



Able Marine Energy Park

Material Change 2

Updated Marine Written

Scheme of Investigation

(referenced in response to question

11.0.1)



Able Marine Energy Park

Marine Archaeological Written Scheme of Investigation

Report Ref.: 237310.01
September 2021



© Wessex Archaeology Ltd 2021, all rights reserved

Portway House
Old Sarum Park
Salisbury
Wiltshire
SP4 6EB



Wessex Archaeology Ltd is a company limited by guarantee registered in England, company number 1712772. It is also a Charity registered in England and Wales number 287786, and in Scotland, Scottish Charity number SC042630. Our registered office is at Portway House, Old Sarum Park, Salisbury, Wiltshire, SP4 6EB

Disclaimer

The material contained in this report was designed as an integral part of a report to an individual client and was prepared solely for the benefit of that client. The material contained in this report does not necessarily stand on its own and is not intended to nor should it be relied upon by any third party. To the fullest extent permitted by law Wessex Archaeology will not be liable by reason of breach of contract negligence or otherwise for any loss or damage (whether direct indirect or consequential) occasioned to any person acting or omitting to act or refraining from acting in reliance upon the material contained in this report arising from or connected with any error or omission in the material contained in the report. Loss or damage as referred to above shall be deemed to include, but is not limited to, any loss of profits or anticipated profits damage to reputation or goodwill loss of business or anticipated business damages costs expenses incurred or payable to any third party (in all cases whether direct indirect or consequential) or any other direct indirect or consequential loss or damage

Document Information

Document title	Able Marine Energy Park and Compensation Site
Document subtitle	Marine Archaeological Written Scheme of Investigation
Document reference	237310.01
Client name	Able UK Limited
Address	Able House, Haverton Hill Road Billingham Reach Industrial Estate Billingham Teesside TS23 1PX
Site location	The Humber, Killingholme Marshes
County	North Lincolnshire
National grid reference	TA 16145 19906
Statutory designations	Protected Wreck Sites
Planning authority	North Lincolnshire Council
Archive repository or museum	North Lincolnshire Museum
Museum accession	North Lincolnshire Museum site code NKBL
WA project name	Able Marine Energy Park
WA project code(s)	76490; 237310
Project management by	Danielle Wilkinson and Andrew Bicket
Document compiled by	Lesley Dalglish
Contributions from	Stephanie Said, Ben Saunders and Robert MacKintosh
Graphics by	Kitty Foster and Amy Wright

Quality Assurance

Issue & issue date	Status	Author	Approved by
1	Draft submitted to client	LD	AEM
2 01/12/2020	Updated draft	BJS	AB
3 11/12/2020	Updated for Issue	RM	AB
4 12/04/2021	Updated for Issue	RM	
5 08/07/2021	Updated for Issue	RM	AB
6 20/08/2021	Updated for Issue	RM	AB
7 30/09/2021	Updated for Issue	RM	AB

DATA LICENCES

This product has been derived in part from material obtained from the UK Hydrographic Office with the permission of the UK Hydrographic Office and Her Majesty's Stationery Office.

© Crown copyright, 2021. Wessex Archaeology Ref. HA294/007/316-01.

The following notice applies:

NOT TO BE USED FOR NAVIGATION

WARNING: The UK Hydrographic Office has not verified the information within this product and does not accept liability for the accuracy of reproduction or any modifications made thereafter.

This product has been derived in part from material obtained from the UK Hydrographic Office with the permission of the Controller of Her Majesty's Stationery Office and UK Hydrographic Office

NOT TO BE USED FOR NAVIGATION

Contains Ordnance Survey data © Crown copyright and database rights 2021



Contents

1	INTRODUCTION	1
1.1	Project and planning background.....	1
1.2	Planning Conditions.....	2
1.3	Development description	3
1.4	Construction programme	3
1.5	Scope of document.....	3
2	THE ARCHAEOLOGICAL ASSESSMENT AREAS.....	4
2.1	Co-ordinate system.....	4
2.2	Archaeological Assessment Areas.....	4
3	AIMS AND OBJECTIVES.....	5
3.1	Aims	5
3.2	Objectives.....	5
4	ROLES, RESPONSIBILITIES AND COMMUNICATION	5
4.1	Schedule.....	5
4.2	Archaeological Curators.....	7
4.3	Communication.....	7
5	BASELINE SUMMARY	9
5.1	Previous archaeological work	9
5.2	Updated baseline.....	9
5.3	Summary of known and potential archaeological assets	10
6	POTENTIAL IMPACTS	13
6.1	Introduction.....	13
6.2	The New Quay.....	13
6.3	The Berthing Pocket, Approach Channel and Turning Area.....	15
6.4	Other	17
7	MITIGATION.....	17
7.1	Introduction.....	17
7.2	Previously agreed mitigation (2012).....	17
7.3	Updated mitigation strategy (2021)	18
7.4	Geophysical investigation	19
7.5	Geoarchaeological investigation	19
7.6	Walkover survey	20
7.7	Archaeological watching briefs.....	20
7.8	Protocol for Archaeological Discoveries (The Protocol).....	21
7.9	Implementation of the Protocol	22
7.10	Additional Construction Phase Mitigation	23
7.11	Archaeological measures within an environmental monitoring plan.....	23
7.12	Standards and Guidance	24
7.13	Service location and other constraints	25



8	FINDS AND ENVIRONMENTAL	26
8.1	Finds.....	26
8.2	Ordnance.....	27
8.3	Human remains	27
8.4	Treasure	27
8.5	Aircraft.....	27
8.6	Wreck	28
8.7	Environmental.....	28
8.8	Conservation and storage.....	29
9	POST-EXCAVATION AND REPORTING.....	29
9.1	Finds.....	29
9.2	Environmental.....	29
9.3	Reporting.....	30
10	ARCHIVE STORAGE AND CURATION.....	30
10.1	Museum.....	30
10.2	Transfer of title.....	31
10.3	Preparation of archive.....	31
10.4	Selection, retention and disposal policy	31
10.5	Security copy	31
11	COPYRIGHT	32
11.1	Archive and report copyright	32
11.2	Third party data copyright	32
12	WESSEX ARCHAEOLOGY PROCEDURES.....	32
12.1	External quality standards.....	32
12.2	Personnel	32
12.3	Internal quality standards.....	32
12.4	Health and Safety	33
12.5	Insurance.....	33
	REFERENCES	34
	APPENDICES	37
	Appendix 1: AMEP Site Gazetteer	37
	Appendix 2: Actions for discoveries made during dredging and excavation works	41
	Appendix 3: Recording Form	42
	Appendix 4: Guidelines for Identifying Finds of Archaeological Interest	43
	Appendix 5: Guidelines for Artefact Handling and Storage.....	47



List of Figures

- Figure 1** Site Location within marine heritage receptors
Figure 2 Schematic diagram showing relative depths and locations of vibrocores within the AMEP, with interpretive units alongside

List of Tables

- Table 1** Definitions
Table 2 Roles and Responsibilities
Table 3 Contacts
Table 4 Potential impacts on receptors within the New Quay development area
Table 5 Potential significance of receptors within the New Quay development area
Table 6 Potential impacts on receptors associated with the Berthing Pocket
Table 7 Potential significance of receptors associated with the Berthing Pocket
Table 8 Potential Method Statements and indicative timescales



Able Marine Energy Park The Humber

Marine Archaeological Written Scheme of Investigation

1 INTRODUCTION

1.1 Project and planning background

- 1.1.1 Wessex Archaeology has been commissioned by Able UK Ltd to prepare an updated Marine Archaeological Written Scheme of Investigation (WSI) for the coastal and marine aspects of the Able Marine Energy Park (AMEP) only. The AMEP development area lies on the south side of the Humber at Killingholme Marshes, Immingham (**Figure 1**).
- 1.1.2 Curatorial comment on the archaeological implications of the development has been provided by Historic England and North Lincolnshire Council.
- 1.1.3 This WSI addresses coastal and marine aspects of the development, including intertidal areas and fully sub-tidal areas. Land-based aspects of the development are addressed separately in a terrestrial WSI prepared by AC Archaeology.
- 1.1.4 This WSI draws upon the Crown Estate document *Model Clauses for Archaeological Written Schemes of Investigation* (Crown Estate 2010) and provides a framework and methodologies for additional archaeological work and mitigation to be undertaken during the construction and post-construction phases of the AMEP Site.
- 1.1.5 This updated WSI follows the WSI prepared in 2012 (Wessex Archaeology 2012a) and incorporated by reference into the AMEP Development Consent Order (DCO) 2014 (Schedule 11 Paragraph 17(2)). The 2012 WSI was based on a review of geoarchaeological data (Wessex Archaeology 2011 & 2012b) and geophysical survey data captured by Emu Limited in 2010 (Emu 2010) and was written as part of the design works.
- 1.1.6 The DCO allows for revisions to the WSI to be agreed by the relevant planning authority. This updated WSI also takes into consideration the changes proposed as part of the "Material Change 2" under the Able Marine Energy Park Development Consent Order (DCO) 2014 below.
- 1.1.7 The relevant details of the proposed 'Material Change 2' are summarised as follows:
- Changes to the proposed quay layout to reclaim the specialist berth at the southern end of the quay, and to set back the quay line at the northern end of the quay to create a barge berth;
 - The addition of options to the form of construction of the quay whereby the piled relieving slab to the rear of the quay could be raised or omitted entirely (subject to detailed design), and the quay wall piles could be restrained with more conventional steel anchor piles and tie bars in lieu of flap anchors;
 - An amendment to the sequencing of the quay works (as illustrated on the consented DCO drawings AMEP_P1D_D_101 to 103; Indicative Sequence Plan View[s]) to enable those works to commence at the southern end of the quay and progress northwards.



- 1.1.8 It should be noted that the changes to the proposed quay layout would result in a reduction in footprint area reclaimed from the estuary. The DCO quay alignment has a footprint of 45 hectares, whilst the proposed quay alignment within the material amendment would equate to a footprint of 43.6 hectares; a reduction of approximately 1.4 hectares. In addition to the above, there are no alterations proposed to the operating life or decommissioning of the site. As such, these elements remain as considered and assessed within the original ES.

1.2 Planning Conditions

- 1.2.1 This update to the approved WSI is prepared with reference to the Development Consent Order (Schedule 11) and the deemed Marine Licence (DML) and is based on The Crown Estate & Wessex Archaeology (2010) guidelines and The Crown Estate (2014) Protocol for Archaeological Discoveries. It has been updated to include method statements for the planned dredging works and an updated scheme of investigation for any potential future works. It has been prepared to satisfy the relevant condition of the DCO, which currently states:

17.—(1) No stage of the authorised development is to commence until, for that stage, a written project design for the investigation of areas of archaeological interest as identified in chapters 18 and 40 of the environmental statement has been submitted to and approved by the relevant planning authority.

(2) The project design must accord with the evaluation results and mitigation measures included in the document Able UK Ltd Marine Energy Park: Framework for archaeological investigation and mitigation strategies prepared by AC Archaeology Ltd (ref: ACW283/3/1 revised June 2012), and the Written Scheme of Investigation: Coastal and Marine prepared by Wessex Archaeology (ref 79490.02 revised March 2012) and subsequent updates, to be agreed by the relevant planning authority.

(3) The project design must identify —

(a) areas where fieldwork is required;

(b) measures to be taken to identify, protect, record and recover any archaeological remains that may be found including artefacts and ecofacts;

(c) methodologies for post-excavation assessment and analysis of artefacts and ecofacts;

(d) arrangements for dissemination and publication of reports;

(e) preparation of archive material and its deposition with recognised repositories;

(f) an implementation timetable;

(g) monitoring arrangements, including notification and commencement of work;

*(h) details of contractors involved in the implementation of archaeological works;
and*

(i) proposals for publicity and community outreach work.

(4) Any archaeological works carried out under the scheme must be carried out by a suitably qualified person or body.

(5) Any archaeological works must be carried out in accordance with the approved scheme and timings, subject to any variation approved by the relevant planning authority.



1.3 Development description

- 1.3.1 Able UK is proposing to construct a Marine Energy Park which comprises new manufacturing facilities, storage and a new deep-water quay at Killingholme Marshes (**Figure 1**). The new deep water quay will enable transportation of wind turbine parts from the manufacturing site to the windfarm on vessels up to 40,000 T with an operational draft of up to 10 m. In order to accommodate these vessels, the existing approach channel will be deepened, an area for manoeuvring and turning these vessels will be developed, and a new quay with associated turbine manufacturing and storage facilities will be constructed.
- 1.3.2 The dredging proposals have not changed as part of the “Material Change 2” and the relevant marine and coastal works of this project are:
- Dredging of a trench to seat flap anchors (c. 275 000m³);
 - Sheet and tubular pile quay wall;
 - Backfilling quay wall with dredged material;
 - Dredging of a berthing pocket (c. 830 000m³);
 - Dredging of a turning area (c. 115 000m³); and
 - Dredging of an approach channel (c. 750 000m³).
- 1.3.3 Selected arisings from the dredging will be disposed of at sea in licensed sites.
- 1.3.4 The proposed Material Amendments to the DCO of relevance to the marine Historic Environment are those associated to the proposed quay layout and the dredging volumes. The proposals will reclaim the specialist berth at the southern end of the quay and set back the quay line at the northern end of the quay to create a barge berth. However, the overall footprint of the quay is largely unchanged. In addition, the dredging permissions are to be changed to the extent necessary to dredge the berthing pockets and approaches for the amended quay line.

1.4 Construction programme

- 1.4.1 The construction programme for the capital and maintenance dredging activities associated with the Quay construction is:
- Commence dredging Q2 2022, works to be carried out in stages throughout the project.
 - Commence Quay Construction June 2022
 - Complete Quay Q1 2025

1.5 Scope of document

- 1.5.1 This WSI sets out the aims, methods and standards that will be employed to ensure that adequate mitigation is applied to aspects of the marine historic environment that will be impacted by the construction and capital dredging aspect of AMEP. In format and content, it conforms to current best practice and to the guidance outlined in *Management of Research Projects in the Historic Environment* (MoRPHE, Historic England 2015a), the Joint Nautical Archaeology Policy Committee *Code of Practice for Development* (JNAPC 2006) and the relevant guidance from the Chartered Institute for Archaeologists’ (CIfA) guidance.



- 1.5.2 This document will be submitted to Historic England and North Lincolnshire Council for approval, prior to the commencement of any investigative work.

2 THE ARCHAEOLOGICAL ASSESSMENT AREAS

2.1 Co-ordinate system

- 2.1.1 Positions are reported in the **British National Grid** (BNG) co-ordinate system for all aspects of this report.

2.2 Archaeological Assessment Areas

- 2.2.1 The site lies between the Humber Sea Terminal (HST) and ABP Immingham Port centred on National Grid Reference (NGR) TA 16145 19906 (**Figure 1**). The areas under study cover existing intertidal and subtidal area. These are located within the Humber Estuary and extend from the existing tidal defences towards the deep-water channel that serves the HST.



3 AIMS AND OBJECTIVES

3.1 Aims

3.1.1 The aim of this WSI is to establish the archaeological mitigation for the AMEP scheme. The project design for the compensation scheme on the north bank will be dealt with separately.

3.2 Objectives

3.2.1 The objectives of this WSI are as follows:

- to fulfil the requirements of Historic England and North Lincolnshire Council in respect of archaeological monitoring and mitigation works associated with the Proposed Development of AMEP;
- to propose measures for the mitigation of unexpected archaeological remains encountered during dredging, excavation or construction work associated with the project;
- to establish the reporting and archiving requirements for the archaeological works undertaken during construction and post-construction monitoring.

4 ROLES, RESPONSIBILITIES AND COMMUNICATION

4.1 Schedule

4.1.1 Mitigation measures required to inform the final engineering design for this project must be undertaken, completed and reported on in time to inform the design.

4.1.2 For the purposes of the WSI, the following definitions apply:

Table 1 Definitions

The Developer	Able UK
Agents and Contractors	Organisations and individuals contracted or otherwise instructed by the Company in respect of the design and construction of the AMEP and Compensation Site.
Archaeological Curator	Historic England, in consultation with the Archaeological Officers of North Lincolnshire Council and Humber Archaeology Partnership.
Retained Archaeologist	The suitably qualified and experienced archaeologist or archaeological organisation employed and retained by the Company as required by the Scheme to supervise the implementation of the Scheme. In this case Wessex Archaeology is the Retained Archaeologist.
Archaeological Contractor(s)	An archaeologist or archaeological organisation employed by the Company to carry out specific archaeological work packages, subject to Method Statements submitted and agreed in accordance with this WSI. There may be more than one Archaeological Contractor.

4.1.3 The following table sets out the principle roles and responsibilities.



Table 2 Roles and Responsibilities

Role	Organisation	Responsibilities
Developer	Able UK	<p>The responsibility for implementing the WSI rests with the Developer and their appointed representatives (including their Contractors). The Developer and/or their representative shall:</p> <ul style="list-style-type: none">• familiarise themselves with the contents of this WSI and will ensure that Contractors and any project personnel are aware of this WSI and the Protocol for Archaeological Discoveries (the Protocol);• seek curatorial advice from the Archaeological Curators as appropriate;• commission and consult Wessex Archaeology during the planning stages for any further work;• ensure that Wessex Archaeology is provided with all relevant project datasets, to ensure that they are in an informed position to advise the project team; and• identify Nominated Contacts for the Protocol.
Agents, Contractors and Sub-Contractor	TBC	<p>All relevant Contractors engaged in the construction of the project shall:</p> <ul style="list-style-type: none">• familiarise themselves with the requirements of the WSI and make them available to all of their staff working on the project (e.g. for Protocol);• communicate with Wessex Archaeology in the planning stages of survey work, to ensure archaeological objectives are included, as appropriate;• obey legal obligations in respect of 'wreck' and 'treasure' under the <i>Merchant Shipping Act</i> 1995 and the <i>Treasure Act</i> 1996, respectively;• assist and afford access to archaeologists employed by the Developer;• inform Wessex Archaeology of any environmental constraint or matter relating to health, safety and welfare of which they are aware that is relevant to the archaeologists' activities; and,• implement the Protocol.
Archaeological Curators	Historic England, North Lincolnshire Council	<p>Historic England is the Archaeological Curator providing advice for the historic environment within the English inshore and offshore marine planning areas.</p> <p>Advice will be sought from North Lincolnshire Council for the historic environment falling above the Medium Low Water Mark.</p> <p>See below for contact details.</p>
Retained Archaeologist	Wessex Archaeology	<p>The Retained Archaeologist will oversee archaeological mitigation to provide consistency throughout the project, as required. The Retained Archaeologist is responsible for:</p> <ul style="list-style-type: none">• advising the Developer and/ or their representative on necessary interaction with third parties with archaeological interest, and the Archaeological Curator(s);• advising the Developer and/ or their representative and appropriate Contractor(s) on which elements warrant archaeological investigation and provide archaeological advice at the planning stages for any further surveys, such as geophysical, geotechnical, Unexploded Ordnance (UXO), ROV or diver. The Retained Archaeologist will produce archaeological method statements for further archaeological investigations and will ensure approval from Archaeological Curator(s);• will act as the first contact for any unexpected archaeological discoveries. The Retained Archaeologist will cover the



Role	Organisation	Responsibilities
		administration of the reporting of discoveries and provide immediate actions, including recording, handling and storage, and introduction of measures to prevent or reduce damage if the presence of a significant archaeological site is suspected; and, <ul style="list-style-type: none">will produce reports for approval by the Developer and/ or their representative and the Archaeological Curator(s) and will also prepare project archives in consultation with the appropriate repository/ museum.
Archaeological Contractor(s)	-	Archaeological Contractor(s) may be appointed to carry out specific packages of work, for example works beyond the in-house capabilities of the Retained Archaeologist, or additional works, as required. The Archaeological Contractor(s) may be appointed by the Developer or their appointed representatives (the Client, the Retained Archaeologist or other contractors/ sub-contractors). In these instances, the Retained Archaeologist will have a coordinating role, ensuring works are specified, planned, undertaken and reported in accordance with this WSI.

4.2 Archaeological Curators

4.2.1 The Archaeological Curators responsible for heritage within the historic environment are Historic England and North Lincolnshire Council Archaeologist. Historic England's Regional Science Advisor may consult colleagues in Marine Planning (responsible for heritage matters in areas that fall within the English Inshore Region, within the 12-nautical mile limit) with regard to activities undertaken as part of this WSI. The following table provides the contact information of the relevant curators.

Table 3 Contacts

Name	Organisation	Role	Contact Information
Dr Christopher Pater	Historic England	Head of Marine Planning	██████████@HistoricEngland.org.uk
Matthew Nicholas	Historic England	East Midlands Science Advisor	██████████@HistoricEngland.org.uk
Alison Williams	North Lincolnshire Council Archaeologist	Archaeological Officer	██████████@northlincs.gov.uk

4.3 Communication

4.3.1 Interaction with the construction team (or any other party contracted for the delivery of the development) will be administered by the Developer, advised by Wessex Archaeology.

4.3.2 Interaction with the Archaeological Curators will be administered by the Developer, advised by Wessex Archaeology.

4.3.3 On instruction from the Developer, Wessex Archaeology may liaise directly with the Archaeological Curators, subject to the Developer being informed of all such direct liaison.

4.3.4 Unless otherwise agreed, the Developer will notify the Archaeological Curators four weeks in advance of:

- work timetables;
- the commencement of works that may impact the historic environment;
- the completion of works that may impact the historic environment; and



- changes to work timetables and the commencement and completion of works.

4.3.5 Unless otherwise stated in this WSI, or agreed between the Developer and the Archaeological Curators, the Developer and the Archaeological Curators will have four weeks within which to agree documentation or actions as provided for by this WSI. Where no further communication has been received within four weeks, agreement will be considered to have been reached.

4.3.6 The Developer and the Archaeological Curators may agree a shorter or longer period within which a specific item or type of documentation or action is to be agreed or be considered to have been agreed.

4.3.7 Where commencement of a relevant work under the consent is subject to the Developer securing implementation of a programme of archaeological works, the Archaeological Curators will confirm in writing that such implementation has been secured, on submission by the Developer of appropriate evidence.

4.4 Meetings between Developer and Archaeological Curators

4.4.1 Regular meetings will be held between the Developer and the Archaeological Curators to enable monitoring of the implementation of this WSI.

4.4.2 Meetings will be attended by Wessex Archaeology and – as relevant – by Archaeological Contractor(s).

4.4.3 By agreement in advance, the Developer and the Archaeological Curators may arrange for the attendance at meetings of other parties.

4.4.4 The schedule (frequency / timescale) of meetings will be agreed between the Developer and the Archaeological Curators.

4.4.5 The Developer will provide for the circulation in advance of an agenda for each meeting, and for the preparation and circulation of meeting notes.



5 BASELINE SUMMARY

5.1 Previous archaeological work

5.1.1 The baseline conditions were initially set out in the original ES (AMEP 2011, Section 18.5)¹.

5.1.2 The following sources of information were used to form the baseline in the ES:

- a Desk-Based Assessment (DBA) of available information, including data from the National Record for the Historic Environment (NRHE), local Historic Environment Records (HERs), and the United Kingdom Hydrographic Office (UKHO).
- an intertidal walk-over survey;
- a magnetometry, single beam echo sounder, and sub bottom profiler survey conducted by Emu (Emu 2010);
- Wessex Archaeology AMEP Geoarchaeological Recording and Sub-sampling (Wessex Archaeology 2011);
- Wessex Archaeology AMEP Stage2/3 Geoarchaeological Recording and Sub-sampling 2012 (Wessex Archaeology 2012b); and
- an assessment of the setting within the broad study area.

5.1.3 There were no shipwrecks designated under the Protection of Wrecks Act 1973, there were no shipwrecks or known aircraft remains protected under the Protection of Military Remains Act 1986.

5.1.4 All maritime archaeology receptors, including the recorded losses and charted wrecks (Sites 22-25, 109-115), foul ground (Sites 128, 129 and 130) and magnetometer anomalies (Sites 12, 27-30, 131-133, 167) were assessed to be of either local significance due to their archaeological, architectural, artistic or historic interest, i.e. they would score low using the non-statutory criteria for assessing scheduled monuments, or of no significance, i.e. they were not considered to be of archaeological, architectural, artistic or historic interest (ES Table 18.4).

5.2 Updated baseline

5.2.1 The marine historic environment baseline and impacts were reassessed for this WSI. Data from the United Kingdom Hydrographic Office Wreck Database were acquired in September 2020 and from North Lincolnshire HER in August 2021. Eight new relevant sites were added to the project gazetteer (**Appendix 1**).

5.2.2 All heritage receptors have been renumbered for this WSI, their equivalent numbering in the original ES is listed in **Appendix 1**. The numbering follows the Wessex Archaeology convention of 1001, 1002, etc. for intertidal sites recorded in HERs and by the UKHO; 2001, 2002, etc. for maritime and aviation sites recorded in HERs and by the UKHO; and 7001, 7002, etc. for geophysical anomalies.

5.2.3 Where there is a discrepancy in location between the UKHO, NRHE and HER records, the UKHO position has been used as this is likely to be more accurate.

¹ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030001/TR030001-000323-18%20-%20Historic%20Environment.pdf>



5.2.4 Marine archaeological and cultural heritage receptors may consist of the following categories:

- **Seabed Prehistory:** for example, palaeochannels and other features that contain prehistoric sediment, and derived Palaeolithic artefacts e.g. handaxes;
- **Maritime Archaeology:** maritime archaeological sites consist broadly of vessel remains, wreckage and submerged vessel/cargo debris; and
- **Aviation Archaeology:** this comprises all military and civilian aircraft crash sites and related wreckage; and
- **Intertidal Archaeology:** the remains of maritime infrastructure and other heritage sites that are located within the intertidal zone or partially submerged.

5.2.5 The records can be discriminated between records for which there is known material on the seabed and 'recorded losses', the recorded loss location of vessels that are known to have been lost. The locations of recorded losses are often very general or arbitrary and so it is unlikely that there is any wreck material on the seabed at these locations.

5.2.6 The methodology follows the best practice professional guidance outlined by the Chartered Institute for Archaeologists' (CIfA) *Standard and Guidance for Historic Environment Desk-Based Assessment* (CIfA 2014a).

5.3 Summary of known and potential archaeological assets

Overview

5.3.1 Within the marine area of the development area there are 18 archaeological receptors (**Figure 1**), with a further 4 outside the development area that have also been included. A summary gazetteer can be seen in **Appendix 1**. There are 9 intertidal sites, 8 maritime sites, and 5 geophysical anomalies.

5.3.2 There are no shipwrecks designated under the *Protection of Wrecks Act 1973*.

5.3.3 There are no known aircraft remains located in the development area protected under the *Protection of Military Remains Act 1986*. However, there is one reported loss of a Halifax MKIII MZ576 bomber to the south of the AMEP, the remains of which have not yet been located (**2008**).

5.3.4 The UKHO locations of *Cook S26*, and *Sergei* (**2001** and **2004**), lie outside the development area but are included as they were listed in the original ES. The HER location of a further possible wreck (**2005**) lies 10m outside the development area, but the wreck itself may have overlapped the area, and so is also included.

The New Quay

5.3.5 There are two unidentified magnetometer anomalies (**7003** and **7005**) within the area of the new quay (**Figure 1**). **7003** is a strong singular signature and **7005** is apparently multiple objects. There are also two recorded losses (**2002** and **2003**), these are documentary references to wrecking events that have been assigned an arbitrary location, and no wreckage has been confirmed at this location. Their remains are likely to lie elsewhere.

5.3.6 Vibrocores VC20 and VC21 within the area of the new quay contained organic material indicative of the presence of prehistoric land surfaces and deposits (Wessex Archaeology 2011). In addition, recording and sub-sampling has been carried out on six core samples from three boreholes by Wessex Archaeology and the logs of 77 boreholes reviewed

(Wessex Archaeology 2012b). This indicated that Pleistocene and Holocene sediments including glacial, alluvial, peat and estuarine alluvial sediments of prehistoric archaeological and palaeoenvironmental interest exist in the area of the Deepwater Frontage of the AMEP at a depth which is to be dredged using backhoe dredging techniques.

- 5.3.7 There are no known aviation wrecks within the area of the new quay.
- 5.3.8 In addition to the features that are known from coring and desk-based study there is potential for as yet unknown features and sites to be present in the area of the new quay. These sites range from prehistoric land surfaces, and associated sites, to the remains of vessels, from the prehistoric to modern periods, aircraft crash sites, and other features such as jetties and other coastal infrastructure within the intertidal zone. The anchorage of Whitebooth Roads, off Killingholme, is believed to have been heavily used and was a focus for shipping in this stretch of the river.

The Berthing Pocket, Approach Channel and Turning Area

- 5.3.9 There are two unidentified magnetometer anomalies (**7002** and **7004**) in the dredging area. **7002** is apparently multiple objects and **7004** is a large single object. A further magnetometer anomaly, a single object with a strong magnetic signature, lies within the development boundary but outside the approach channel and turning area (**7001**) (**Figure 1**).
- 5.3.10 Vibrocores VC07, VC09 and VC13 within the dredging area, and adjacent VC05, VC06, and VC08, contained organic material indicative of the presence of prehistoric land surfaces and deposits (Wessex Archaeology 2012b). However, the levels of these land surfaces are all below the maximum depth of dredging planned (**Figure 2**).
- 5.3.11 There are no known aviation sites within the dredging area.
- 5.3.12 In addition to the features that are known from coring and desk-based study, there is potential for as yet unknown features and sites to be present in the area of the new quay, ranging from prehistoric land surfaces and associated sites, to hitherto unknown wrecks of dating from the prehistoric to modern periods, to aviation remains. These sites, if present, could range from low to high sensitivity and, in the case of military aviation remains, be subject to automatic legal protection under the Protection of Military Remains Act 1986.

Other

- 5.3.13 In the intertidal area adjacent to the existing seawall to the south east of the new quay are a number of jetties shown on 19th and 20th century OS maps, 20th century aerial photography and observed on the walkover survey prior to the original ES (**1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008** and **1009**). Some of these sites were associated with Killingholme High Lighthouse, some with a brick and tile yard, and some with a 20th century fish meal and fish oil works. These lie within the development boundary, but not within the area of the new quay or dredging area. In this area there are also three wrecks observed on aerial photographs taken in 1962, but which are now no longer visible (**2005, 2006** and **2007**), although **2005** is approximately 10m outside the development boundary.

5.4 Summary

- 5.4.1 There are 16 known heritage receptors within the marine area of the proposed development, the magnetometer anomalies (**7001-7005**), the intertidal sites comprising posts and jetty remains (**1001-1009**) and the wreck sites **2006** and **2007**. **2005** is also possibly partly within the development area. The two recorded losses (**2002** and **2003**) are



merely documentary references to wrecking events that were assigned an arbitrary location, and no wreckage has been confirmed at their location.

- 5.4.2 There remains the potential for as yet undiscovered heritage receptors to exist within the development area.



6 POTENTIAL IMPACTS

6.1 Introduction

6.1.1 The area of the AMEP is considered to be an area of archaeological potential. In particular the development of the berthing pocket along the eastern side of the New Quay may result in a series of possible impacts on historic environment receptors.

6.1.2 These receptors can be broadly divided into palaeo-land surfaces, maritime archaeology and aviation archaeology, and encompass receptors that are known to be present, and receptors that are as yet unknown but have the potential to be present.

6.2 The New Quay

6.2.1 The new quay frontage will be 1288 m in length and located close to the western edge of the existing dredged channel. Direct impacts from construction of the new quay on archaeological sites may arise from the following activities:

- Dredging of alluvium from the reclamation area;
- Excavation of anchor piles;
- Installation of tubular and sheet piles for 1288m of front wall (combi-pile);
- Rainbowing of fill;
- Hydraulic fill of reclamation area;
- Installation of piles to support relieving slab; and
- Installation of rock revetment;

6.2.2 Where horizons with potential to contain archaeological material are to be entirely removed, subsequent activities (e.g. piling; rainbowing of fill; hydraulic fill) in these areas will have no additional direct impact.

6.2.3 Adverse direct impacts on the archaeological heritage may arise from intrusive works associated with the activities above, including dredging, piling and excavation. Such works can damage and remove material of archaeological interest and expose it to subsequent processes that will cause decay. Adverse direct impacts may also arise where the import of new materials such as fill or rock for revetment cause compaction to underlying features of archaeological interest and the deposits which currently protect them.

6.2.4 Adverse secondary impacts may arise from construction equipment that affects the seabed, notably the spuds/feet of jack-up vessels such as backhoe dredgers and piling rigs.

6.2.5 Construction of the new quay is not expected to have any adverse indirect impacts on marine heritage assets through changes in hydrology and sedimentation/erosion regimes. The Review of the Geomorphological Dynamics of the Humber Estuary (Original ES Annex 8.2) has concluded that the impact of the proposed quay on local sedimentation is likely to be one of enhanced deposition around the immediate structure, and that away from the proposed quay the combined impact of the development on intertidal and sub-tidal areas will be negligible in comparison with natural variation.

6.2.6 Where fill is to be imported, it will be obtained from existing marine aggregate licence areas. Other than these existing licensed areas, no additional extraction is proposed outside the footprint of the Project.



6.2.7 The following table summarises impacts on buried landscapes, maritime archaeological sites and aviation archaeology:

Table 4 Potential impacts on receptors within the New Quay development area

Impact from:	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
Dredging of alluvium from intertidal area and excavation of anchor piles	Removal and/or exposure of former land surfaces indicated by vibrocores; removal of associated archaeological material. Secondary impacts from dredging equipment, such as jack-up legs of backhoe dredgers.	Removal and/or exposure of shipwrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown shipwrecks, wreckage, small features and artefacts, including remains of documented shipping casualties. Secondary impacts from dredging equipment.	Removal and/or exposure of aircraft wrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown aircraft wrecks, wreckage, small features and artefacts. Secondary impacts from dredging equipment.
Installation of tubular piles and sheet piles for new quay and piling to support relieving slab and jetty*	Direct damage to former land surfaces and associated archaeological material. Secondary impacts from installation equipment, such as jack-up spuds for piling rigs.	Direct damage to as yet unknown shipwrecks and wreckage. Secondary impacts from installation equipment.	Direct damage to as yet unknown aircraft remains. Secondary impacts from installation equipment.
Rainbowing and hydraulic fill of reclamation area; installation of rock revetment*	Compaction of underlying former land surfaces and associated archaeological material.	Compaction of as yet unknown shipwrecks.	Compaction of as yet unknown aircraft remains.
<i>*NB: No further impact from fill if all deposits of archaeological interest removed by dredging / excavation.</i>			

Table 5 Potential significance of receptors within the New Quay development area

Sensitivity of Receptor (if present)	Palaeo-land surfaces		Maritime Archaeology		Aviation Archaeology	
	<i>In-situ</i> Prehistoric sites	High	As yet unknown shipwrecks	Low to High	As yet unknown aircraft wrecks (civil)	Low to High
Submerged landscape features (without associated archaeological material)	Medium	Isolated Maritime finds	Medium	As yet unknown aircraft wrecks (military)	High	



	Isolated Prehistoric finds	Medium			Isolated Aviation finds	Medium
	Isolated examples of Palaeo-environmental evidence	Low				
Overall significance	Minor to High Significance		Minor to High Significance		Minor to High Significance	

6.2.8 The area impacted by the construction of the New Quay contains potential receptors related to recorded losses (**2002** and **2003**) and two magnetometer anomalies (**7003** and **7005**) (**Figure 1**). There is potential for as yet unknown features and sites to be present in the area of the new quay, including prehistoric land surfaces and associated sites, to hitherto unknown wrecks and aviation remains.

6.3 The Berthing Pocket, Approach Channel and Turning Area

6.3.1 Dredging activities will comprise:

- A mixture of backhoe dredging (BHD), Cutter Suction Dredging (CSD) and Trailing Suction Hopper Dredging (TSHD) of berthing pocket in front of quay to the top of natural bedrock. Maximum capital dredge of -11m CD;
- Dredging to a maintained depth of -9m CD in the approach channel. Removal of a maximum of 5.5m at the northern end of the quay and around 2.5m at southern end; and
- Dredging to a maintained depth of -9m CD in the turning area. Maximum capital dredge of 1.5m.

6.3.2 Backhoe dredging and Cutter Suction Dredging will be carried out for the shallower areas of the berthing pocket and the intertidal areas of the compensation site where TSHD will not have access.

6.3.3 Adverse direct impacts on the archaeological heritage may arise from dredging, which can damage and remove material of archaeological interest and expose it to subsequent processes that cause decay.

6.3.4 Adverse secondary impacts may arise from construction equipment that affects the seabed, notably the spuds/feet of jack-up vessels such as backhoe dredgers.

6.3.5 Dredging is not expected to have any adverse indirect impacts on marine heritage assets through changes in hydrology and sedimentation/erosion regimes. The Review of the Geomorphological Dynamics of the Humber Estuary (ES Annex 8.2) has concluded that the combined impact of the development on intertidal and sub-tidal areas will be negligible in comparison with natural variation.

6.3.6 The arisings from dredging will either be used in the Project or disposed of at existing licensed disposal areas. Other than these existing licensed areas, no additional disposal is proposed outside the footprint of the Project.

6.3.7 The following table summarises impacts on buried landscapes, maritime archaeological sites and aviation archaeology.



Table 6 Potential impacts on receptors associated with the Berthing Pocket

Impact from:	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
Dredging operations	Removal and/or exposure of former land surfaces indicated by vibrocores; removal of associated archaeological material. Secondary impacts from dredging equipment, such as jack-up legs of backhoe dredgers.	Removal and/or exposure of shipwrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown shipwrecks, wreckage, small features and artefacts, including remains of documented shipping casualties. Secondary impacts from dredging equipment.	Removal and/or exposure of aircraft wrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown aircraft wrecks, wreckage, small features and artefacts. Secondary impacts from dredging equipment
Construction of Reinforcement of berthing pocket	None identified	None identified	None identified

Table 7 Potential significance of receptors associated with the Berthing Pocket

Sensitivity of Receptor (if present)	Palaeo-land surfaces		Maritime Archaeology		Aviation Archaeology	
	<i>In-situ</i> Prehistoric sites	High	As yet unknown shipwrecks	Low to High	As yet unknown aircraft wrecks (civil)	Low to High
	Submerged landscape features (without associated archaeological material)	Medium	Isolated Maritime finds	Medium	As yet unknown aircraft wrecks (military)	High
	Isolated Prehistoric finds	Medium			Isolated Aviation finds	Medium
	Isolated examples of Palaeo-environmental evidence	Low				
Overall significance	Minor to High Significance		Minor to High Significance		Minor to High Significance	

6.3.8 The potential for impacts on archaeological receptors, in particular deposits of geoarchaeological interest (palaeo-land surfaces), has been identified within the Berthing Pocket dredge area. Within this area, geoarchaeological deposits containing palaeoenvironmental evidence were identified within VC20 and VC21 of the geoarchaeological assessment (Wessex Archaeology 2012b; **Figure 2**). Within the turning area and approach channel, the dredging works will either be removing deposits containing low/negligible potential for palaeoenvironmental evidence or will not be excavating to a level which would impact deposits with potential for palaeoenvironmental evidence (**Figure 2**). There are also two magnetic anomalies within the dredging area (**7002** and **7004**).



6.4 Other

- 6.4.1 There are no planned works and corresponding impacts anticipated on the post and jetties represented by sites **1001** to **1009**, nor on the wrecks **2005**, **2006** and **2007**.

7 MITIGATION

7.1 Introduction

- 7.1.1 Proposed mitigation measures for AMEP were originally set out in the original ES (AMEP 2011, Section 18.7) and in the 2012 WSI (Wessex Archaeology 2012a). This section provides an updated approach honed to the current work activities discussed above, for each of the types of mitigation and the way that they will be implemented.

7.2 Previously agreed mitigation (2012)

- 7.2.1 The original ES set out mitigation measures relevant to the marine historic environment in works relating to new quay and the berthing pocket, approach channel and turning area. For the new quay it stated: *'Detailed mitigation measures to accompany construction of the new quay are being set out in a Written Scheme of Investigation (WSI) for marine and intertidal archaeology that has been drafted to accompany this Environmental Statement. The WSI provides for a further phase of investigations to enable detailed design of mitigation measures, as well as an outline of the mitigation measures that will be provided. The mitigation measures set out in the WSI will include monitoring by NLC/English Heritage and make provision for post-investigation assessment, material conservation, archaeological analysis, interpretation and publication of significant results, and preparation and deposition of a publicly-accessible archive. The WSI is subject to the agreement of NLC and English Heritage. It is anticipated that implementation of the WSI will be secured through a condition'* (AMEP 2011, para. 18.7.4).
- 7.2.2 For the berthing pocket, approach channel and turning area it stated: *'Detailed mitigation measures to accompany dredging of the berthing pocket, approach channel and turning area are being set out in the Written Scheme of Investigation (WSI) for marine and intertidal archaeology referred to above'* (AMEP 2011, para. 18.7.5).
- 7.2.3 The 2012 WSI set out possible measures that could be carried out during the design phase to supplement archaeological information identified by studies carried out prior to submission of the licence application (Wessex Archaeology 2012a, Section 5.1). These could inform the detailed design of the archaeological mitigation to take place during and after construction of the Marine Energy Park and Compensation Site, to be set out in an updated WSI. The investigations suggested were:
- Review of existing geophysical data;
 - Acquisition and interpretation of additional geophysical data;
 - Geoarchaeological investigation, including the development of a deposit model taking account of previous work;
 - Additional documentary research notably into the brick and tile yards and historic shipping records relating to the anchorage of Whitebooth Roads (off Killingholme);
 - Investigation of unidentified foreshore sites;
 - Diver-based investigations of geophysical anomalies;
 - Development of dredge reporting protocol.



- 7.2.4 Since the completion of the 2012 WSI there have been no further design phase investigations which could have contained the suggested design phase mitigation measures, however, certain mitigation measures can be applied pre-construction.
- 7.2.5 The 2012 WSI also set out measures that will be carried out during the construction phase, as well as further possible measures (Wessex Archaeology 2012a, Section 5.2). The measures that were stated will happen were:
- implementation of Dredge Reporting Protocol; and
 - investigations in response to discoveries arising from Dredge Reporting Protocol.
- 7.3 Updated mitigation strategy (2021)**
- 7.3.1 Pre-construction mitigation will comprise:
- Archaeological analysis of newly-acquired marine geophysical data, including multi-beam bathymetry, magnetometer and side scan sonar (**Section 7.4**);
 - Geoarchaeological assessment of newly-acquired geotechnical boreholes (**Section 7.5**); and
 - Intertidal Walkover survey (**Section 7.6**).
- 7.3.2 Construction phase mitigation will comprise:
- Archaeological watching briefs (**Section 7.7**) during backhoe dredging based on the results of the archaeological assessment of marine geophysical data (**Section 7.4**);
 - Implementation of a Protocol for Archaeological Discoveries (**Sections 7.8 and 7.9**); and
 - Additional mitigation in response to discoveries arising from Dredge Reporting Protocol (**Section 7.10**).
- 7.3.3 Side scan sonar survey or diver survey was initially suggested by Emu as a method of identifying the magnetic anomalies (Emu 2010). These anomalies (**7001 - 7005**) will be re-evaluated through a further geophysical survey campaign (**Section 7.4**) and through an archaeological watching brief (**Section 7.7**) as appropriate.
- 7.3.4 Detailed survey, recording, sampling and analysis of the intertidal post and jetty sites (**1001-1009**) was suggested; however, these sites will not be impacted by the development and so mitigation is not necessary. No intertidal sites are known within the New Quay area, but potential intertidal sites within the New Quay area will be sought through an additional walkover survey (**Section 7.6**).
- 7.3.5 The development of a geoarchaeological deposit model is also possible and is discussed further below (**Section 7.5**) combining marine and terrestrial geotechnical information.
- 7.3.6 In line with the 2012 WSI, the Dredge Reporting Protocol will be implemented at all times and for all works activities, and discoveries will be responded to appropriately (**Sections 7.8 to 7.10**).
- 7.3.7 The indicative timescales for activities and works relevant to the mitigation measures are presented in **Table 8**. These reflect measures in this WSI, and also indicative Method Statements for geophysical and geoarchaeological assessments.



Table 8 Potential Method Statements and indicative timescales

Mitigation Strategy	Method Statement	Activity/Work	Proposed Timescale
Method Statement	Archaeological Assessment of Marine Geophysical Survey Data	Marine Geophysical Survey Campaign	Q2 2022
		Archaeological assessment of geophysical data	Q2 2022
	Geoarchaeological Assessment of terrestrial and marine geotechnical data	Further geotechnical works	Q3 / Q4 2021
		Geoarchaeological investigation following geotechnical works	Q3 / Q4 2021
WSI Section 7.6	-	Walkover survey	From Q3 2021
WSI Section 7.7, 7.8	-	Dredging of the berthing pocket	From Q3 2022
WSI Section 7.7, 7.8	-	Dredging of the approach channel and turning area	From Q3 2022

7.4 Geophysical investigation

- 7.4.1 Further geophysical investigations are taking place pre-construction including multi-beam bathymetry pre-dredging survey and UXO surveys. Side scan sonar survey was initially suggested by Emu as a method of identifying the magnetic anomalies (**7001 to 7005**) (Emu 2010). Side scan sonar will be included in the scope of subsequent marine geophysical survey campaign. The data will be gathered at a suitable quality, coverage and specification to support effective archaeological assessment. The datasets will be processed, reviewed and interpreted by an archaeologist with an appropriate level of underwater cultural heritage expertise. If features of archaeological interest are identified, Archaeological Curators will be consulted prior to any changes to the mitigation strategy and construction activity.
- 7.4.2 The current magnetic anomalies (**7001 to 7005**) will be re-evaluated through this process and grouped as appropriate with anomalies from the other sensors. If features are identified this assessment will inform the watching brief strategy in discussion with Archaeological Curators.
- 7.4.3 The marine geophysical survey campaign is currently planned for the second quarter of 2022.

7.5 Geoarchaeological investigation

- 7.5.1 The 2012 WSI recommended developing a deposit model as part of further geoarchaeological work (Wessex Archaeology 2012a). This can be achieved using existing geoarchaeological data and will be updated with the geoarchaeological assessment of 7 further marine boreholes proposed for the site. Further onshore geotechnical work is also planned and the geoarchaeological assessment will combine the interpretation of stratigraphic information from both marine and terrestrial geotechnical datasets.
- 7.5.2 In addition, Wessex Archaeology has retained the borehole samples R13, R16 and D12 (Wessex Archaeology 2012b) and Stage 3 assessment and scientific dating can be undertaken on these samples.



7.5.3 The scope and methodology of these further geoarchaeological works will be set out in a separate method statement.

7.6 Walkover survey

7.6.1 One walkover survey has been undertaken on the site prior to the original ES. This survey observed the jetty/posts at sites **1004** and **1006**. No intertidal sites are currently known within the area of the New Quay, and a further walkover survey will cover this area prior to construction. The scope and methodology of this walkover survey will be set out in a separate method statement.

7.7 Archaeological watching briefs

7.7.1 An archaeological watching brief is a formal programme of archaeological monitoring and will be carried out by a suitably qualified archaeologist, subject to prior and adequate notification being given by the Client, on dredging activities within the Development Area, where the method of works allows.

7.7.2 All works will be carried out in accordance with the following methodology and industry standards and guidelines (ClfA various).

Dredging Activities

7.7.3 During backhoe dredging activities, watching briefs will be undertaken by at least one archaeologist, subject to the number of site operations being carried out at any one time. Watching brief methodologies and frequency of archaeological monitoring will be kept under review with curators and amended or ceased as appropriate.

7.7.4 The Client or their Principal Contractor will afford reasonable access in order that all archaeological features revealed during dredging activities can be investigated and recorded.

7.7.5 Subject to the results of the further geophysical analysis, the magnetometer anomalies **7002**, **7004** and **7005** will be targeted during the watching brief, and so the areas around these anomalies will be dredged using backhoe dredging (**Figure 1**). Watching briefs are also expected to be carried out for the backhoe dredging taking place within the Berth Pocket area east of the New Quay wall and all other areas dredged using backhoe dredging.

7.7.6 Watching briefs are not expected to be carried out where TSHD or CSD is being used due to the lack of visual access to sediments preventing an archaeological assessment and the difficulty in retrieving finds and samples.

7.7.7 It is assumed that TSHD and CSD will be the main dredging methods in the main water body. In this instance, the Protocol for Archaeological Discoveries will be the primary form of mitigation (**Section 7.8**).

7.7.8 For any archaeological finds that have been recovered during the watching brief, they will be kept onboard the dredger or within an associated spoil barge until dredging has been completed for the day. If on a spoil barge, then the potential archaeological material should be kept separate from the non-archaeological spoil. The dredger or barge will then return to the quay where the finds recovered will be offloaded and stored safely for review and recording by Wessex Archaeology. Finds will be stored in a secure location on the quay side, in an allotted archaeological storage area. Finds will be treated with basic 'first aid': keeping the finds wet, cool and dark.



7.7.9 In the event that complex archaeological features, including human remains (**see below**) are revealed, these will be identified and made clear to the North Lincolnshire Council Archaeologist, the Client and their dredging contractor, who will allow reasonable access to Wessex Archaeology, facilitating the recording of the archaeology present. Areas of archaeological interest will be marked up and suitably protected in advance of their investigation and clearance.

7.7.10 Recording will include written, drawn, and photographic elements as conditions allow.

7.7.11 The findings of any watching briefs will be compiled as an Archaeological Report consistent with industry standards.

Provisions

7.7.12 Provision will be made by the Developer for temporary cessation of works in the immediate area of any important archaeological material that comes to light in the course of a watching brief. Where the presence of important archaeological material is confirmed, works will not resume in the vicinity of the discovery without the approval of the Archaeological Curators.

7.7.13 Provision will be made to carry out call-out works to investigate any important archaeological material that comes to light in the course of a watching brief, and to institute suitable mitigation as agreed with the Archaeological Curators.

7.7.14 Provision will be made to carry out archaeological investigations in response to call-outs arising from discoveries made through:

- the Protocol for Archaeological Discoveries; and
- dredging watching briefs.

7.7.15 Call-out investigations will include provision for the immediate preparation and submission of Archaeological Reports, to include recommendations in respect of the resumption of construction. Archaeological Reports relating to call-out investigations will be submitted by the Developer to the Archaeological Curators for immediate consideration.

7.7.16 Generic Method Statements for call-out investigations will be submitted to the Archaeological Curator four weeks prior to construction commencing.

7.8 Protocol for Archaeological Discoveries (The Protocol)

7.8.1 The Protocol will allow for the documentation of any discoveries that are made during dredging activities for the AMEP and will follow bespoke Protocol guidelines. This bespoke Protocol is in line with guidance published by the British Marine Aggregate Producer's Association (BMAPA) and English Heritage (now Historic England) (2005). As this watching brief will be conducted within an overall marine environment, standard marine evaluation procedures will be followed. A flowchart of the communication lines and an example of a recording sheet associated with the reporting procedures can be found in **Appendices 2** and **3**. Additional information about the types of finds that could be discovered can be found in **Appendix 4**, and **Appendix 5** provides guidelines for artefact handling and storage.

Discoveries during dredging works

7.8.2 A flow chart illustrating the steps to take when a discovery has been made can be found in **Appendix 2**. This section provides additional details.



- 7.8.3 The Client/ Principal Contractor and/or Project Manager will ensure that all staff are aware of the reporting Protocol and know the identity of the assigned Retained Archaeologist (Wessex Archaeology).
- 7.8.4 All finds of archaeological interest will be reported to Wessex Archaeology. The archaeologist will then inform the Client and any other relevant stakeholders.
- 7.8.5 If there is any uncertainty as to whether or not the discovery is of archaeological interest, staff will operate a precautionary approach and assume interest.

Levels of archaeological importance

- 7.8.6 The levels of archaeological importance can be loosely described as follows:
- major archaeological discovery - which could include a shipwreck, logboat, harbour structures, jetties or human remains;
 - intermediate archaeological discovery - which could include mooring fixtures, anchors, isolated ships timbers, concretions or isolated hand-axes or other prehistoric tools; and
 - minor archaeological discovery - which could include modern debris such as fishing gear or modern pottery.
- 7.8.7 Further details about the types of finds and the levels of archaeological importance can be found in **Appendix 4**.

Steps to take following a discovery (of all levels of significance)

- 7.8.8 The dredging contractor will:
- ensure that all material is handled/treated with care;
 - not remove any rust, sediment, concretion or marine growth, not separate 'groups' of items;
 - ensure that the find is photographed, using a camera with a date/time stamp, and/or videoed;
 - provide the find with a reference number from a continuous unique numbering system;
 - obtain an approximate position for the find using the GPS location of the dredging barge;
 - provide 'first aid' for the recovered find (keep the find cool, dark and wet);
 - fill in a recording form (Appendix 3); and
 - inform the relevant stakeholders.
- 7.8.9 Material recovered from the dredging activities will be handled by Wessex Archaeology according to the details laid out in **Section 8** (Finds and Environmental).

7.9 Implementation of the Protocol

- 7.9.1 The Protocol as described in **Section 7.8** will be applied during all dredging and excavation works associated with the Construction Phase of the AMEP.
- 7.9.2 The Protocol sets out the procedures for reporting discoveries of potential archaeological interest made during the Construction Phase.
-



7.9.3 Where discoveries are made, the Protocol makes provision for the temporary cessation of works in the vicinity of the discovery, call-out investigations and such other actions as may be necessary.

7.9.4 Where the presence of important archaeological material is confirmed, works will not resume in the vicinity of the discovery without the approval of the Archaeological Curators.

7.10 Additional Construction Phase Mitigation

7.10.1 If there are unexpected significant finds made during the dredging and excavation phases, additional mitigation may be required for the construction phase where watching briefs and/or the Protocol are not sufficient.

7.10.2 Additional mitigation may include:

- recording and recovery of archaeologically important material;
- watching briefs of construction activities;
- investigations in response to discoveries arising from the Protocol;
- investigations in response to discoveries arising from watching briefs.

7.10.3 All additional mitigation and investigations will accord with methodologies to be advised by Wessex Archaeology and set out in further Method Statements agreed with the Archaeological Curators.

7.11 Archaeological measures within an environmental monitoring plan

7.11.1 In the event that The Company develops an overarching Environment Monitoring Plan (EMP) in connection with the development of the AMEP and/or the Compensation Site, the provisions of this WSI will be incorporated within that EMP. Where practical, the requirements of this WSI will be met through integration with marine environmental monitoring requirements raised by other topics.

7.11.2 Each monitoring survey that has the potential to contribute to this WSI will be subject to a Method Statement prepared and agreed in accordance with this WSI. Where the survey is integrated with the marine environmental monitoring requirements of other topics, proposals for data acquisition will be subject to archaeological advice from the Retained Archaeologist and such advice will be reflected in the Method Statement.

7.11.3 The processing and interpretation of survey data for archaeological purposes will be carried out by competent and suitably experienced Archaeological Contractor(s).

7.11.4 The Company and the Archaeological Curator will meet annually (at least) to review results of the EMP relating to the historic environment.

7.11.5 In the event that archaeological review of EMP monitoring surveys during and following construction identifies significant adverse effects on the historic environment that are attributable to construction of the AMEP and Compensation Site, the Company will agree with the Archaeological Curator an appropriate means of mitigation.

7.11.6 The Company will notify the Retained Archaeologist of any Environmental Management Plan or Construction Method Statements put in place as part of the development.



7.11.7 The Retained Archaeologist will ensure that any archaeological Method Statements produced for the project are compliant with any Environmental Management Plan and consistent with the environmental protection requirements of method statements for construction work.

7.12 Standards and Guidance

7.12.1 All works will be undertaken in accordance with the detailed methods set out within this WSI and in compliance with the standards outlined in the ClfAs' *Standards and guidance for archaeological geophysical survey* (ClfA 2016), Historic England's guidance notes on *Marine Geophysics Data Acquisition, Processing and Interpretation* (2013), and *Standard and guidance for archaeological watching brief* (ClfA 2020a), except where they are superseded by statements made below. Any significant variations to these methods will be agreed in writing with the North Lincolnshire Council Archaeologist and the Client, prior to being implemented.

7.12.2 Other principal sources are:

- *Code for Practice for Seabed Development* (Joint Nautical Archaeology Policy Committee (JNAPC) 2006);
- *Marine Aggregate Dredging and the Historic Environment: Guidance Note* (BMAPA and English Heritage (now Historic England) 2005);
- *Protocol for reporting finds of archaeological interest* (BMAPA 2005);
- *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (Gribble and Leather 2011);
- *Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects* (Crown Estate 2010);
- ClfA (various) Standards and guidance's;
- *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers* (English Heritage (now Historic England) 1998);
- *Military Aircraft Crash Sites: Guidance on their Significance and Future Management* (English Heritage (now Historic England) 2002);
- *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (English Heritage 2008);
- *Ships and Boats: Prehistory to Present – Designation Selection Guide* (Historic England 2012);
- *Marine Geophysics Data Acquisition, Processing and Interpretation Guidance Notes* (English Heritage 2013);
- *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2011);
- *Geoarchaeology: using earth sciences to understand the archaeological record* (Historic England 2015b);
- *Preserving Archaeological Remains: Decision-taking for Sites under Development* (Historic England 2016); and,
- *Our Seas – A Shared Resource: High Level Marine Objectives* (Department for Environment, Food and Rural Affairs (DEFRA) 2009).



7.13 Service location and other constraints

- 7.13.1 The Client and/or their Principal Contactor will be responsible for informing Wessex Archaeology of any other areas of environmental, ecological or other constraints.



8 FINDS AND ENVIRONMENTAL

8.1 Finds

- 8.1.1 All artefacts identified from material recovered will be retained, processed and recorded in accordance with the ClfA's Standard and guidance for archaeological field evaluation (ClfA 2020b) and Standard and guidance for the collection, documentation, conservation and research of archaeological material (ClfA 2020c).
- 8.1.2 All finds and other items of archaeological interest recovered from the seabed have an owner, but the law regarding ownership varies according to the character of the material, the environment in which it was found and national legislation. For example, finds and other items of archaeological interest recovered in the course of investigation are generally the property of the Developer, with the exception of all human remains, 'wreck' for the purposes of the *Merchant Shipping Act 1995*, and material covered by the *Protection of Military Remains Act 1986*.
- 8.1.3 Any material found below the high water line and deemed to be 'wreck' as defined in the *Merchant Shipping Act 1995* will be reported to the Receiver of Wreck within 28 days of recovery. Material suspected to be from an aircraft lost while in military service may be protected under the *Protection of Military Remains Act 1986* and will need to be reported to the Ministry of Defence (MoD). Further information is presented in **sections 8.5** and **8.6** below.
- 8.1.4 From the point of discovery, all finds will be held by the Developer or Wessex Archaeology in appropriate conditions pending further recording, investigation, study or conservation. Apart from items with ownership identified by the Receiver of Wreck which may require further investigation, ownership will be transferred to the institution receiving the archive, unless other arrangements are agreed with the Archaeological Curators.
- 8.1.5 Unexpected artefacts that are exposed or recovered in the course of the scheme of works will be reported through the Protocol.
- 8.1.6 Recovered objects that require immediate conservation treatment to prevent deterioration will be treated according to guidelines laid down in *First Aid for Finds* (Watkinson and Neal 1998) and *First Aid for Underwater Finds* (Robinson 1998). A full record will be made of any treatment given. These recovered finds will be primarily conserved, bagged and boxed in accordance with guidelines set out in the United Kingdom's Institute for Conservation (UKIC)'s *Conservation Guidelines No 2* (UKIC 1984). Any objects that are recovered will be selected, retained or disposed of in accordance with the policy agreed with the institution receiving the archive, and in consultation with the Archaeological Curators.
- 8.1.7 Subject to the agreement reached with the receiving institution regarding selection, retention and disposal of material, Wessex Archaeology will retain all recovered objects unless they are undoubtedly modern debris and/ or of no archaeological interest. Any objects discarded will, however, be noted on object records and in the project database. In these circumstances, sufficient material will be retained to characterise the date and function of the deposit from which it was recovered, if applicable.
- 8.1.8 In the event of the discovery of items that may be eligible for legal protection, the Contractor will immediately notify Wessex Archaeology, who will notify the relevant legal authority as soon as possible.



8.1.9 Wessex Archaeology will prepare and implement a finds monitoring and maintenance programme, which will cross reference finds to management/ monitoring systems maintained by Wessex Archaeology.

8.1.10 Contingency will be made for specialist advice and conservation needs on-site should unexpected, unusual, or extremely fragile and delicate objects be recovered, and the advice and input from an appropriate Conservation Specialist will be sought through Wessex Archaeology. A range of internal and external specialists will be consulted as appropriate.

8.2 Ordnance

8.2.1 If items of ordnance are discovered, they will be treated with extreme care. Company Health & Safety policies and established operational procedures should always take priority over archaeological reporting of munitions and ordnance.

8.2.2 Depending on the item's age, ordnance may be of archaeological interest, and therefore if it is safe to do so, it should be recorded and reported.

8.2.3 Any firearms and ammunition are likely to be subject to the Firearms Acts (various dates). Ammunition should be regarded as ordnance, regardless of its size.

8.3 Human remains

8.3.1 Any human remains (articulated or disarticulated, cremated or unburnt) discovered, will be left *in situ*, covered and protected. A Ministry of Justice licence will be obtained by Wessex Archaeology before any further excavation (including where remains are to be left *in situ*). Following discussions with the Developer and the Archaeological Curators, and with advice from an osteoarchaeologist, Wessex Archaeology will determine the need for and appropriateness of their excavation/ removal or sampling as part of the evaluation. Should human remains require excavation, they will be fully recorded, excavated and removed from the site in compliance with the terms of the Ministry of Justice licence.

8.3.2 Any excavation and post-excavation processing of human remains will be undertaken in accordance with current guidance documents (e.g., McKinley 2013) and ClfA standards (McKinley and Roberts 1993). Appropriate specialist guidance will be provided by an osteoarchaeologist, with site visits undertaken if required. The final deposition of human remains, following analysis, will be in accordance with the terms of the Ministry of Justice licence.

8.4 Treasure

8.4.1 Wessex Archaeology will immediately notify the Developer and the Archaeological Curators on discovery of any material covered, or potentially covered, by the *Treasure Act* 1996 (as amended by *The Coroners and Justice Act* 2009). All information required by the *Treasure Act* (i.e., finder, location, material, date, associated items etc.) will be reported to the Coroner within 14 days. Items falling under the *Treasure Act* will be removed from the site by Wessex Archaeology and stored in a secure location, pending a decision by the Coroner.

8.5 Aircraft

8.5.1 The majority of aircraft wrecks are military and therefore fall under the *Protection of Military Remains Act* 1986. All military aircraft crash sites in the UK, its territorial waters, or British aircraft in international waters, are controlled sites under this Act. It is an offence under this Act to tamper with, damage, move or unearth any items at such sites, unless the MoD has issued a licence authorising such activity. Consequently, anyone wishing to recover a



military aircraft or excavate a military aircraft crash site in the UK is required to obtain a licence from the Joint Casualty and Compassionate Centre (JCCC). A licence is required irrespective as to whether the aircraft was in the service of another nation's armed forces.

- 8.5.2 Any finds that are suspected of being military aircraft will be reported immediately to Wessex Archaeology. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately.

8.6 Wreck

- 8.6.1 Archaeological artefacts that have come from a ship are 'wreck' for the purposes of the *Merchant Shipping Act 1995*. The Developer, via the Retained Archaeologist, should ensure that the Receiver of Wreck is notified within 28 days of recovery, for all items of wreck that have been recovered below the high water line. This material will need to be securely stored, for at least a year, until the associated droit reports have been closed by the Receiver of Wreck. If the material is accessioned to a museum within this period, the Receiver of Wreck must be informed of any transfers.

8.7 Environmental

- 8.7.1 Deposits (i.e. sediments) of archaeological/historical/cultural interest that do not comprise artefactual remains will not be considered to be 'finds' but may be subject to sampling. Any artefactual material subsequently discovered in the course of processing such samples would be treated as finds thereafter.
- 8.7.2 All sampling will be undertaken following the Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015b).
- 8.7.3 Bulk environmental soil samples, for the recovery of plant macrofossils, wood charcoal, small animal bones and other small artefacts, will be taken as appropriate from well-sealed and dateable contexts or features.
- 8.7.4 If waterlogged or mineralised deposits are encountered, an environmental sampling strategy will be devised and agreed with the Curator(s) as appropriate. Specialist guidance will be provided by the Wessex Archaeology, with site visits undertaken if required.
- 8.7.5 Any samples will be of an appropriate size – typically 40 litres for the recovery of environmental evidence from dry contexts, and 10 litres from waterlogged deposits.
- 8.7.6 Following specialist advice, other sampling methods such as monolith, Kubiena or contiguous small bulk (column) samples may be employed to enable investigation of deposits with regard to microfossils (e.g., pollen, diatoms) and macrofossils (e.g., molluscs, insects), soil micromorphological or soil chemical analyses.
- 8.7.7 Samples are likely to comprise intact vibrocores and sub-samples recovered during bulk grab sampling. The cores will be retained intact and subsampled for microfossil assessment and dating at Wessex Facilities. Bulk samples will be processed for macrofossil and finds recovered where appropriate.
- 8.7.8 Approaches and methods will be consistent with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage (now Historic England) 2011) and *Geoarchaeology: using earth sciences to understand the archaeological record* (Historic England 2015b).



8.8 Conservation and storage

- 8.8.1 All recovered materials, from land or underwater, will be subject to a Conservation Assessment to gauge whether special measures are required while the material is being held. This Conservation Assessment will be carried out by Wessex Archaeology or an Archaeological Contractor with an appropriate level of expertise, with advice from appropriate specialists. Wessex Archaeology or an Archaeological Contractor with appropriate expertise will implement recommendations arising from the assessment. If no special measures are recommended, finds will be conserved, bagged, boxed and stored in accordance with industry guidelines (ClfA 2014b) and the Museums and Galleries Commissions Standards in the Museum Care of Archaeological Collections (1992).

9 POST-EXCAVATION AND REPORTING

9.1 Finds

- 9.1.1 All artefacts identified from material recovered will be retained, processed, and recorded in accordance with the ClfA's Standard and guidance for archaeological field evaluation (ClfA 2020b) and Standard and guidance for the collection, documentation, conservation and research of archaeological material (ClfA 2014b).
- 9.1.2 All retained finds will, as a minimum, be registered, assessed for their conservation needs and stored. They will then be recorded to a level appropriate to the aims and objectives of the investigation. The report will include a table of finds by period and/or feature group.
- 9.1.3 Conservation needs will be undertaken by Wessex Archaeology's in-house conservation staff, or by another approved conservation centre. Any additional costs required for long-term conservation of material considered to be significant will be discussed in liaison with the Developer and the Archaeological Curator.
- 9.1.4 Artefacts and other finds will be suitably bagged and boxed in accordance with the guidance given by the relevant museum and generally in accordance with the standards of the ClfA (2014b).

9.2 Environmental

- 9.2.1 Bulk environmental soil samples will be processed by standard flotation methods and scanned to assess the environmental potential of deposits. The flot will be retained on a 0.25 mm mesh, with residues fractionated into 5.6/4 mm, 2 mm, 1 mm and 0.5 mm and dried if necessary. Coarse fraction (>5.6/4 mm) will be sorted, weighed and discarded, with any finds recovered given to the appropriate specialist. Finer residues will be retained until after any analyses and discarded following final reporting (in accordance with the Selection policy, below).
- 9.2.2 In the case of samples from cremation-related deposits the flots will be retained on a 0.25 mm mesh, with residues fractionated into 4 mm, 2 mm and 1 mm. In the case of samples from inhumation deposits, the sample will be artefact sieved through 9.5 mm and 1 mm mesh sizes. The coarse fractions (9.5 mm) will be sorted with any finds recovered given to the appropriate specialist together with the finer residues.
- 9.2.3 Any waterlogged or mineralised samples will be processed by standard waterlogged flotation methods.



9.3 Reporting

General

9.3.1 The report(s) will be prepared in accordance with the relevant Standards and Guidance documents produced by the ClfA, and will typically include the following elements:

- a non-technical summary;
- the aims and methods of the work;
- the results of the work including finds and environmental remains;
- a statement of the potential of the results;
- proposals for further analysis and publication;
- appendices;
- illustrations and appendices to support the report; and
- references.

9.3.2 A copy of the report(s) will be deposited with the National Record of the Historic Environment (NRHE), along with surveyed spatial digital data (.dxf or shapefile format) relating to the evaluation.

Publication

9.3.3 If no further mitigation works are undertaken, a short report on the results of the evaluation will be prepared for publication in a suitable journal, if considered appropriate and agreed with the Developer and the Archaeological Curators.

OASIS

9.3.4 An OASIS (Online AccesS to the Index of archaeological investigationS) online record for the report () will be created, with key fields completed, and a .pdf version of relevant reports submitted, within three months of each report being approved by the Developer. Copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service ArchSearch catalogue. However, projects subject to any contractual requirements on confidentiality, or with the discovery of vulnerable sites, will only be uploaded to OASIS following confirmation from the Developer and/or Archaeological Curators.

10 ARCHIVE STORAGE AND CURATION

10.1 Museum

10.1.1 If the nominated archive repository is unable to accept certain archive material, every effort will be made to identify an alternative. If no alternative can be found, the digital and paper archive will be retained by Wessex Archaeology for perpetuity. If a museum will not accept some or all of the material archive, after two years of storing this material it will either be included into Wessex Archaeology's own teaching collection or discarded (section 10.4 below). Wessex Archaeology may institute a charge to the Developer for storage for the two years.

10.1.2 Deposition of any finds with the museum will only be carried out with the full agreement of the Developer or the owner (as confirmed by the Receiver of Wreck).



10.2 Transfer of title

- 10.2.1 On completion of the investigation (or extended fieldwork programme), the Developer, with the exception of human remains and any objects covered by the *Treasure Act 1996* (as amended by the *Coroners and Justice Act 2009*) or wreck covered by the *Merchant Shipping Act 1995* whereby an owner has been found, will transfer their ownership of any finds recovered to the museum or archive in a written agreement.

10.3 Preparation of archive

- 10.3.1 The complete project archive, which may include paper records, graphics, artefacts, ecofacts and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the suitable repository that will accept the archive, and in general following nationally recommended guidelines (Society of Museum Archives (SMA) 1995; ClfA 2014d; Brown 2011; ADS 2013). The archive will usually be deposited within one year of the completion of the project, with the agreement of the Developer.
- 10.3.2 The relevant Archaeological Curators and Wessex Archaeology will agree with the receiving institution a policy for the selection, retention and disposal of recovered or excavated material (section 10.4 below), and confirm requirements in respect of the format, presentation and packaging of archive records and materials. The receiving institution will be notified in advance of any fieldwork.
- 10.3.3 All digital data will be considered part of the primary archive and will accord with the procedures recommended by Archaeological Data Service (ADS), other relevant archive institutions and the accepting institution.

10.4 Selection, retention and disposal policy

- 10.4.1 The selection policy should be based on national guidelines on selection and retention (SMA 1993; Brown 2011, section 4). In accordance with these, and any specific guidance prepared by the museum, a process of selection and retention will be followed so that only those artefacts or ecofacts that are considered to have potential for future study will be retained. The selection policy will be agreed with the museum, and fully documented in the project archive.
- 10.4.2 Material not selected for retention may be used for teaching or reference collections by the museum, or by Wessex Archaeology. Material deemed unsuitable for inclusion in these collections may be discarded. For material considered to be wreck, this will only occur once the transfer of ownership has been passed to Wessex Archaeology following closure of any relevant droit reports. Similarly, depending on the nature of the material, approval from the Archaeological Curator may need to be sought prior to discard.

10.5 Security copy

- 10.5.1 In line with current best practice (e.g., Brown 2011), on completion of the project a security copy of the written records will be prepared in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.



11 COPYRIGHT

11.1 Archive and report copyright

- 11.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the Copyright, Designs and Patents Act 1988 with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the Copyright and Related Rights Regulations 2003. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.
- 11.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research, or development control within the planning process.

11.2 Third party data copyright

- 11.2.1 This document, the evaluation report and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology will be able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of the Copyright, Designs and Patents Act 1988 with regard to multiple copying and electronic dissemination of such material.

12 WESSEX ARCHAEOLOGY PROCEDURES

12.1 External quality standards

- 12.1.1 Wessex Archaeology is registered as an archaeological organisation with the Chartered Institute for Archaeologists (CIfA) and fully endorses its Code of conduct (CIfA 2019a) and Regulations for professional conduct (CIfA 2019b). All staff directly employed or subcontracted by Wessex Archaeology will be of a standard approved by Wessex Archaeology, and archaeological staff will be employed in line with the CIfA codes of practice and will normally be members of the CIfA.

12.2 Personnel

- 12.2.1 The analysis of any finds and environmental data will be undertaken by Wessex Archaeology core staff or external specialists, using Wessex Archaeology's standard methods, under the supervision of the departmental managers and the overall direction of the project manager. A complete list of specialists can be provided on request.

12.3 Internal quality standards

- 12.3.1 Wessex Archaeology is an ISO 9001 accredited organisation (certificate number FS 606559), confirming the operation of a Quality Management System which complies with the requirements of ISO 9001:2015 – covering professional archaeological and heritage advice and services. The award of the ISO 9001 certificate, independently audited by the British Standards Institution (BSI), demonstrates Wessex Archaeology's commitment to providing quality heritage services to our clients. ISO (the International Organisation for Standardisation) is the most recognised standards body in the world, helping to drive excellence and continuous improvement within businesses.



- 12.3.2 Wessex Archaeology operates a computer-assisted project management system. Projects are assigned to individual project managers who are responsible for the successful completion of all aspects of the project. This includes monitoring project progress and quality; controlling the project budget from inception to completion; and all aspects of Health and Safety for the project. At all stages the project manager will carefully assess and monitor performance of staff and adherence to objectives, timetables and budgets, while the manager's performance is monitored in turn by the team leader or regional director.
- 12.3.3 All work is monitored and checked whilst in progress on a regular basis by the project manager, and all reports and other documents are checked (where applicable) by the team leader/technical manager, or regional director, before being issued. A series of guideline documents or manuals form the basis for all work. The technical managers in the Graphics, Finds and Analysis, GeoServices and IT sections provide additional assistance and advice.
- 12.3.4 All staff are responsible for following Wessex Archaeology's quality standards but the overall adherence to and setting of these standards is the responsibility of the senior management team in consultation with the team leaders/regional directors who also ensure projects are adequately programmed and resourced within Wessex Archaeology's portfolio of project commitments.

12.4 Health and Safety

General

- 12.4.1 Health and Safety considerations will be of paramount importance in conducting all fieldwork. Safe working practices will override archaeological considerations at all times. Wessex Archaeology will supply trained, competent and suitably qualified staff to perform the tasks and operate the equipment used on site. All work will be carried out in accordance with the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999, and all other applicable Health and Safety legislation, regulations and codes of practice in force at the time.
- 12.4.2 Wessex Archaeology will supply a copy of the company's Health and Safety Policy and a Risk Assessment to the client before the commencement of the evaluation. The Risk Assessment will have been read, understood and signed by all staff attending the site before any fieldwork commences. Wessex Archaeology staff will comply with the Personal Protective Equipment (PPE) requirements for working on the site, and any other specific additional requirements of the principal contractor.
- 12.4.3 All fieldwork staff have had UKATA Asbestos Awareness Training.

12.5 Insurance

- 12.5.1 Wessex Archaeology has both Public Liability (£10,000,000) and Professional Indemnity Insurance (£5,000,000).



REFERENCES

- ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice
- AMEP 2011 Chapter 18, Historic Environment, in *Environmental Statement*. Document reference: TR03001/APP/14b
- BMAPA and Historic England 2003 *Marine Aggregate Dredging and the Historic Environment*. Available online at [REDACTED], accessed July 2015
- BMAPA and Historic England 2005 *Protocol for Reporting Finds of Archaeological Interest*. Available online at [REDACTED], accessed July 2015
- Brown, D H 2011 *Archaeological archives; a guide to best practice in creation, compilation, transfer and curation*, Archaeological Archives Forum (revised edition)
- Chartered Institute for Archaeologists (ClfA) 2014a *Standard and guidance for historic environment desk-based assessment*. Reading, ClfA
- ClfA 2014b *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. Reading, ClfA
- ClfA 2016 Updated *Standard and guidance for archaeological geophysical survey*. Reading. ClfA
- ClfA 2019a *Code of Conduct*. Reading, ClfA
- ClfA 2019b *Regulations for professional conduct*. Reading, ClfA
- ClfA 2020a *Standard and guidance for an archaeological watching brief*. Reading, ClfA
- ClfA 2020b *Standard and guidance for archaeological field evaluation*. Reading, ClfA
- ClfA 2020c *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*. Reading, ClfA
- Crown Estate 2010 *Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects*. Published guidance by Wessex Archaeology Ref 73830.
- Crown Estate 2014 *Protocol for Archaeological Discoveries: Offshore Renewables Projects*. Published by Wessex Archaeology, Salisbury, on behalf of The Crown Estate. (2nd issue, July 2014 (revised))
- Department of Energy & Climate Change (DECC) 2011 National Policy Statement for Renewable Energy Infrastructure (EN-3)
- Department for Environment, Food and Rural Affairs (DEFRA) 2009 *Our Seas – A Shared Resource: High Level Marine Objectives*;
- Emu 2010 North Killingholme Geophysical Report. Unpublished report no. 10/J/25/1695.



- English Heritage (now Historic England) 1998 *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers*;
- English Heritage (now Historic England) 2002 *Military Aircraft Sites: Guidance on their Significance and Future Management*;
- English Heritage (now Historic England) 2008 *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment*;
- English Heritage (now Historic England) 2011 *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation*. Second Edition
- English Heritage (now Historic England) 2013 *Marine Geophysics Data Acquisition, Processing and Interpretation Guidance Notes*
- Gribble, J and Leather, S 2011 *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector*. Prepared for EMU Ltd. For COWRIE 2011
- Historic England 2012 *Ships and Boats: Prehistory to Present – Designation Selection Guide*;
- Historic England 2015a *Management of Research Projects in the Historic Environment: the MoRPHE project managers' guide*. Swindon, Historic England
- Historic England 2015b *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*. Swindon, Historic England
- Historic England 2015c *Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning: 2*.
- Historic England 2016 *Preserving Archaeological Remains: Decision-taking for Sites under Development*
- Historic England and Wessex Archaeology 2016 *The Assessment and Management of Marine Archaeology in Port and Harbour Development*
- Joint Nautical Archaeology Policy Committee 2006 *Code of Practice for Seabed Development, JNAPC*
- McKinley, J I 2013 'Cremation: Excavation, Analysis, and Interpretation of Material from Cremation-Related Contexts' in S Tarlow and L Nilsson Stutz (eds) *The Oxford Handbook of the Archaeology of Death and Burial*. Oxford University Press 147-171
- McKinley, J I and Roberts, C 1993 *CIfA Technical Paper No 13 Excavation and post-excavation treatment of cremated and inhumed human remains*.
- Museums and Galleries Commissions 1992 *Standards in the Museum Care of Archaeological Collections*
- PIANC 2014 *Dredging and Port Construction: Interactions with Features of Archaeological or Heritage Interest*. PIANC Guidance Document No. 124-2014. PIANC: The World Association for Waterborne Transport Infrastructure
-



- Robinson, W 1998 *First Aid for Underwater Finds*. Archetype Publications Ltd
- Society of Museum Archives (SMA) 1993 *Selection, Retention and Dispersal of Archaeological Collections*
- Society of Museum Archives (SMA) 1995 *Towards an Accessible Archaeological Archive*
- United Kingdom's Institute for Conservation (UKIC) 1984 *Conservation Guidelines No 2*
- Watkinson, D and Neal, A V 1998 *First Aid for Finds*. United Kingdom Institute for Conservation and Rescue: The British Archaeological Trust
- Wessex Archaeology 2011 Able Marine Energy Park (AMEP), Humber Estuary: Geoarchaeological Recording and Sub-sampling. Unpublished report. Ref.:76490
- Wessex Archaeology 2012a Able Marine Energy Park and Compensation Site, Written Scheme of Investigation. Unpublished report. Ref: 76490.02
- Wessex Archaeology 2012b Able Marine Energy Park (AMEP), Humber Estuary, Stage 2/3 Geoarchaeological Recording and Sub-sampling. Unpublished report. Ref.: 76491.01



APPENDICES

Appendix 1: AMEP Site Gazetteer

WA ID	Original ES Site No	UKHO / NMR / HER Reference	Easting	Northing	Form / Type	Description	Period	Designation
1001		MLS26131	517988	418290	Jetty	A jetty is marked on the Ordnance Survey 1st edition map at Killingholme High Lighthouse.	Post-Medieval	None
1002		MLS26134	518033	418274	Jetty	Site of a probably 19th century jetty was visible as a double-line of piles on aerial photographs taken in 1962. It was digitally plotted from aerial photographs during the Inner Humber RCZAS NMP project but is no longer visible on recent Google Earth imagery. Jetty was visible as a double-line of piles 64m in length.	Post-Medieval	None
1003	16		517959	418268	Jetty	1855 Ordnance Survey map shows a jetty north of 'Killingholme Lt Ho No 2'. The 1887 OS map shows the jetty to be immediately east of the Killingholme High lighthouse. The jetty continues to be marked on the OS maps until 1956 where no jetty is marked, but a number of piles are marked on the map in the foreshore where the jetty used to be	Post-Medieval to Modern	None
1004	17		517959	418238	Jetty	One post was seen on the foreshore east of the Killingholme High lighthouse, thought to be possible remains of site 16	Unknown	None
1005		MLS26136	518279	417927	Jetty	A jetty is marked on the Ordnance Survey 3rd edition map at the Fish Meal Works at South Killingholme and was visible in aerial in the 20th century, but is no longer visible.	Modern	None



WA ID	Original ES Site No	UKHO / NMR / HER Reference	Easting	Northing	Form / Type	Description	Period	Designation
1006	21		518253	417911	Jetty	Jetty remains extend approximately 40m from the sea wall on a bearing of 54°. A total of 12 pairs of piles remain upstanding, two pairs have their cross beams still intact, and a further six individual piles have lost their pair. The jetty timbers measure approximately 30cm by 30cm and stand around 1.2m high. The jetty is approximately 3.6m wide, with pile spacings of around 2.6m. Possibly remains of Site 20.	Unknown	None
1007		MLS26702	518304	417876	Jetty	A jetty shown on the 4th edition map associated with a fish oil works at South Killingholme.	Post-Medieval	None
1008		MLS26138	518374	417822	Jetty	A jetty is marked on the Ordnance Survey 1st edition map, presumably serving the adjacently marked Brick Yard at South Killingholme.	Post-Medieval	None
1009	20		518357	417802	Jetty	A jetty marked on the 1887 OS map to the north of South Killingholme Haven, probably associated with the adjacently marked Brick Yard. A second jetty is added at the brick works by 1908 and by 1932 the site has been converted to a fish meal and fish oil works. The fish processing site has three jetties in 1932 but only one by 1951. The OS map for 1956 records no jetties at the site.	Post-Medieval to Modern	None
2001	25	UKHO 8511; NMR 907862; MLS22826	518674	418595	Wreck	COOK S26, barge wrecked 11th February 1955. Salvage work undertaken in 1959, but still charted as a wreck on current charts. Remains of the barge have been confirmed as present on the seabed through geophysical survey.	Modern	None
2002	22	MLS20122	517860	418560	Wreck	IVY, English Ketch, built 1874, recorded wrecked 1897 whilst on a fishing trip. Owner: J Munby, Master: E J Barth, Crew: 5. Vessel foundered and was lost following a collision with the Goole registered SS Corea. Location unknown.	Post-Medieval	None



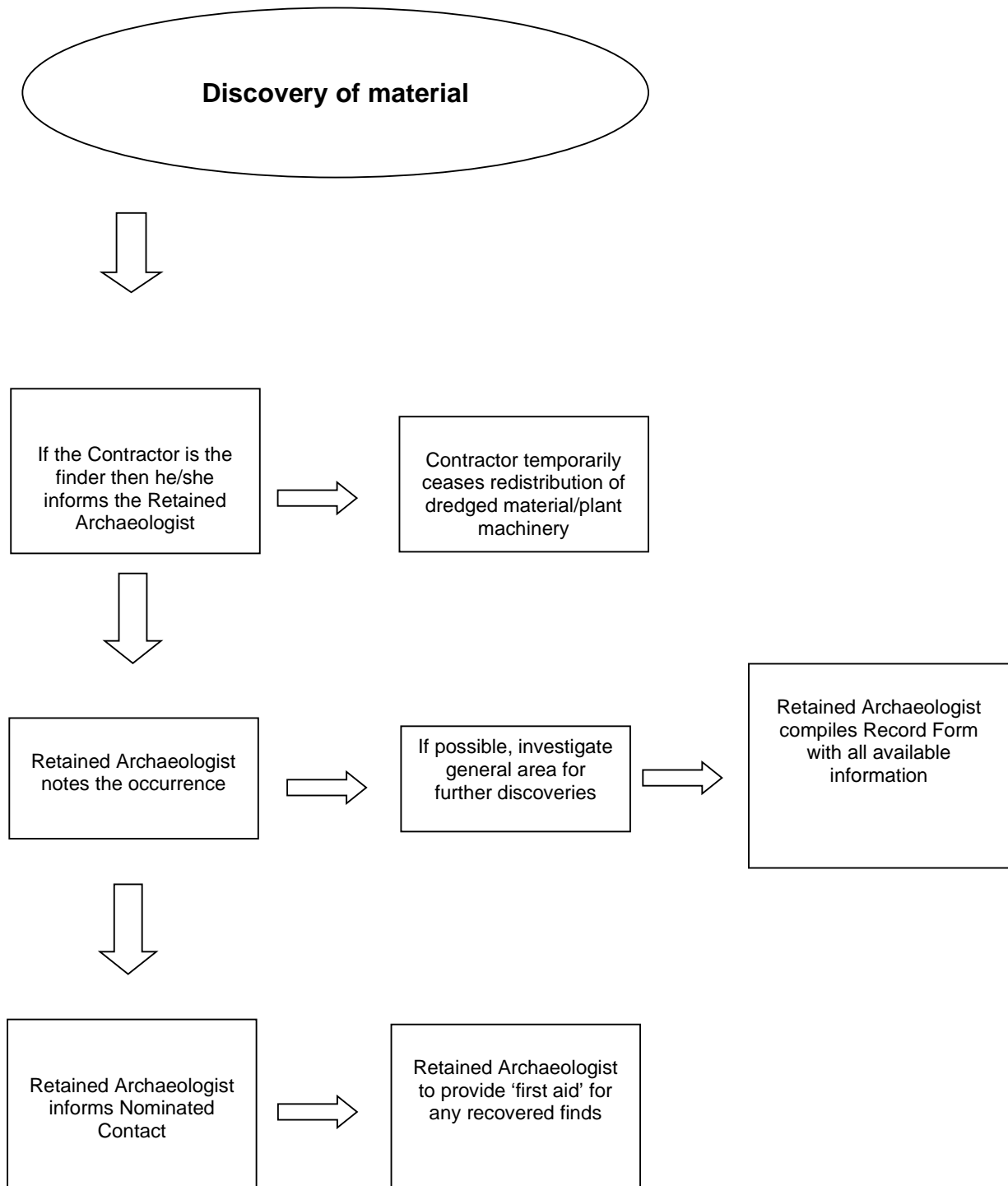
WA ID	Original ES Site No	UKHO / NMR / HER Reference	Easting	Northing	Form / Type	Description	Period	Designation
2003	23	NMR 943096	517860	418560	Wreck	WILLIAM, English Sloop Built 1883 recorded wrecked 1899. Owner: W Marshall & Sons, Grimsby, Master: J Ball, Crew: 2. Vessel foundered and was lost following collision with the Hull registered steam trawler ORINOCO. Location unknown.	Post-Medieval	None
2004	24	UKHO 8510; NMR 907861; MLS26752	518695	418548	Wreck	SERGEI, Hull built screw steamer built 1899 wrecked after a collision, whilst en route from Malmo to Hull with pit props in 1923. The ship was raised and broken up 1923, however dispersal operations still on-going through to October 1924.	Modern	None
2005		MLS26135	518137	418133	Wreck	The possible site of a 19th or 20th century wreck visible in aerial photographs taken in 1946. It may have measured approx. 17m by 6m. It is no longer visible on aerial photography.	Post-Medieval	None
2006		MLS26137	518330	417873	Wreck	The site of a 19th or 20th century wreck is visible aerial photographs taken in 1962. It measured 17m by 4m and had a rounded stern and bow, possibly indicating a Humber Keel. It is no longer visible in recent aerial images.	Post-Medieval	None
2007		MLS26139	518317	417872	Wreck	The site of a 19th or 20th century wreck is visible aerial photographs taken in 1962. It measured 5m by 1.5m and had a pointed bow and stern. It is no longer visible in recent aerial images.	Post-Medieval	None
2008	122	NMR 1341163	520110	416760	Documentary evidence	Handley Page Halifax Mk. III heavy bomber; one of a batch of 360 delivered between March and August 1944, Squadron 10. Two engines feathered; ditched off Immingham 28th October 1944. Location unknown	Modern	None
7001	30	MLS22830	517638	419593	Magnetometer anomaly	Strong singular signature, relative target size 11.55 (Emu 6). Possible wreck site.	Unknown	None



WA ID	Original ES Site No	UKHO / NMR / HER Reference	Easting	Northing	Form / Type	Description	Period	Designation
7002	167	MLS22833	517571	419443	Magnetometer anomaly	Apparently multiple objects, could be unidentified wreckage. Relative target size 11.41 (Emu 7).	Unknown	None
7003	29	MLS22829	517594	419145	Magnetometer anomaly	Strong singular signature, relative target size 12.58 (Emu 5). Possible wreck site.	Unknown	None
7004	27	MLS22827	518429	418869	Magnetometer anomaly	Apparent large single object, relative target size 8.83 (Emu 1).	Unknown	None
7005	28	MLS22832	518238	418550	Magnetometer anomaly	Apparently multiple objects, relative target size 9.47 (Emu 3).	Unknown	None



Appendix 2: Actions for discoveries made during dredging and excavation works





Appendix 3: Recording Form

Discoveries: Preliminary Record Form	
When and Where?	
Date Found:	
Name of Finder:	
Location discovered:	
Anomaly number (if applicable):	
Original Position (if possible): Datum (if not BNG): Accuracy: <input type="checkbox"/> GPS Fix <input type="checkbox"/>	
What is it?	
Description of the find(s):	
What Next?	
Photographs taken <input type="checkbox"/>	
Treatment Given: <input type="checkbox"/> If wet – keep wet <input type="checkbox"/> <input type="checkbox"/> If dry – keep dry <input type="checkbox"/>	
Current Location: <input type="checkbox"/> Dredger: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> Office: _____	
Any other notes:	
Form Complete	
Name of compiler: <input type="checkbox"/> Site Champion <input type="checkbox"/> Other _____	
Signed: _____ Date: _____	



Appendix 4: Guidelines for Identifying Finds of Archaeological Interest

This text is based on the categories outlined in the *Protocol for Reporting Finds of Archaeological Interest*, published by the British Marine Aggregate Producer's Association (BMAPA) and English Heritage (now Historic England) 2005.

Bone

Major Archaeological Finds

Human bone is definitely of archaeological interest and is also subject to special legal requirements under the *Burial Act 1857*. Any suspected human bone should be reported and treated with discretion and respect.

Large quantities of animal bone may indicate a wreck (the remains of cargo or provisions) and should be reported.

Intermediate Archaeological Finds

Animal bone, teeth and tusks are of archaeological interest because they may date to periods when the seabed formed dry land, and should be reported. Such bones, teeth, tusks etc. may have signs of damage, breaking or cutting that can be directly attributed to human activity.

Objects made out of bone – such as combs, harpoon points or decorative items – can be very old and are definitely of archaeological interest. All occurrences should be reported.

Pottery

Intermediate Archaeological Finds

Any fragment of pottery is potentially of interest, especially if it is a large fragment. Items with unusual shape, glaze or fabric should be reported.

Minor Archaeological Finds

Items which look like modern crockery would be considered to be a minor archaeological find, until further assessment.

Brick

Intermediate Archaeological Finds

Bricks that do not have v-shaped hollows ('frogs') and/or are small, thin, or generally appear different than modern bricks could date back to the medieval or Roman period and should be reported.

Minor Archaeological Finds

Bricks with modern proportions and 'frogs' are of little to no archaeological interest.

Wood

Major to Intermediate Archaeological Finds



Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails. All occurrences should be reported. Objects made out of dark, waterlogged wood, such as bowls, handles, shafts and so on – can be very old and are definitely of archaeological interest. All occurrences should be reported. Roundwood that has clearly been shaped or made into a point should be reported.

Minor Archaeological Find

Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest. 'Roundwood' with bark, such as branches – is unlikely to be of archaeological interest.

Peat and Clay

Major Archaeological Find

Peat is black or brown fibrous soil that formed when sea-level was so low that the seabed formed marshy land, on the banks of a river or estuary, for example. The peat is made up of plant remains, and also contains microscopic remains that can provide information about the environment at the time it was formed. This information helps us to understand the kind of landscape that our predecessors inhabited, and about how their landscape changed. It can also provide information about rising sea-level and coastline change, which are important to understanding processes that are affecting us today. Prehistoric structures (such as wooden trackways) and artefacts such as stone tools, including hand axes, are often found within or near peat, because our predecessors used the many resources that these marshy areas contained. As these areas were waterlogged, and have continued to be waterlogged because the sea has risen, organic artefacts made of wood, leather, textile and so on often survive together with the stone and pottery which are found on 'dry' sites.

Fine-grained sediments such as silts and clays are often found in the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea-level change.

Intermediate Archaeological Finds

Isolated discoveries of peat or clay.

Stone

Major Archaeological Finds

The recovery of numerous stones may indicate the ballast mound of a wreck or a navigational cairn, and all occurrences should be reported. Additionally, if a large concentration of stone material (as described below) is encountered, it would also be considered a major archaeological find.

Intermediate Archaeological Finds

Small to medium size stones that are shaped, polished and/or pierced may be prehistoric axes. Objects such as axe heads or knife blades made from flint are also of prehistoric date. Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported.



Rubber, Plastic, etc.

Major Archaeological Finds

If rubber and plastic materials are discovered in the same area as aluminium objects and structures, they could indicate wreckage from a World War II aircraft, and therefore this material should be reported.

Minor Archaeological Finds

Except for the above, in most cases, rubber, plastic, Bakelite and similar modern materials are of little to no archaeological interest.

Iron and Steel

The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. However, the following provides an outline of what might constitute a major or intermediate find.

Major Archaeological Finds

If an area contains numerous 'concretions' (iron and steel objects covered by a thick amorphous concrete-like coating), it could represent a wreck site, and should be treated as a major archaeological find.

A concentration of pieces of metal sheet and structure may also represent a wreck site, and should be treated as a major archaeological find.

Intermediate Archaeological Finds

The discovery of an isolated anchor would be considered to be an intermediate archaeological find, however, if it is discussed in association with timber or iron and steel material as discussed above, it could be part of a wreck site.

Isolated concretions, pieces of sheet metal and/or structure may also be of archaeological interest, and should be reported.

Minor Archaeological Finds

Isolated modern material, such as lost fishing gear, would be considered a minor archaeological find.

Other Metals

Major Archaeological Finds

Aluminium objects may indicate aircraft wreckage from World War II, especially if two or more pieces of aluminium are fixed together by rivets. All occurrences should be reported.

Concentrations of copper and copper alloy (bronze, brass) objects, precious metal objects and coins are of interest, as they could indicate a wreck site.

Minor Archaeological Finds



Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest.

Isolated discoveries.

Ordnance

Any ordnance that is discovered should be dealt with based on the company UXO policy, as safety takes priority over archaeological objectives. However, discoveries of ordnance may be of archaeological interest (including cannonballs, bullets and shells), and they should be reported.



Appendix 5: Guidelines for Artefact Handling and Storage

It should be noted that 'time is of the essence' in terms of the recovery of wet archaeological material. If organic objects such as wood are allowed to dry out, this can cause irreparable damage. Care in handling items is therefore paramount. A recovered object should be handled and stored in the following manner, particularly those identified as major archaeological finds:

- Handle all material with care;
- Do not remove any rust, sediment, concretion or marine growth and do not separate 'groups' of items or sediments;
- All objects should be kept completely immersed in river water if possible; if this is not possible because of their size, they should be kept damp and wrapped in plastic to prevent them drying out;
- Objects should be kept in clean storage containers, preferably rigid plastic boxes with lids, which should be kept in a safe, sheltered location (preferably cool and dark); large objects that will not fit in containers should be kept covered so that they do not dry out;
- Each object should be marked with its unique number, either by means of a tag attached to the object(s) or by writing the number on the bag that it is stored on. If this is not possible, photographs of the artefact with a label clearly displayed on it should be taken, in order for the artefact to be identified later;
- Each small object should be kept in its own zip-lock plastic bag;
- Any sediments of interest should be collected and double-bagged into zip-lock bags, if possible; and
- If particularly delicate or significant items are recovered, Wessex Archaeology should be contacted as soon as possible for further advice.