRHE	Spurn Head
5565	1355031	WELLINGTON MK X HE915, BRITISH BOMBER, 1944	1939-1945	304740	5957586	NRHE	Withernsea
5566	1357599	BLENHEIM MK IV V6255, BRITISH BOMBER, 1942	1939-1945	304740	5957586	NRHE	Withernsea
5567	1402769	HEINKEL HE111H-5 (3987) 5J+ZB, 1941 wreck of a German Heinkel He111 which crashed on Withernsea beach. It was part of Stab I/KG4.	1939-1945	304740	5957586	NRHE	Withernsea

WA ID	NRHE ID	Description	Period	UTM31N Easting	UTM31N Northing	Source	Named Location
5568	1340641	HARVARD MK IIB FX412, BRITISH TRAINER, 1946	post 1945	315874	5918151	NRHE	Theddlethorpe

13.10 APPENDIX X - CHRONOSTRATIGRAPHY OF UK ARCHAEOLOGY



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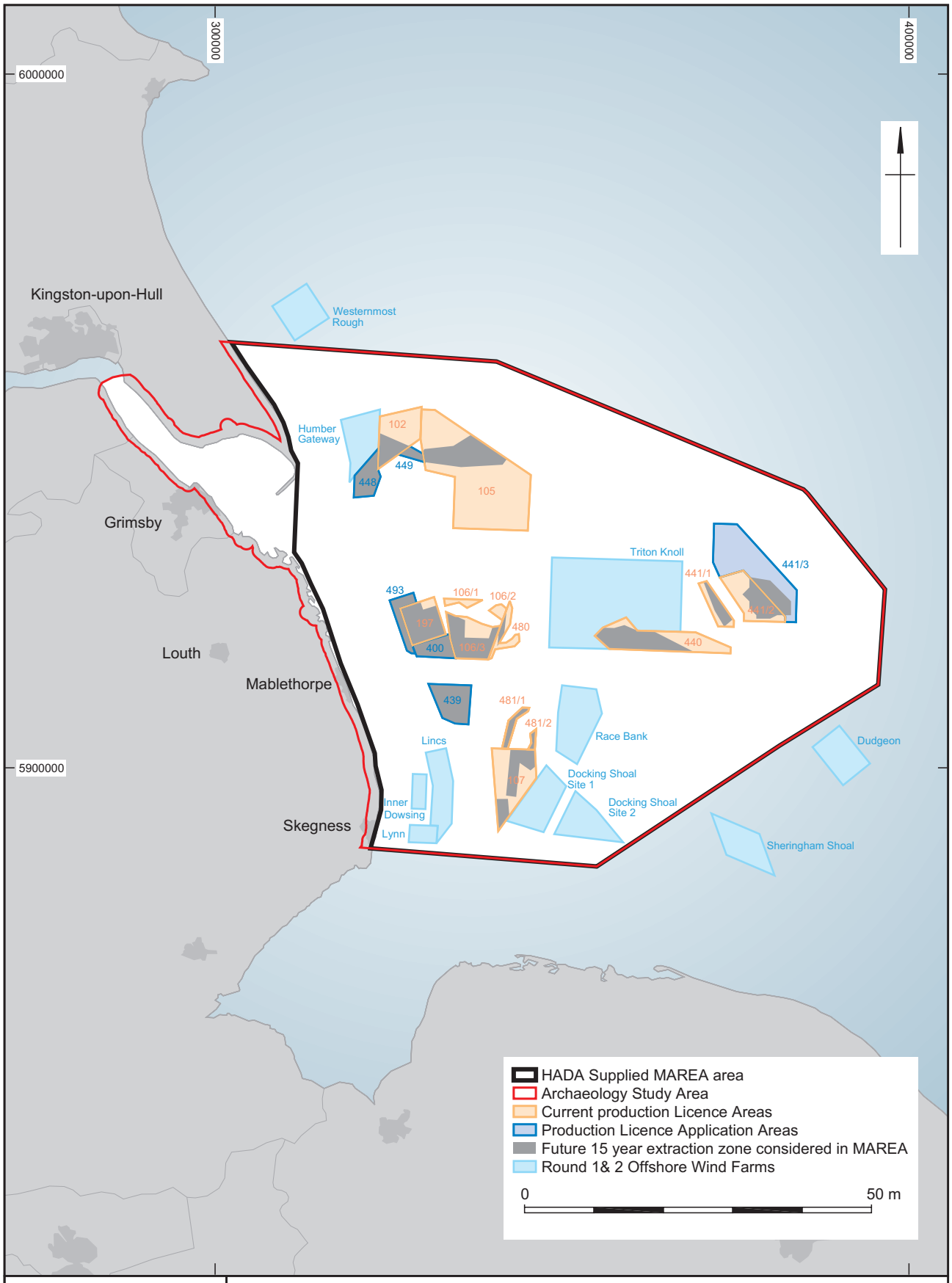
Date:	04/08/11	Revision Number:	0
Scale:	N/A	Illustrator:	KJF
Path:	W:\Projects\78290\Drawing Office\Report figs\DBA\11_08_03		

Chronostratigraphy timeline / sea level curve

Appendix X



Drawing Projection: UTM WGS84 z31N

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Date:	21/06/11	Revision Number:	1
Scale:	1:800,000 @A4	Illustrator:	KJB
Path:	W:\Projects\75710\Drawing Office\Report figs\MAREA\11_10_03		

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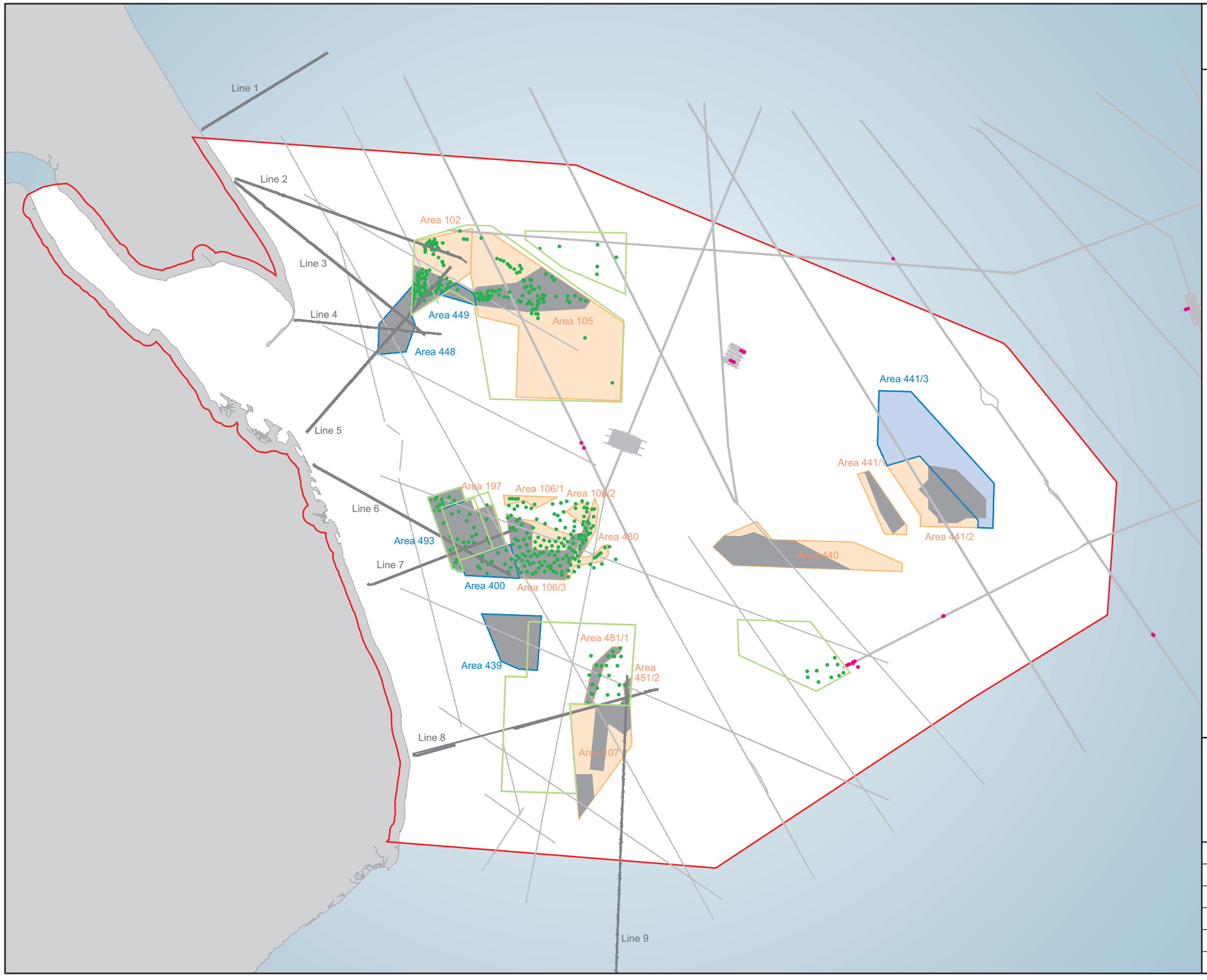
HADA Supplied MAREA area and the Archaeology Study Area including an onshore buffer. Licenced Dredging Areas as of July 2011 are also shown

Figure 1



Wessex Archaeology

MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
REA geophysical survey lines
Vibrocores assessed for REA
Geophysics survey areas assessed for REA
REC geophysical survey lines (Tappin et al. 2011)
REC environmental core locations (Tappin et al. 2011)

0 10 20 km

Drawing Projection: UTM WGS84 z31N

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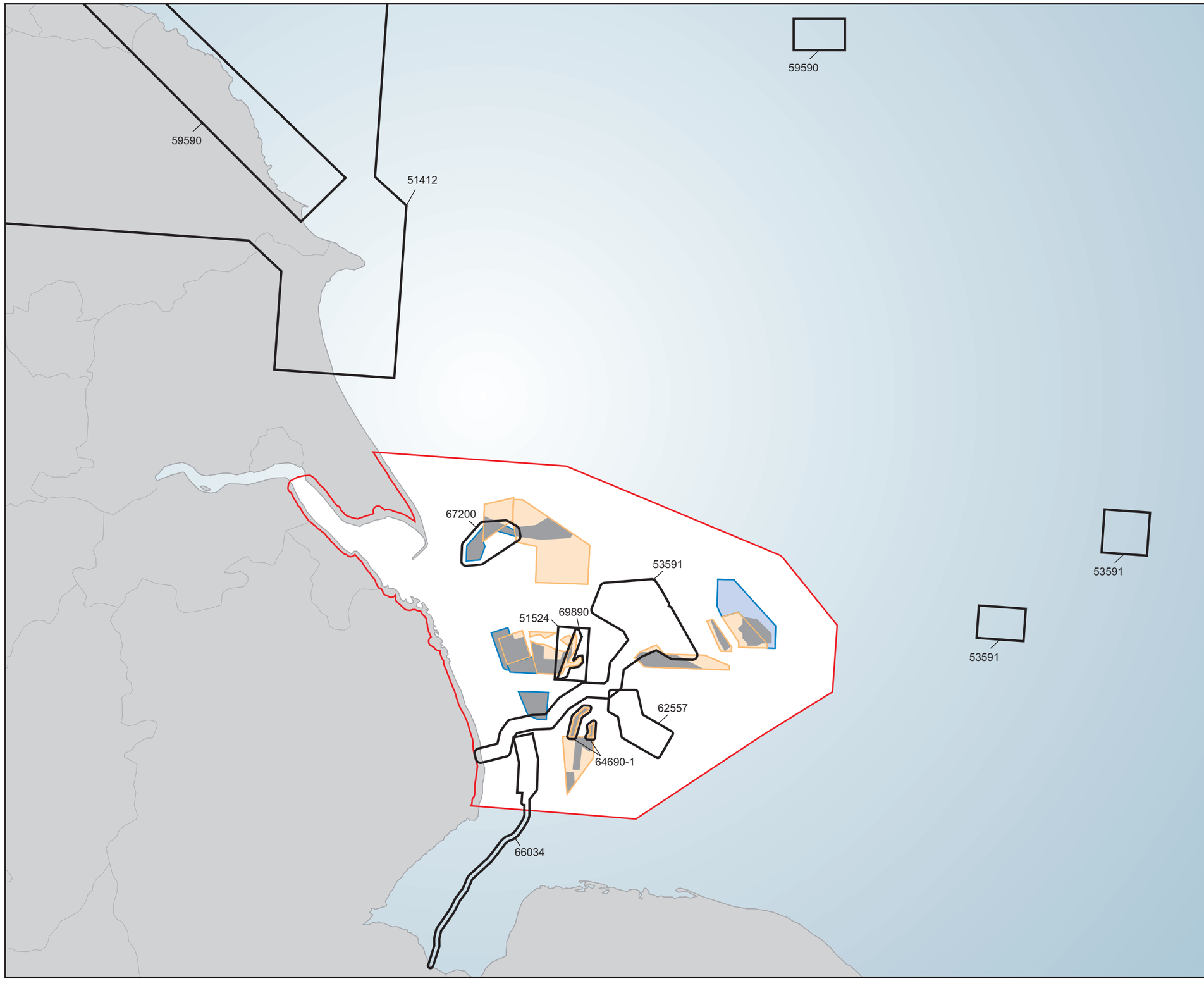
Vibrocore locations and geophysical survey lines

Figure 2



Wessex Archaeology

MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
Previous work undertaken by Wessex Archaeology

0 50 km

Drawing Projection: UTM WGS84 z31N

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Location map of previous work undertaken by Wessex Archaeology within the MAREA Study Area

Figure 3

Wessex Archaeology

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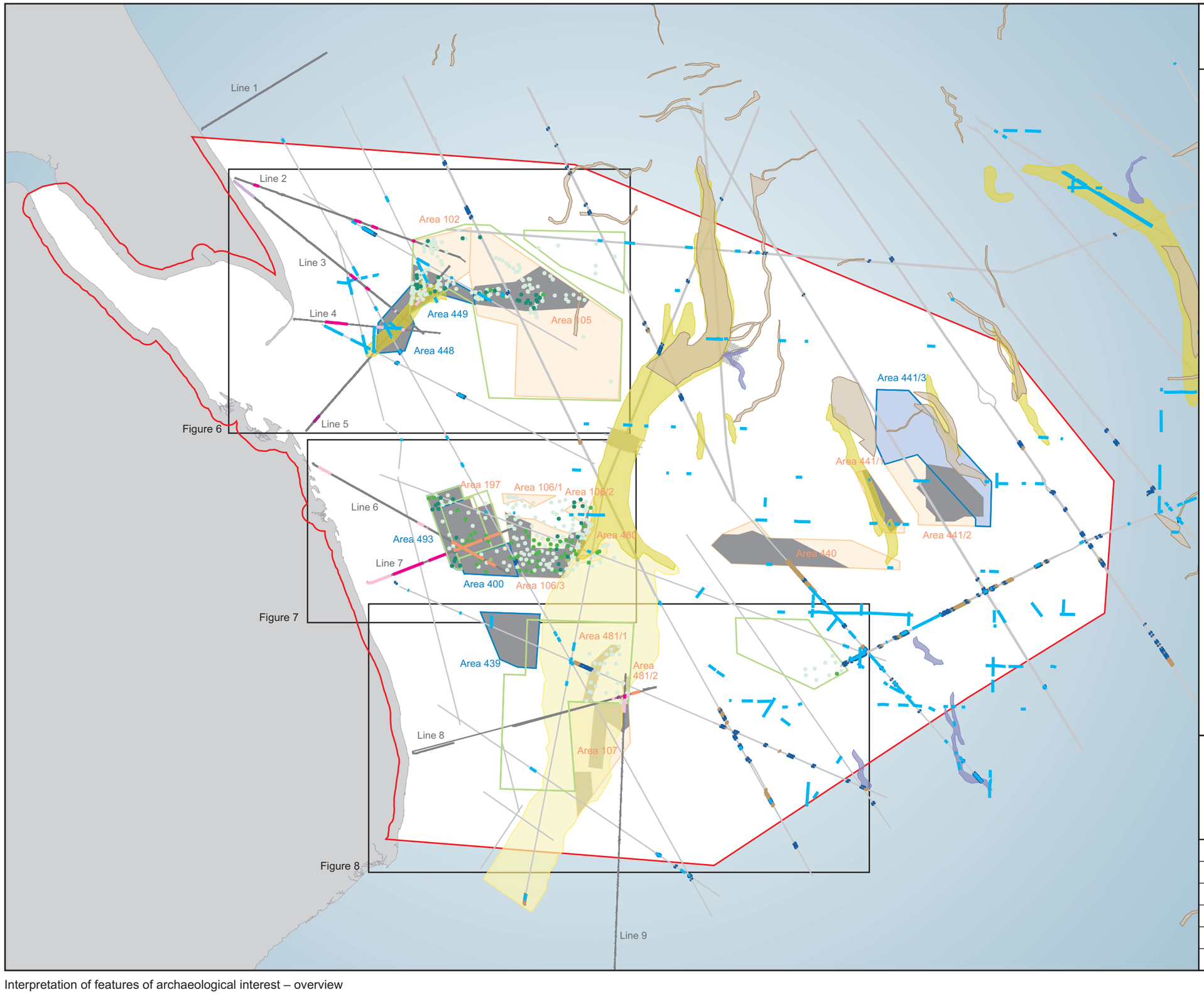
Known early prehistoric sites and prehistoric finds recovered from offshore aggregate licence areas through the TCE/BMAPA/EH finds reporting protocol within the MAREA Study Area

Figure 4



Wessex Archaeology

MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
REA geophysical survey lines
Geophysics survey areas assessed for REA
REC geophysical survey lines (Tappin et al. 2011)

Humber REA features
Bank
Complex cut and fill
Depression
Sediment unit
Simple cut and fill

Vibrocores assessed for REA
Unit 3a
Unit 3b
Unit 3a/b
Other

Humber REC
Holocene land surface
Holocene channels
Prehistoric features
Botney Cut Channels

Geological bedforms
Glaciofluvial outwash fan
Submarine channel
Tunnel valley

0 10 20 km

Drawing Projection: UTM WGS84 z31N

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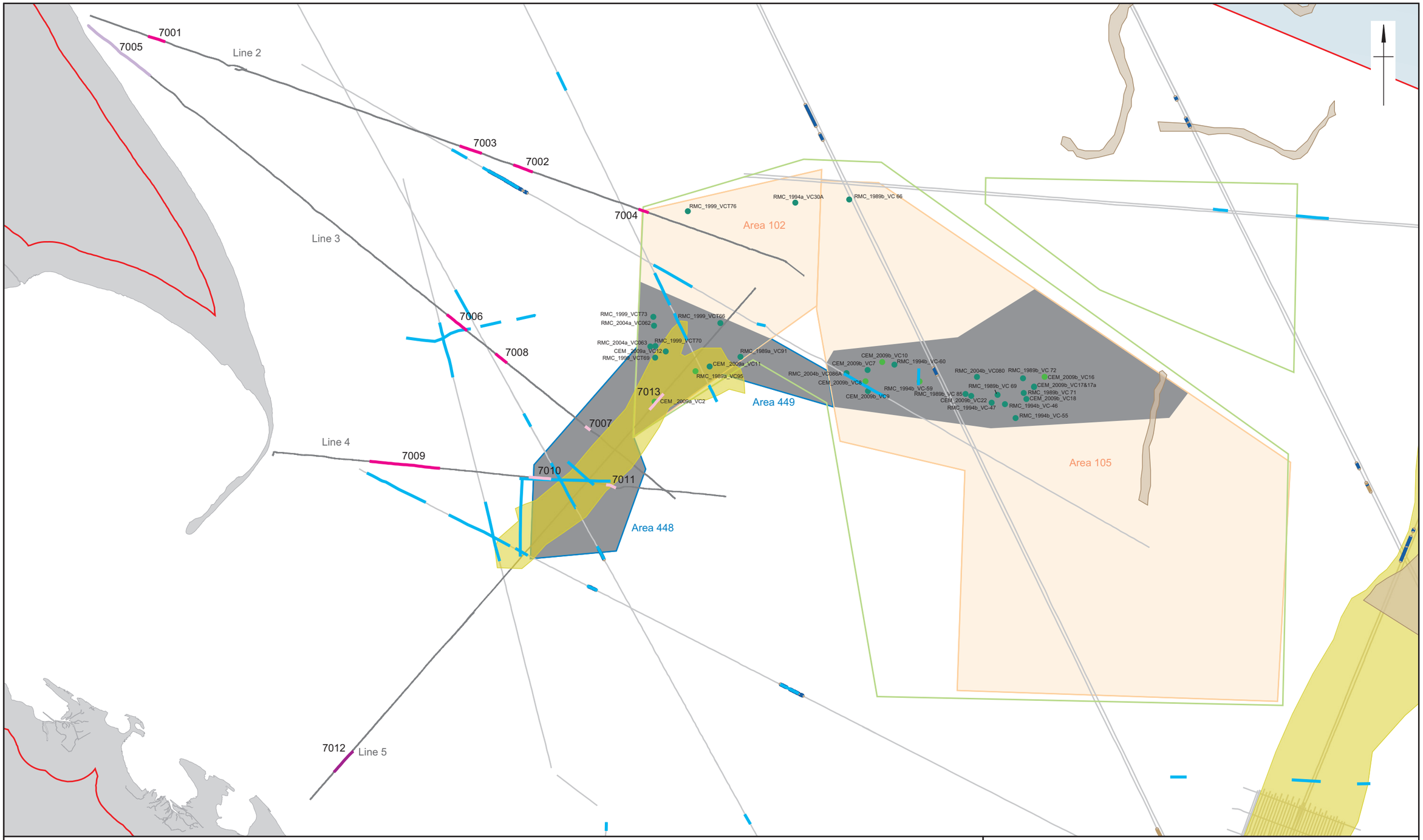
Interpretation of features of archaeological interest – overview

Figure 5



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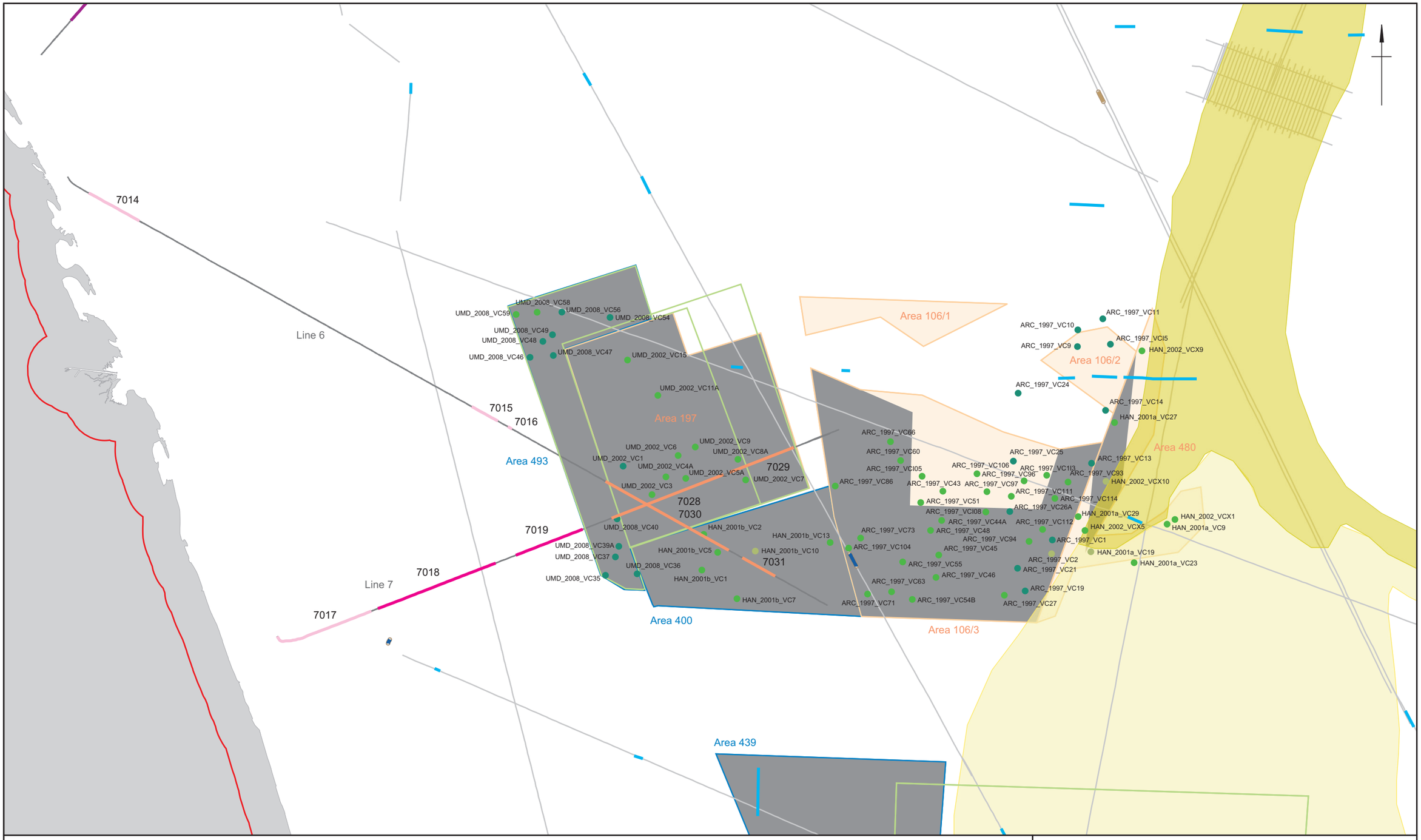
Interpretation of features of archaeological interest – Northern Area

Figure 6



MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA

REA geophysical survey lines
Geophysics survey areas assessed for REA
REC geophysical survey lines (Tappin et al. 2011)

Humber REA features
- Bank
- Complex cut and fill
- Depression
- Sediment unit
- Simple cut and fill

Vibrocores assessed for REA
- Unit 3a
- Unit 3b
- Unit 3a/b

Humber REC
- Holocene land surface
- Holocene channels
- Prehistoric features
- Botney Cut Channels

Geological bedforms
- Glaciofluvial outwash fan
- Submarine channel
- Tunnel valley

Wessex Archaeology

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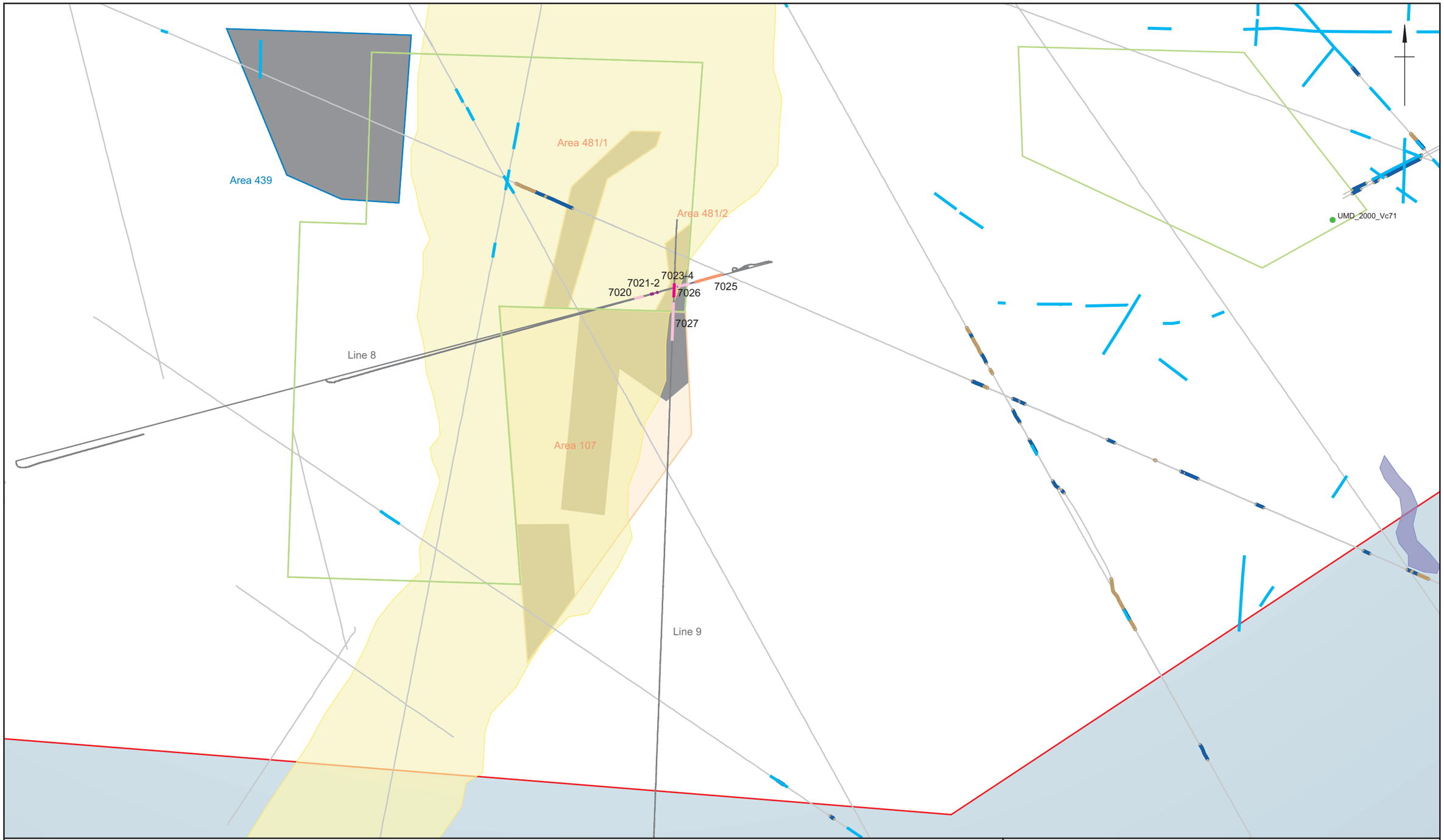
Interpretation of features of archaeological interest – Central Area

Figure 7



MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA

REA geophysical survey lines
Geophysics survey areas assessed for REA
REC geophysical survey lines (Tappin et al. 2011)

Humber REA features
Bank
Complex cut and fill
Depression
Sediment unit
Simple cut and fill

Vibrocores assessed for REA
Unit 3a
Unit 3b
Unit 3a/b

Humber REC
Holocene land surface
Holocene channels
Prehistoric features
Botney Cut Channels

Geological bedforms
Glaciofluvial outwash fan
Submarine channel
Tunnel valley

0 5 km

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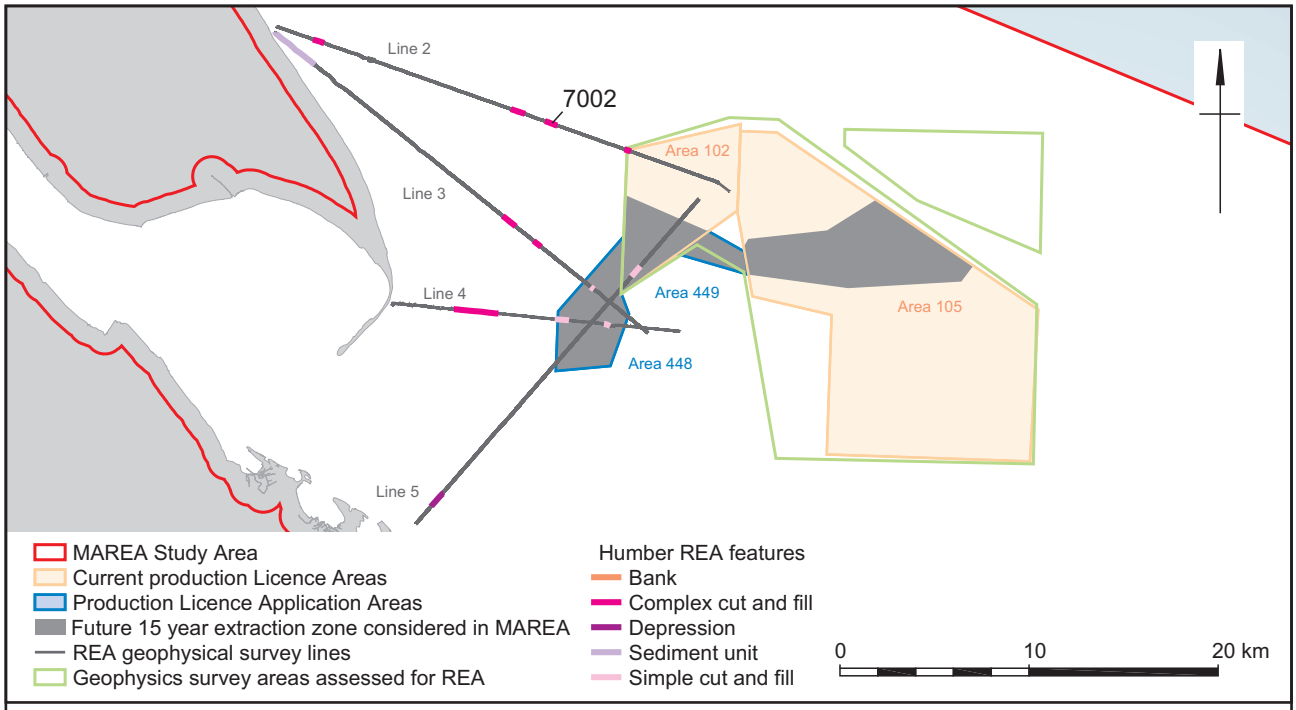
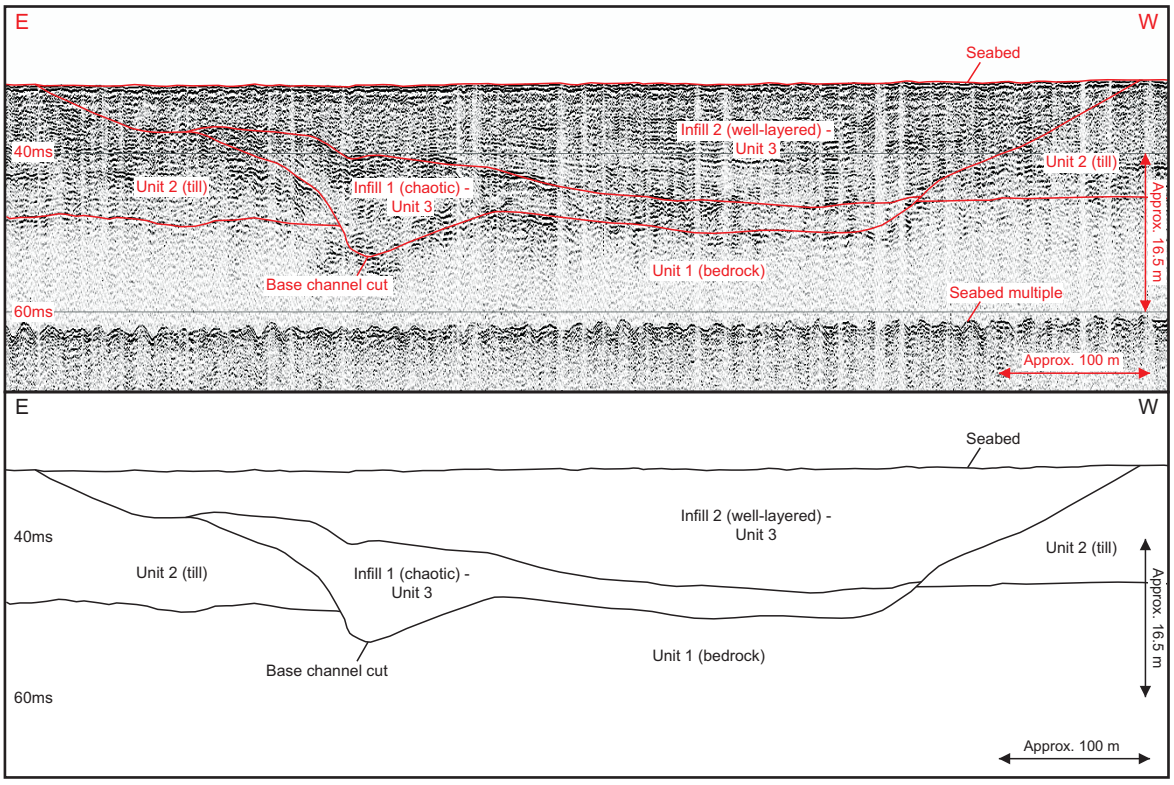
Interpretation of features of archaeological interest – Southern Area

Figure 8





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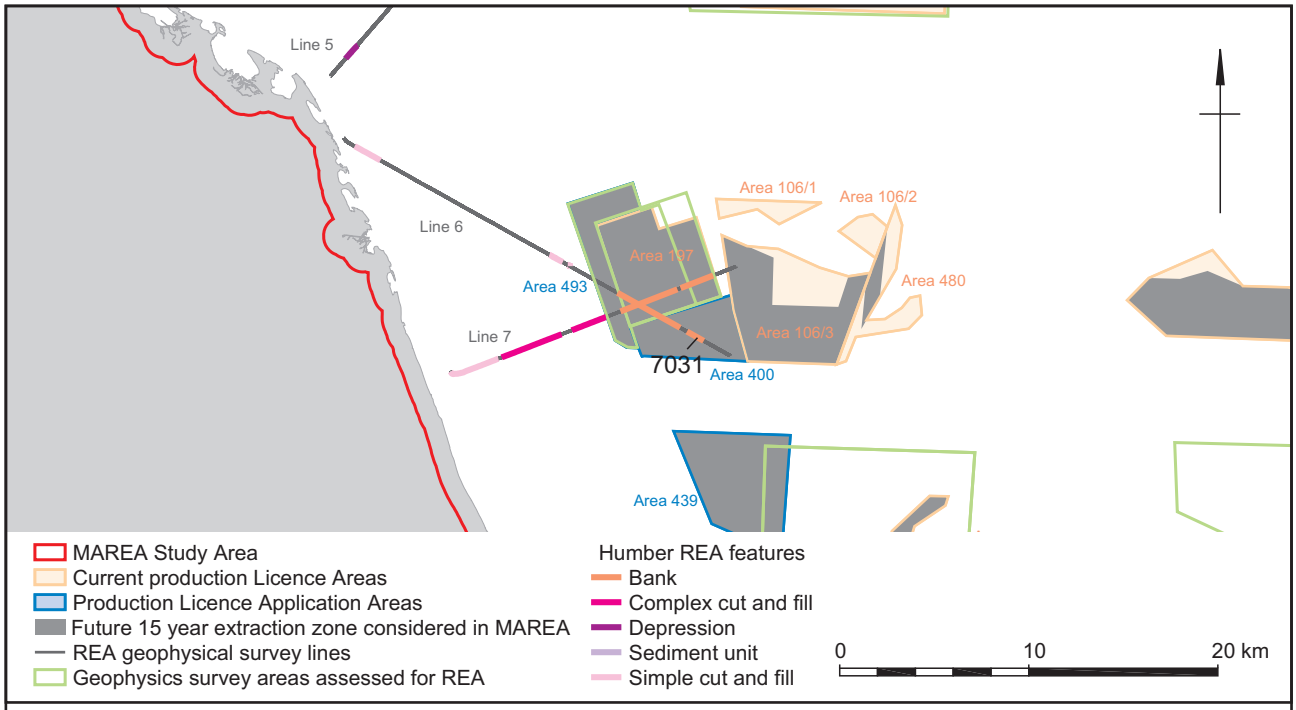
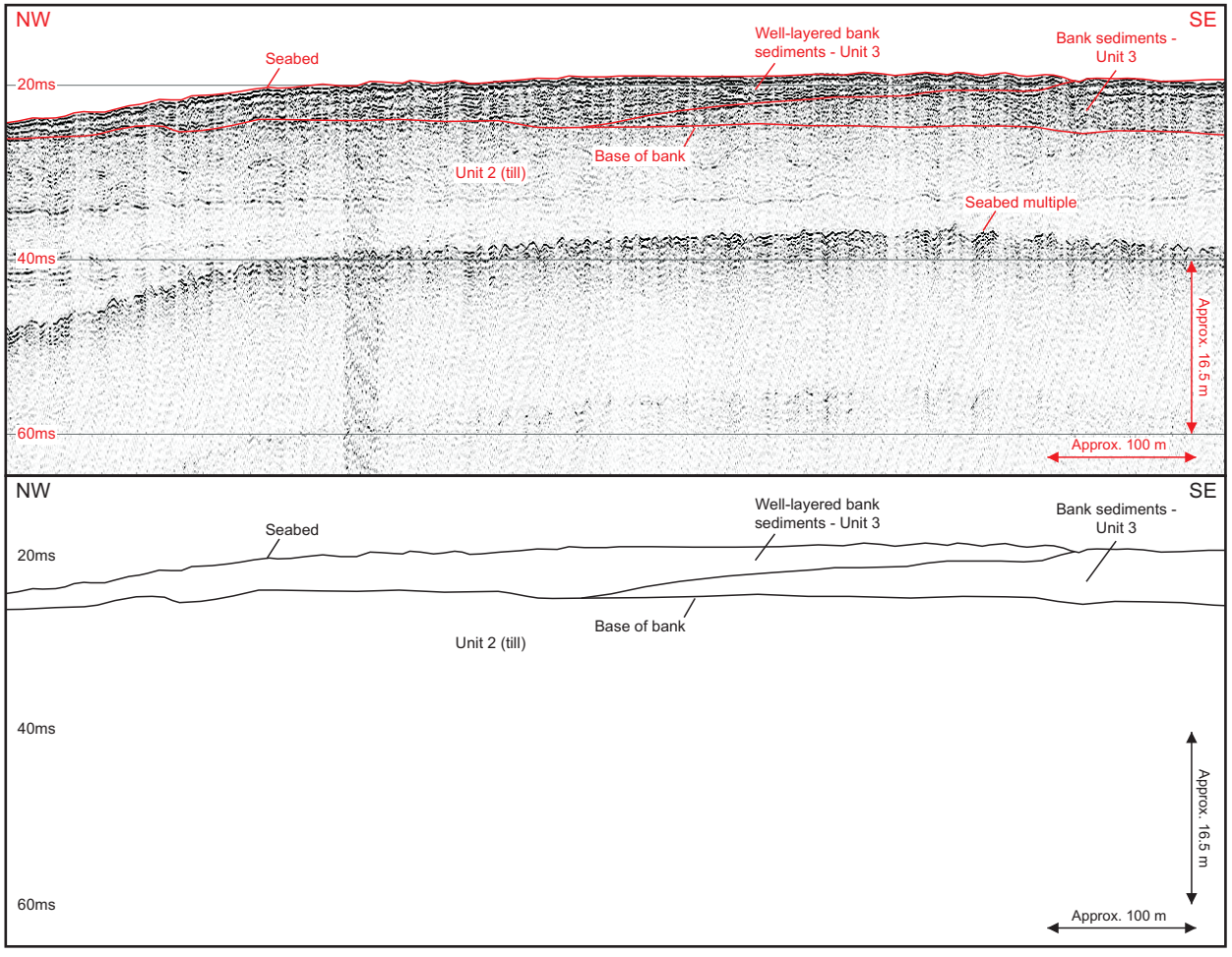
Wessex Archaeology

Sub-bottom profiler data example illustrating complex cut and fill feature (7002) in the northern area

Figure 9





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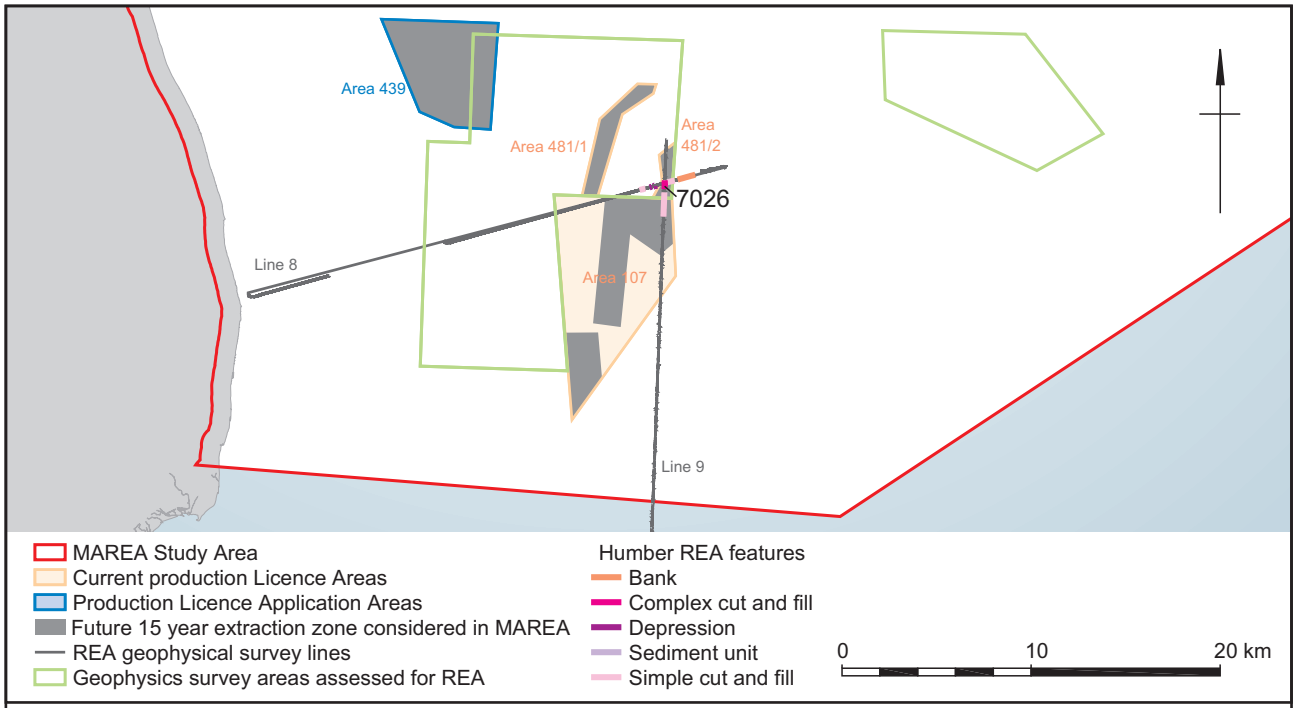
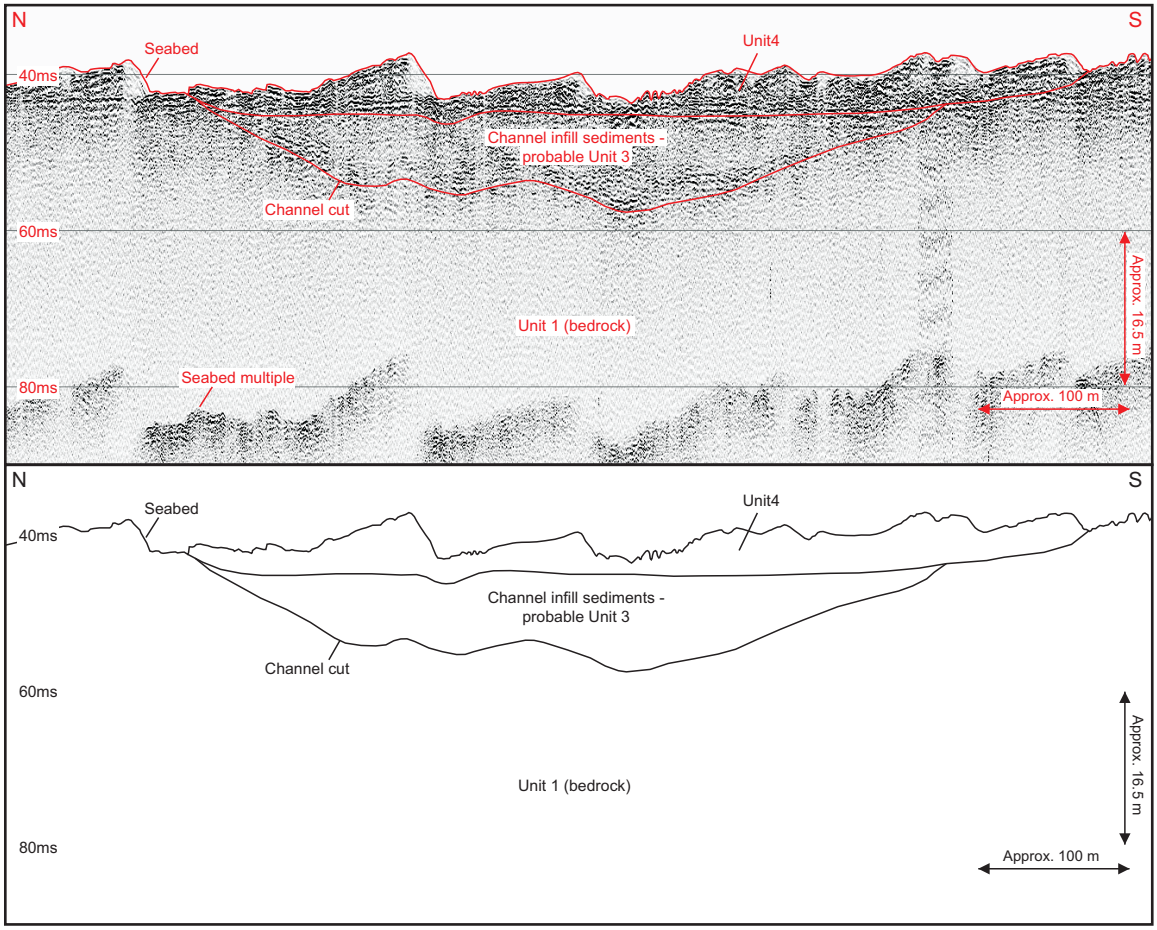
Sub-bottom profiler data example illustrating a bank feature (7031) comprising Unit 3 sediments in the central area

Figure 10





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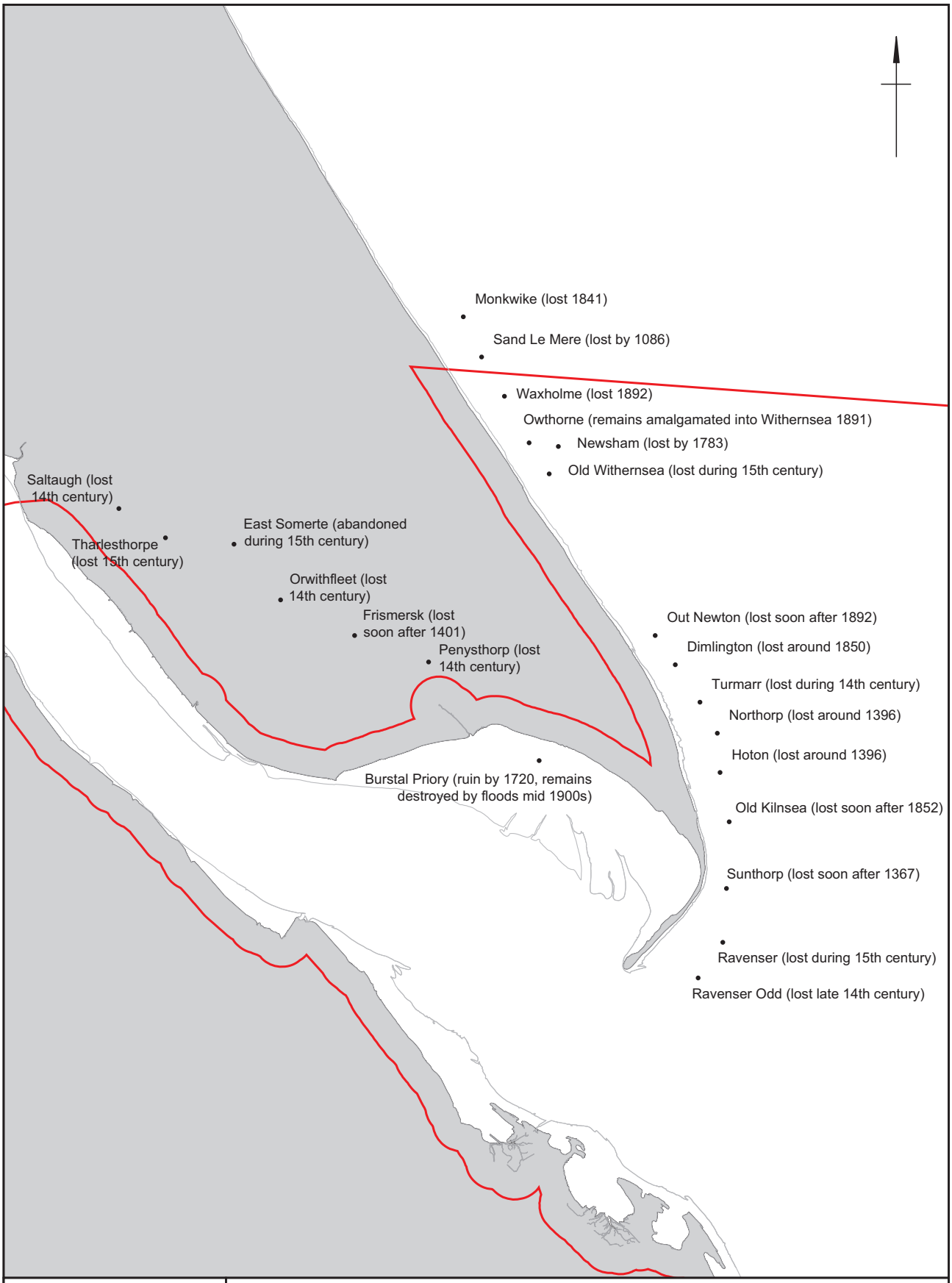
Sub-bottom profiler data example illustrating complex cut and fill feature (7026) in the southern area

Figure 11



MAREA Study Area

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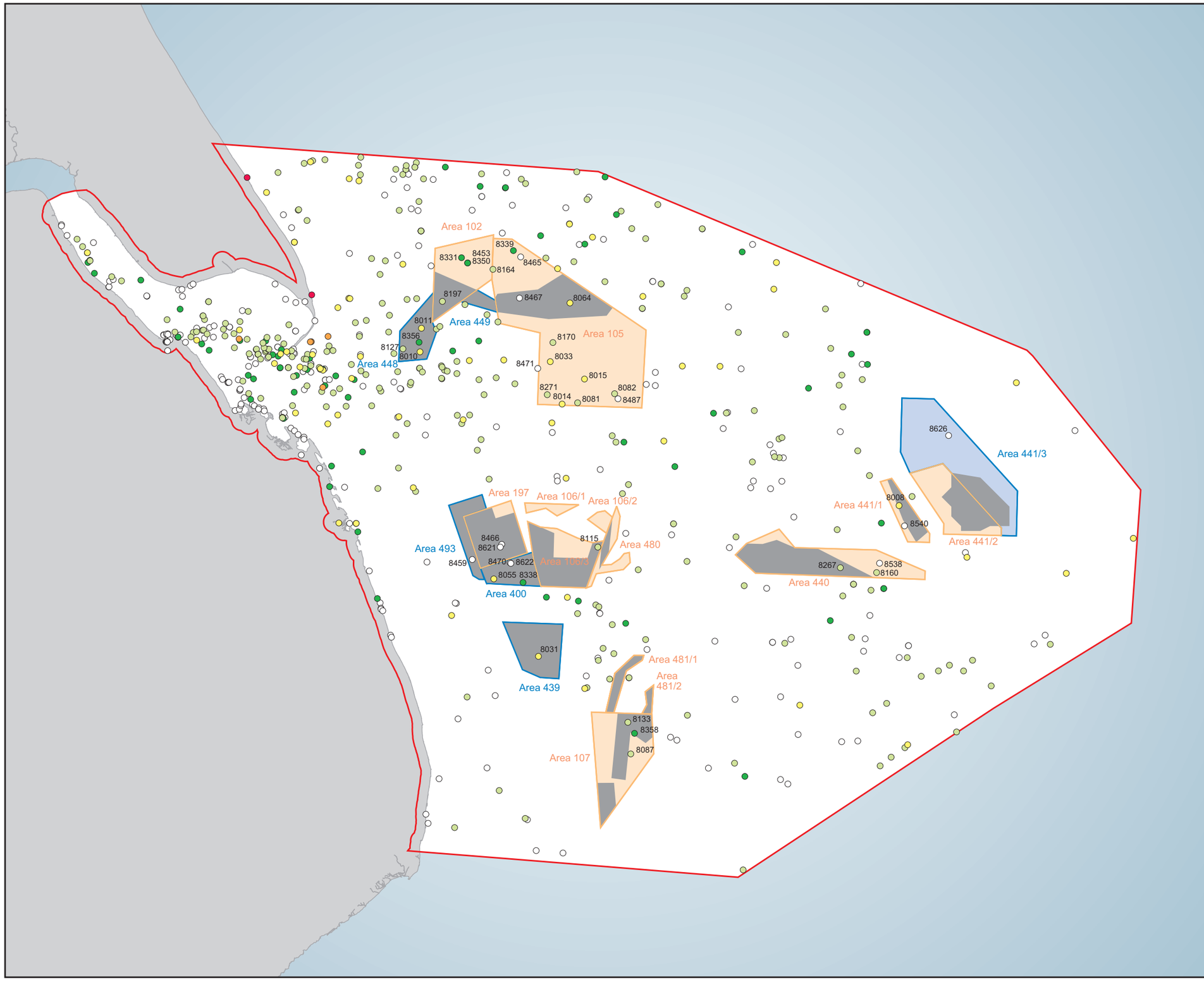
Map of medieval villages lost to coastal erosion within the MAREA Study Area (after Sheppard 1912) Figure 12



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MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA

NMR records
- Pre 1508
- 1509-1815
- 1816-1913
- 1914-1945
- Post 1946
- Unknown

0 10 20 km

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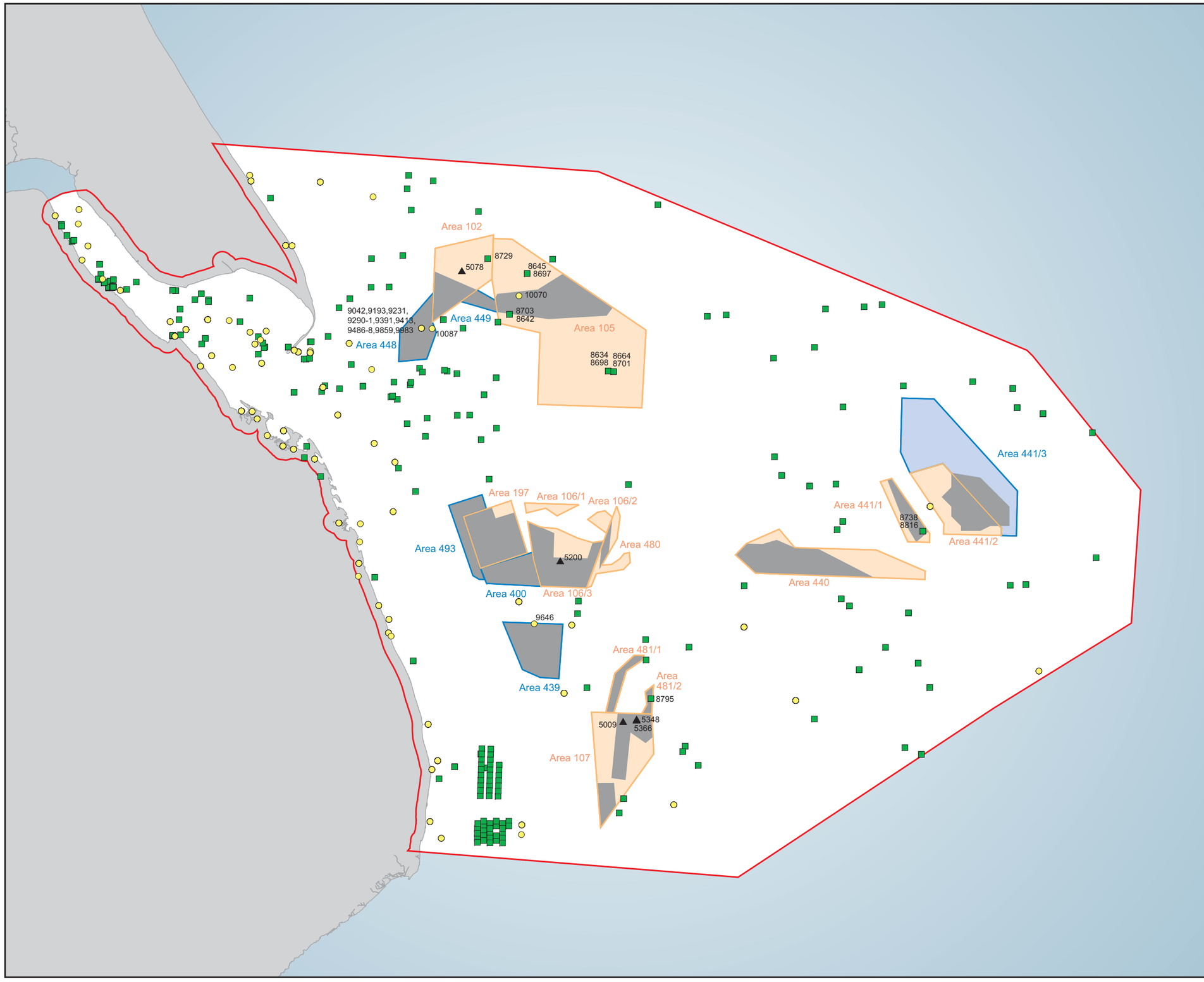
Recorded wrecks within the MAREA Study Area

Figure 13



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MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
Shipping casualty/ recorded loss
Seabed obstruction
BMAPA find

0 10 20 km

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Shipping casualties/ recorded losses, reported seabed obstructions and possible wreck related finds recovered from offshore aggregate licence areas through TCE, BMAPA/EH finds reporting protocol within the MAREA Study Area

Figure 14

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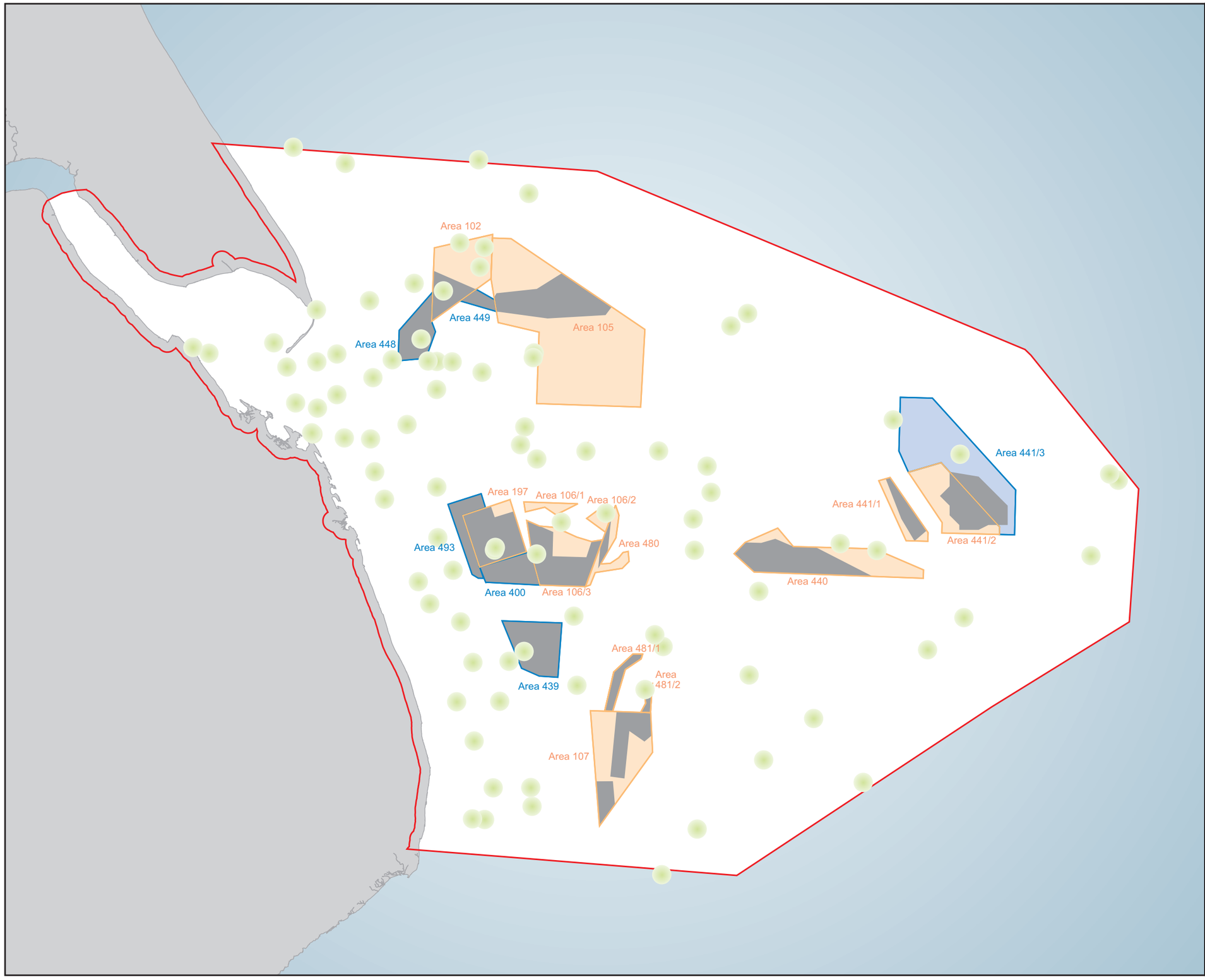

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MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
World War II Air/Sea Rescue operation (approximate location)

0 10 20 km

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Approximate locations of World War II air/sea rescue operations within the MAREA Study Area

Figure 15

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5573
5565-7 Withernsea
5529 Off Withernsea
Area 102
5571
Area 449
Area 105
5507-8 Grimsby Roads
5513 Humber River
5570
5506 Grimsby
5561,5563-4 Spurn Head
5546 Outer Binks
5545 Outer Binks
5557-60,5562 Spurn Head
Area 448
5510-2 Humber Estuary
5509 Haile Sand Flat
5521-8 Northcoates Point
5552 Rosse Spit
5503-5 Donna Nook
5530 Offshore Donna Nook
Area 441/3
Area 197
Area 106/1
Area 106/2
5553 Saltfleet Overfalls
Area 441/1
5574
Area 441/2
Area 493
Area 480
5568 Theddlethorpe
Area 440
Area 400
Area 106/3
5519-20 Mablethorpe
5518 Lincolnshire Coastal Waters
5547-51 Outer Dowsing Shoal
5514 Inner Dowsing Overfalls
Area 481/1
Area 481/2
Area 439
5501-2 Chapel St Leonards
Area 107
5554-6 Skegness
5572
5531-44 Offshore Skegness
5569

MAREA Study Area
Current production Licence Areas
Production Licence Application Areas
Future 15 year extraction zone considered in MAREA
Recorded aircraft casualties
Located aircraft wrecks
1939-1945
Post 1945
Unknown

0 10 20 km

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Recorded aircraft casualties and located aircraft wrecks within the MAREA Study Area

Figure 16