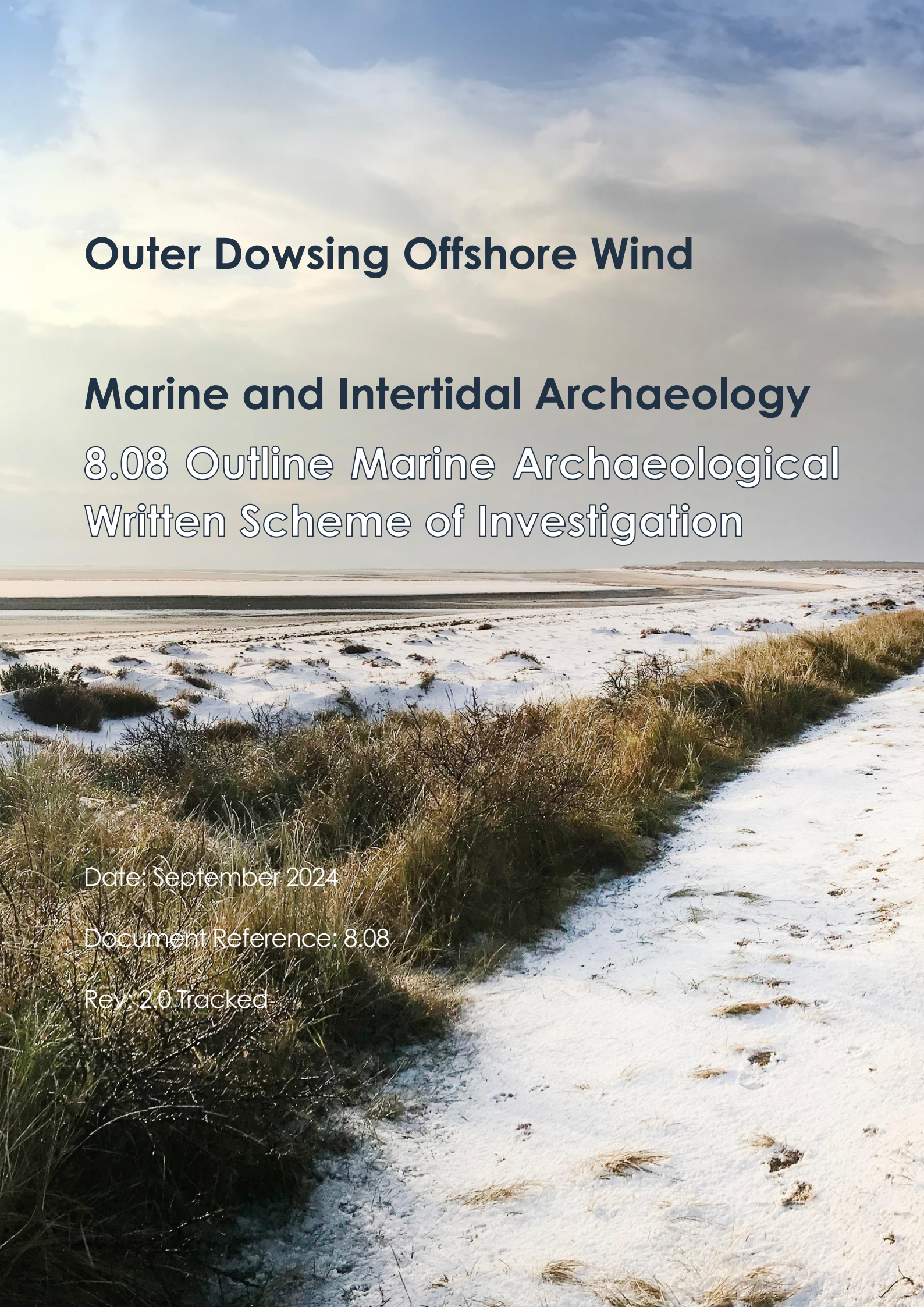
Outer Dowsing Offshore Wind

Marine and Intertidal Archaeology

8.08 Outline Marine Archaeological Written Scheme of Investigation



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1.0	March 2024	DCO Application	Maritime Archaeology	GoBe	Shepherd & Wedderburn	Outer Dowsing
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Acronyms & Definitions

Abbreviations / Acronyms

Abbreviation / Acronym	Description
AEZ	Archaeological Exclusion Zone
ANS	Artificial Nesting Structures
BEIS	Department for Business, Energy & Industrial Strategy (now the Department for Energy Security and Net Zero (DESNZ))
BP	Before Present
CIfA	Chartered Institute for Archaeologists
CITiZAN	Coastal and Intertidal Zone Archaeological Network
DAC	Digital Archive Centre
DCO	Development Consent Order
DDV	Drop Down Video
DESNZ	Department for Energy Security and Net Zero, formerly Department of Business, Energy and Industrial Strategy (BEIS), which was previously Department of Energy & Climate Change (DECC)
dML	Deemed Marine Licence
ECC	Export Cable Corridor (offshore ECC or indicative onshore ECC)
EIA	Environmental Impact Assessment
EMHERF	East Midlands Historic Environment Research Framework
ES	Environmental Statement
GTR4 ltd	The Applicant. The special project vehicle created in partnership between Corio Generation (a wholly owned Green Investment Group portfolio company), Gulf Energy Development and TotalEnergies
HSC	Historic Seascape Characterisation
JNAPC	Joint Nautical Archaeology Policy Committee
ka	kiloannum (one thousand years)
MA	Maritime Archaeology Ltd.
MEDIN	Marine Environment Data and Information Network
MHWS	Mean High Water Springs
MLWS	mean low water springs
MMO	Marine Management Organisation
MoD	Ministry of Defence
MS	Method Statement
NRHE	National Record of Historic Environment
NSPRMF	North Sea Prehistory Research Management Framework
NSIP	Nationally Significant Infrastructure Project
nT	nanotesla
O&M	Operation and Maintenance
OASIS	Online Access to the Index of Archaeological Investigations
ODOW	Outer Dowsing Offshore Wind (The Project)
ORCP	Offshore Reactive Compensation Platform
ORPAD	Offshore Renewables Protocol for Archaeological Discoveries
PAD	Protocol for Archaeological Discoveries
PEIR	Preliminary Environmental Information Report
Project	Outer Dowsing Offshore Wind
ROV	Remotely Operated Vehicle

Abbreviation / Acronym	Description
SoS	Secretary of State
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
TEZ	Temporary Exclusion Zone
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded ordnance
WGS84	World Geodetic System 1984
WSI	Written Schemes of Investigation
WTG	Wind Turbine Generator
WWI	World War One
WWII	World War Two

Terminology

Term	Definition
AfL array area	The area of the seabed awarded to GT R4 Ltd. through an Agreement for Lease (AfL) for the development of an offshore windfarm, as part of The Crown Estate's Offshore Wind Leasing Round 4.
Archaeological Contractor(s)	Archaeological Contractor appointed by the OWF Project Team or Retained Archaeologist to carry out specific packages of archaeological work
Archaeological Curator (s)	The body responsible for agreeing or accepting Method Statements, reports and deliverables once submitted to them.
Archaeological Exclusion Zones	Buffers around known Historic Environment receptors that should be avoided during construction works. The avoidance of AEZs must also consider that the use of anchors and lines, which could impact upstanding features, are adequately taken into account in the planning of operations.
Array area	The area offshore within the Order Limits within which the generating stations (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling are positioned.
Baseline	The status of the environment at the time of assessment without the development in place.
DEAD	Not detected over repeated surveys, therefore not considered to exist in that location.
Decommissioning	The period during which a development and its associated processes are removed from active operation.
Deemed Marine Licence (dML)	A marine licence set out in a Schedule to the Development Consent Order and deemed to have been granted under Part 4 (marine licensing) of the Marine and Coastal Access Act 2009.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of an impact with the sensitivity of a receptor, in accordance with defined significance criteria.
English Heritage	A charity and company with responsibility for managing historic buildings, monuments and sites in England.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection

Term	Definition
	and consideration of environmental information, which fulfils the assessment requirements of the Environmental Impact Assessment (EIA) Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	The suite of documents that detail the processes and results of the Environmental Impact Assessment (EIA).
GT R4 ltd	The Applicant making the application for a DCO. The Applicant is GTR4 Limited (a joint venture between Corio Generation and TotalEnergies), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company) and TotalEnergies.
Features	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines OR a particular aspect of the Project.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
Historic England	The public body that champions and protects England's historic places.
Historic Landscape Character	The identification and interpretation of the varying historic character within an area that looks beyond individual Historic Environment receptors providing understanding of the whole landscape and townscape area into Historic Landscape Character Types.
Historic Seascape Characterisation	A thesaurus that lists and provides scoping for the terms deployed in the Historic Seascape Characterisation project database. Historic Seascape Characterisation conveys a maritime perspective of historic landscape character and is relevant across fully marine areas, inshore and offshore, intertidal and coastal lands.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Indirect Effects	Effects that result indirectly from the Project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects. Often used to describe effects on landscape character that are not directly impacted such as effects on perceptual characteristics and qualities of the landscape.
Intertidal	Area where the ocean meets the land between high and low tides.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
LIFT	Wreck that has been salvaged.
LIVE	Wreck considered to exist as a result of detection through survey
Lincolnshire Historic Environment Record	This record collection provides details of all known archaeological assets, sites and former archaeological events within Lincolnshire.
Historic Environment receptors	Physical resources such as shipwrecks, aviation remains, archaeological sites, archaeological finds and material including pre-historic deposits as well as archival documents and oral accounts recognised as of historical/archaeological or cultural significance.
Marine archaeology study area	Defined as the ES Array Area, Offshore ECC up to MHWS and surrounded by a 1km buffer, artificial nesting structure areas surrounded by a 1km buffer and the biogenic reef area.

Term	Definition
Marine Written Schemes of Investigation (WSI)	A document forming the agreement between the client, the appointed archaeological, contractors, and the relevant stakeholders. The document sets out methods to mitigate the effects on all the known and potential Historic Environment receptors within the marine archaeology study are. An Outline Marine WSI, specific for the offshore area and developed during the EIA process will form frameworks for mitigation strategies that will be submitted with the DCO application. Followed by the Outline Marine WSI (based on the Outline Marine WSI) and the final Agreed Marine WSI (based on the Outline Marine WSI).
Medieval	The Medieval period or Middle Ages begins with the Norman invasion and ends with the dissolution of the monasteries. Archaeological period lasting from 1066-1540 AD.
Mitigation	Mitigation measures, or commitments, are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the Project design) or secondarily added to reduce impacts in the case of potentially significant effects.
National Policy Statement (NPS)	A document setting out national policy against which proposals for Nationally Significant Infrastructure Projects (NSIPs) will be assessed and decided upon.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Offshore Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Order Limits within which the export cables running from the array to landfall will be situated.
Offshore Reactive Compensation Platform (ORCP)	A structure attached to the seabed by means of a foundation, with one or more decks and a helicopter platform (including bird deterrents) housing electrical reactors and switchgear for the purpose of the efficient transfer of power in the course of HVAC transmission by providing reactive compensation
Offshore Substation (OSS)	A structure attached to the seabed by means of a foundation, with one or more decks and a helicopter platform (including bird deterrents), containing— (a) electrical equipment required to switch, transform, convert electricity generated at the wind turbine generators to a higher voltage and provide reactive power compensation; and (b) housing accommodation, storage, workshop auxiliary equipment, radar and facilities for operating, maintaining and controlling the substation or wind turbine generators
Palaeolithic	The period is defined by the practice of hunting and gathering and the use of chipped flint tools. This period is usually divided up into the Lower, Middle and Upper Palaeolithic. Archaeological period lasting from 350,000-22,000 BP.
Preliminary Environmental Information Report (PEIR)	The PEIR was written in the style of a draft Environmental Statement (ES) and provided information to support and inform the statutory consultation process during the pre-application phase.
Pre-construction and post-construction	The phases of the Project before and after construction takes place.
Protocol for Archaeological Discoveries (PAD)	A document detailing how finds made during the lifetime of the Project should be reported.
Post-Medieval	The Post-Medieval period is defined as the period between the medieval and the industrial ages. In terms of dates, it is 1541 to 1901.

Term	Definition
Receiver of Wreck	Official of the British Government whose main task is to administer the law in relation to Wreck and Salvage.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Retained Archaeologist	The Retained Archaeologist is the archaeological contractor or consultant appointed by the OWF Project Team to implement the WSI.
Scour	A localised sediment erosion feature caused by local enhancement of flow speed and turbulence due to interaction with an obstacle.
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
Study area	Area(s) within which environmental impact may occur – to be defined on a receptor by receptor basis by the relevant technical specialist.
Subsea	Subsea comprises everything existing or occurring below the surface of the sea
The Project	Outer Dowsing Offshore Wind including proposed onshore and offshore infrastructure
UNKNOWN	The state of the wreck is unknown or unconfirmed.
Wind turbine generator (WTG)	A structure comprising a tower, rotor with three blades connected at the hub, nacelle and ancillary electrical and other equipment which may include J-tube(s), transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, helicopter landing facilities and other associated equipment, fixed to a foundation.

Reference Documentation

Document Number	Title
6.1.13	Marine and Intertidal Archaeology Technical Report
6.1.3	Project Description
6.1.7	Marine Physical Processes
6.1.20	Onshore Archaeology and Cultural Heritage
6.1.17	Seascape, Landscape and Visual
6.3.13.2	Marine and Intertidal Archaeology Geoarchaeological assessment Phase One (ECC)
6.3.13.2	Marine and Intertidal Archaeology Geoarchaeological assessment Phase One (Array)

1 Marine Written Scheme of Investigation

1.1 Introduction

1. This Outline Marine Written Schemes of Investigation (WSI) sets out the basis for the archaeological mitigation strategies in relation to Outer Dowsing Offshore Wind (ODOW) ('the Project') and accompanies Volume 1, Chapter 13 Marine and Intertidal Archaeology (document reference 6.1.13) and Volume 2, Appendix 13.1 Marine and Intertidal Archaeology Technical Report (document reference 6.1.13.1).

1.1.1 Overview

2. GTR4 Ltd (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Project array area will be located approximately 54km from the Lincolnshire coastline in the southern North Sea. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm), export cables to landfall, onshore cables, and connection to the electricity transmission network, and ancillary and associated development. Full details outlined in Volume 1, Chapter 3 Project Description (document reference 6.1.3). The Development Consent Order Application was accepted for Examination on 16 April 2024.
3. The Applicant has commissioned Maritime Archaeology Ltd. (MA) to provide an Outline Marine WSI that will outline the expected impacts, mitigation strategies, and responsibilities of the Applicant. This Outline Marine WSI will be used as a supporting document if and when detailed Method Statements (MSs) for archaeological works are produced. The Outline WSI will inform the Final WSI that will be submitted to MMO for approval post consent.
4. This Outline Marine WSI summarises the known and potential Historic Environment receptors within the marine archaeology study area, as defined in Section 1.4 and illustrated in Figure 1.
5. This Outline Marine WSI forms an umbrella document for all survey, investigation and assessment required for the Project and will be supported by activity specific MSs as outlined in the Archaeological Written Schemes of Investigation for Offshore Windfarm Projects guidance (Crown Estate, 2021). The framework for archaeological mitigation strategies for the Project is outlined in Volume 1, Chapter 13.
6. This document has been structured to consider required mitigation and offsetting works through archaeological assessment in relation to the following offshore phases and does not consider any area of the Project landward of Mean High-Water Springs (MHWS).
    - Pre-construction:
        - Survey and site investigations; and
        - Seabed preparation.
    - Construction:
        - Wind Turbine Generator (WTG) foundation installation;

- Installation of array, interlink and export cables;
- Installation of offshore substations (OSSs);
- Associated vessel works – jack-up vessel, anchorage, etc.;
- Installation of foundations;
- Installation of ORCPs;
- Installation of accommodation platform;
- Exposure of cables;
- Use of cable protection measures;
- Installation of artificial nesting structures (ANS) area; and
- Creation of ~~benthic~~ biogenic reef.

- Operation and maintenance:
  - Presence of array, interlink and export cables;
  - Presence of OSSs;
  - Presence of ORCPs;
  - Presence of WTG foundations;
  - Cable, substation and WTG foundation repair activities
  - Use of cable protection measures;
  - Maintenance and associated vessel works;
  - Presence of ANS; and
  - Presence of ~~benthic~~ biogenic reef.
- Decommissioning:
  - Removal of foundations; and
  - Associated vessel works – jack-up vessels and anchorage.

1.1.2 Purpose of this Document

7. This Outline Marine WSI forms the basis for agreement between the Applicant, its contractors, and relevant regulators.
8. The fundamental objectives of a WSI are set out in The Crown Estate (TCE) guidance (2021) and are as follows:
   - Sets out the roles and respective responsibilities of the Applicant, contractors, Retained Archaeologist and Archaeological Contractor(s) and formal lines of communication between the parties and with Archaeological Curator(s) (Sections 1.2 and 1.8);
   - Outlines the known and potential Historic Environment receptors that could be impacted by the Project (outlined in Section 1.6);

- Outlines the agreed mitigation and archaeological actions that are to take place in various circumstances (outlined in Section 1.7);
- Sets out the importance of research frameworks in setting objectives that are delivered through the realisation of work in relevant MSs (outlined in Section 1.6); and
- Provides summarised details on methodologies for these archaeological actions, which will be clarified in more detail in subsequent activity specific MSs (outlined in Section 1.7).

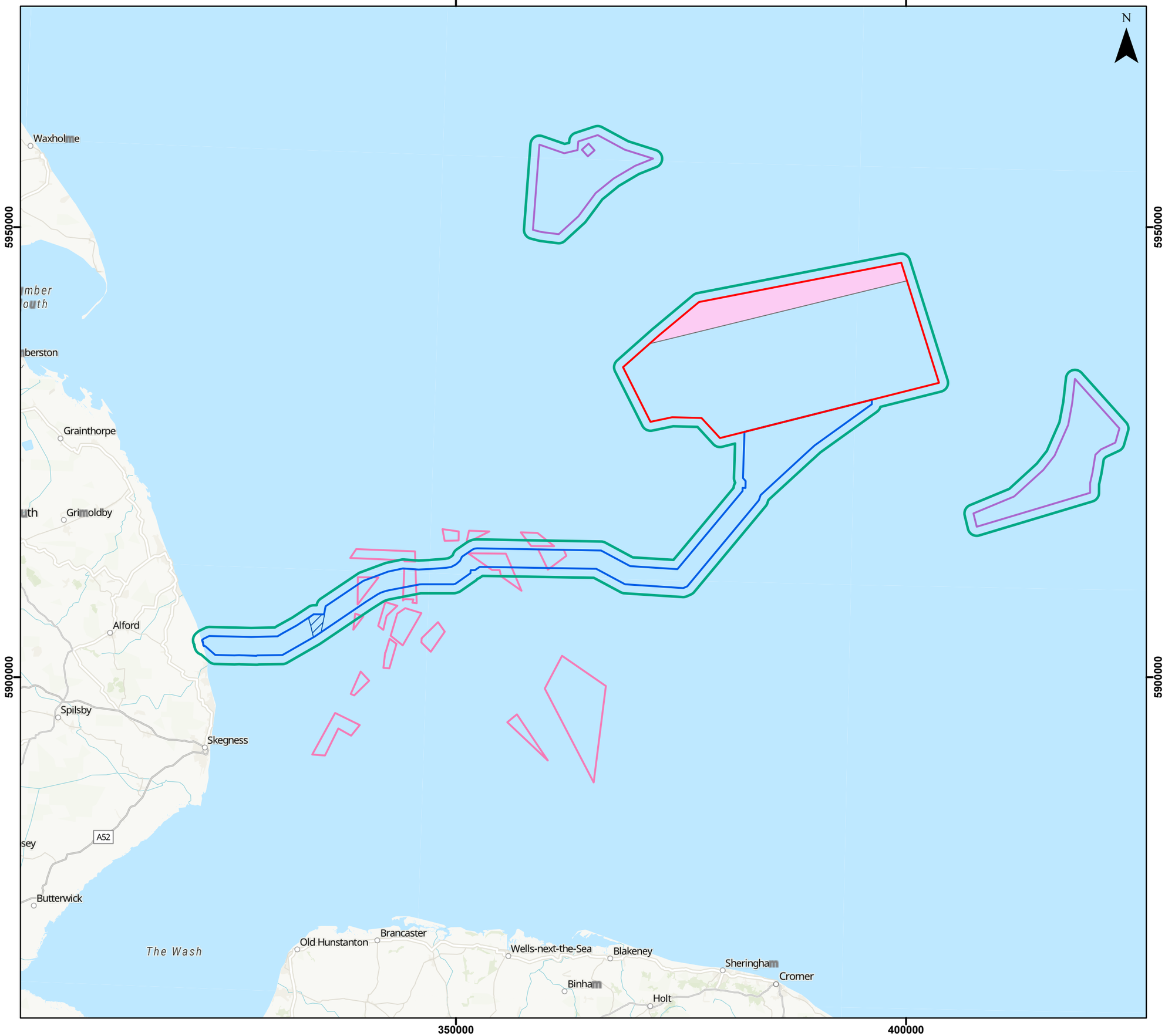
9. In demonstrating adherence to industry good practice, this Outline Marine WSI has also been compiled with respect to available archaeological guidance for offshore developments including:
   - Chartered Institute for Archaeologists (CIfA) Code of Practice and Standards and Guidance (CIfA 2014a, 2014b, 2014c, 2014d, 2014e and 2014f); and
   - Code for Practice for Seabed Development (Joint Nautical Archaeology Policy Committee (JNAPC) 2006).
10. This Outline Marine WSI summarises the known and potential Historic Environment receptors within the marine archaeology study area, expected impacts, and recommended archaeological mitigation methodologies and actions for a range of work phases within the marine environment. Each phase of work will require a more detailed MS which will be prepared by appropriately qualified professionals and submitted to Archaeological Curator(s).
11. This Outline Marine WSI will form the basis of the Draft Marine WSI and Final Agreed Marine WSI. The final Agreed Marine WSI will form the basis of agreement between the Applicant, its contractors, and relevant regulators.
12. This Outline Marine WSI has been compiled by MA to accompany Volume 1, Chapter 13 and should be read in conjunction with Volume 2, Appendix 13.1.

1.1.3 Marine Archaeology Study Area

13. A marine archaeology study area has been established for the purposes of collating characterising baseline data as part of this Outline Marine WSI. The marine archaeology study area is defined as the array area, the Offshore Export Cable Corridor (ECC), and a 1km buffer up to MHWS (Figure 1).
14. The additional 1km buffer is common practise and allows for the consideration of direct and indirect effects on Historic Environment receptors and is designed to accommodate the potential imprecision of historic marine positions and the strong tides which can cause the scattering of shipwreck artefacts and eroded archaeological material over considerable distances.
15. Shipwrecks located in the array area and/or Offshore ECC may have been recorded as lost outside the area or they may have been lost and drifted or dragged before settling on the seabed. While no impact of the Project is expected outside the array area and/or Offshore ECC, Volume 1, Chapter 7 Marine Physical Processes (document reference 6.1.7), outlines how tidal ranges and seabed movements can be affected by the Project. This is further discussed in terms of impact on Historic Environment receptors in Volume 1, Chapter 13.
16. The area from MHWS landward is covered by the onshore archaeology chapter, Volume 1, Chapter 20 Onshore Archaeology and Cultural Heritage (document reference 6.1.20).

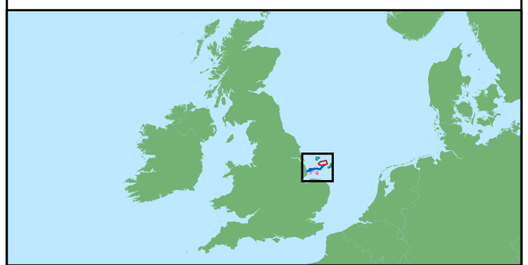
1.1.4 Compensation Areas

17. There are three proposed compensation areas which include, a compensation area for the creation and recreation of biogenic reef and compensation areas for offshore ornithology (artificial nesting structures (ANS). These compensation areas are shown in Figure 1 and Figure 2. A full list of all wrecks and obstructions in the areas (17) are shown in Annex D of Volume 2, Appendix 13.1: Marine and Intertidal Archaeology Technical Report.
18. No site-specific data has been provided for the three proposed compensation areas; therefore, all baseline characterisations have been undertaken on the basis of publicly available data only. The polygons have been significantly reduced following refinement of the proposed areas. The areas identified are larger to enable micrositing once data is available and mitigation measures will apply.



Legend

- Array Area
- Offshore Export Cable Corridor
- 1km Buffer
- ORCP Area
- Artificial Nesting Structure Area
- Biogenic Reef Restoration Area
- Offshore Restricted Build Area



Coordinate System: WGS 1984 UTM Zone 31N

0 10 20 km

Scale: 1:400,000

A3 Page Size

Outline Written Scheme of Investigation

Marine Archaeology Study Area

Figure 1

OUTER DOWSING OFFSHORE WIND

Date: 17/09/2024
Produced By: LR
Revision: 0.1

MARITIME ARCHAEOLOGY

1.2 Scheme of Investigations

1.2.1 Introduction

19. This Outline Marine WSI represents a general foundation for all further archaeological works that may eventually be a condition of consent and will be updated, post-consent, to detail the specific packages of archaeological works that have been agreed. Detailed MSs will be produced, as required, for further archaeological works.
20. Each archaeological MS will correspond to a package of works, for example, archaeological assessment of marine geophysical data, archaeological assessment of ROV data from the UXO survey, and archaeological investigation using divers and/or ROVs.
21. The specifications in this document, and all forthcoming MS, are based on archaeological best practice and guidance for offshore developments. The principal sources are:
    - Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Second Edition) (English Heritage, 2011);
    - Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (COWRIE, 2008);
    - Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record (Historic England, 2015);
    - Deposit Modelling and Archaeology Guidance for Mapping Buried Deposits (Historic England, 2020);
    - Commercial Renewable Energy Development and the Historic Environment Advice Note 15 (Historic England, 2021);
    - Historic Environment Guidance for the Offshore Renewables Energy Sector (COWRIE, 2007);
    - Joint Nautical Archaeology Policy Committee (JNAPC) Code for Practice for Seabed Development (JNAPC, 2006);
    - Marine Geophysics Data Acquisition, Processing and Interpretation (English Heritage, 2013);
    - Archaeological Written Schemes of Investigation for Offshore Windfarm Projects (The Crown Estate, 2021);
    - Protocol for Archaeological Discoveries: Offshore Renewables Projects (ORPAD) (Crown Estate, 2014);
    - Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (CIfA, 2014a, updated 2020);
    - Standard and Guidance for Commissioning Work on, or Providing Consultancy Advice on, Archaeology and the Historic Environment (CIfA, 2014b, updated 2020);
    - Standard and Guidance for Archaeological Field Evaluation (CIfA, 2014c, updated 2020);
    - Standard and Guidance for Nautical Archaeological Recording and Reconstruction (CIfA, 2014d, updated 2020);

- Standard and Guidance for an Archaeological Watching Brief (CIfA, 2014e, updated 2020); and
- Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (CIfA 2014f, updated 2020).

22. The scheme of investigation below includes guidance outlining the requirements and expected standards in relation to:
    - Recording, reporting, data management and archiving;
    - Samples and artefacts;
    - AEZs;
    - Marine geophysical investigations;
    - Marine geoarchaeological investigations;
    - Investigations using divers and/or ROVs; and
    - Watching briefs.

1.2.2 Archaeological Recording, Reporting, Data Management and Archiving

23. Any future archaeological works will be accompanied by written reports pursuant to the requirements of those works and demonstrating appropriate planning, recording and data management and commitment to archiving and public dissemination of results according to the guidance summarised in the below sections and set out in TCE guidance (2021) and COWRIE guidance (2007).

1.2.3 Method Statements

24. Any future archaeological works, including those required as a condition of consent, will be subject to a MS being prepared in advance of works, with appropriate time for review and agreement.
25. Each MS will be submitted to the Archaeological Curator(s) no less than one month before the commencement of planned works and archaeological works will not commence unless the Archaeological Curator(s) have confirmed their agreement.
26. The specifications for MSs are based on archaeological best practice and guidance for offshore developments. The principal sources are:
    - Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Second Edition) (English Heritage, 2011);
    - Marine Geophysics Data Acquisition, Processing and Interpretation (English Heritage, 2013);
    - Deposit Modelling and Archaeology Guidance for Mapping Buried Deposits (Historic England, 2020);
    - Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (COWRIE, 2011);
    - Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record (Historic England, 2015);

- A Maritime Archaeological Research Agenda for England, Research Framework Network (2022);
- Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (CIfA, 2014a, updated 2020); and
- Standard and Guidance for an Archaeological Watching Brief (CIfA, 2014e, updated 2020).

27. A MS will include provision for Archaeological Curator(s) to monitor the conduct of the archaeological work as appropriate.
28. Unless otherwise agreed, the MSs will address the following matters:
    - Form of commission and contractual relationship with the Applicant;
    - Relations between licence condition(s), Outline Marine WSI and the MS;
    - Context in terms of relevant construction works;
    - Summary results of previous archaeological investigations in the vicinity;
    - Archaeological potential;
    - Specific objectives of archaeological works, including specific research questions;
    - Extent of investigation;
    - Investigation methodology, to cover:
        - Intrusive methods;
        - Recording system;
        - Finds, including the policy for selection, retention and disposal and provision for immediate conservation and storage;
        - Environmental sampling strategy; and
        - Anticipated post-investigation actions, including processing, assessment and analysis of finds and samples.
    - Reporting, including Intellectual Property Rights in the report and associated data, confidentiality and timescale for deposition of the report in a publicly accessible archive;
    - Timetable, to include investigation and post investigation actions;
    - Monitoring arrangements, including monitoring by Archaeological Curator(s); and,
    - Health, safety, and welfare.

1.2.4 Archaeological Campaigns

29. For all aspects of marine geophysical investigations, geotechnical investigations, ground truthing and watching briefs, the Applicant will adhere to standards and guidance as set out in the TCE guidance (2021). The archaeological assessment of any marine geophysical data and/or other survey data will aim to avoid significant impacts through aiding further identification and clarification of known and potential Historic Environment receptors as stated in Volume 1, Chapter 13. The acquisition and review of new data for archaeological purposes will also contribute to effective planning of this Project and to any requirements to offset unavoidable impacts to potential archaeology.

Geophysical Surveys

30. The specification of any proposed marine geophysical surveys, whether their primary aim is archaeological or non-archaeological, will be formed in keeping with the guidance in Marine Geophysics Data Acquisition, Processing and Interpretation (English Heritage, 2013). All surveys will be subject to advice from an archaeological contractor to ensure that archaeological input is provided at the planning stage and to enable archaeological considerations to be reflected without compromising the primary objective of the survey. This will ensure that survey objectives can be clearly set at the planning stage and maximum value from data recovered can be derived.
31. Surveys whose primary objectives are non-archaeological (e.g., engineering, or environmental) will include embedded archaeological objectives within the overall survey design. Where deemed necessary, an archaeologist or geophysicist with appropriate archaeological expertise will be onboard during the acquisition of data. If archaeologists are onboard, they will advise on the suitability for archaeological purposes of the data being acquired and be able to propose minor changes to the survey method, settings, etc. to optimise archaeological results, and thereby minimise the need for repeat surveys.
32. Where a survey is carried out primarily to meet archaeological objectives, the specification shall be prepared by the Retained Archaeologist or an archaeological contractor and carried out by a survey contractor.
33. New geophysical survey data will be interpreted by an archaeologist with an appropriate level of expertise. Raw survey data, together with factual reports and track plots, will be made available in digital formats to the Retained Archaeologist and/ or archaeological contractor. The results of further geophysical interpretation will be compiled as an archaeological report consistent with TCE guidance (2021).

Geotechnical surveys

34. Archaeological involvement in the planning, acquisition and review of any geotechnical surveys including pre-construction and future monitoring surveys will be provided. Any necessary archaeological analysis of any material obtained, will follow a phased approach as outlined in COWRIE guidance (2011), to satisfy the requirements of the Archaeological Curator(s) and ensure that the required mitigation measures are delivered as outlined in Section 1.7.
35. The phases are:

- Phase 1: Desk Based Assessment: archaeological review of geotechnical logs and the initial formation of a deposit model;
- Phase 2: splitting and recording geotechnical cores;
- Phase 3: sub-sampling and assessment;
- Phase 4: analysis and dating; and
- Phase 5: publication and archiving.

36. Any future works will support the refinement of the sedimentary deposit model (Plate 1 and 2) to improve models in order to reduce the extent to which there will be anything unforeseen in the sedimentary modelling through the addition or inclusion of new data from subsequent surveys or phases of investigation (COWRIE, 2011).
37. Core collection locations will be developed through early archaeological involvement in planning the geotechnical site investigation programme and will be presented to Historic England for consultation in a detailed MS.

Diver and ROV Surveys

38. It is possible that certainty of the nature and extent of individual Historic Environment receptors or anomalies may only be achieved through the use of diver and/or ROV surveys. For all aspects of archaeological investigations using divers or ROVs, the Applicant will adhere to standards and guidance as set out in the TCE guidance (2021).
39. To maximise the potential benefits of any proposed diver/ROV surveys undertaken primarily for engineering, ecological or other non-archaeological purposes, the Applicant will seek archaeological input at the planning stage of any such works to ensure that archaeological objectives can be clearly set and maximum value from data recovered can be derived. Where the primary objectives of dive survey are non-archaeological, consideration will be given to having an archaeological contractor present during any diver or ROV surveys, either as observers or participating divers to optimise archaeological results and thereby reduce the need for repeat survey. Following the completion of a non-archaeological diver/ROV survey, all data, including video footage, will be reviewed by an archaeological contractor with appropriate expertise. All surveys will be preceded by an activity-specific MS as detailed in Section 1.2.
40. Where the primary objectives of diver/ROV surveys are archaeological, the diving will be led by archaeologists. An archaeological diver or ROV-based assessment may be required where additional information is required to discern the archaeological interest and/or significance of a site to apply the most appropriate mitigation. The results of these surveys will be compiled as an archaeological report consistent with guidance within the TCE guidance (2021) and Standard and Guidance for the Creation, Compilation, Transfer, and Deposition of Archaeological Archives (CifA, 2014f).

Watching Briefs

41. Archaeological Watching Briefs by a suitably qualified archaeologist will be applicable where material of possible or known archaeological interest will be moved or removed from the seabed and can be visibly assessed.
42. A Watching Brief is a formal programme of archaeological monitoring and will involve attendance by an archaeological contractor during offshore works as described below:
    - Excavated surfaces and material will be, where possible, inspected by the archaeological contractor;
    - Any finds will be collected and allocated a record number and their position will be logged;
    - Archaeological features or structures will be examined;
    - Where possible, a sufficient sample of each layer/feature type will be investigated in order to elucidate the date, character, relationships and function of the feature/structure;
    - Works may have to halt for consultation with client and archaeological curators;
    - Recording will include written, drawn, and photographic elements as conditions allow; and
    - The archaeological results of the watching brief assessment will be compiled as an archaeological report consistent with the TCE guidance (2021).

1.2.5 Reporting and Publication

43. Any reports will be prepared in accordance with the guidance provided in the relevant Chartered Institute for Archaeologists (CIfA) Standard and Guidance documents and with reference to any other activity or analysis specific guidance.
44. Reports will detail the work undertaken and the archaeological evidence encountered. They will discuss the importance of the results including their potential contribution to archaeological knowledge and understanding.
45. The reports will typically include:
    - 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;
    - An explanation of how this work is relevant to the objectives and research agendas from applicable local and national archaeological research frameworks;
    - Proposals for further analysis and publication; and
    - Illustrations and appendices to support the report.

1.2.6 Where appropriate the report will provide recommendations for further assessment and/or analysis requirements. Each report will be submitted by the Applicant to the Archaeological Curator(s), as well as to appropriate National and Regional repositories, including the Online Access to the Index of Archaeological Investigations (OASIS).

1.2.7 Artefacts

46. Artefacts that are exposed in the course of the Project works will be recovered by the archaeological contractor or, where recovery is impracticable, recorded. From the point of discovery, all finds will be held by the archaeological contractor in appropriate conditions pending further recording, investigation, study, or conservation.
47. In the event of discovery of unexpected archaeology, the Retained Archaeologist will be informed immediately in line with the current Outline Marine WSI (as described in the Outline PAD (Appendices
    Annex A). The Retained Archaeologist will notify the relevant legal authority, the Applicant and the Archaeological Curator(s) as soon as possible, and the discovery will be referred to the Archaeological Curator(s) or other relevant authority. All recovered finds will be held by the Retained Archaeologist or appointed Archaeological Contractors in appropriate conditions pending further recording, investigation, study, or conservation, and reported via the Retained Archaeologist to the Receiver of Wreck.
48. In the event of the discovery of items that may be eligible for legal protection, the Retained Archaeologist will notify the relevant legal authority, the Applicant and the Archaeological Curator(s) as soon as possible.
49. The Retained Archaeologist will prepare and implement a finds monitoring and maintenance program, which will cross-reference to finds management/monitoring systems maintained by the Applicant, and their Contractors (for example, UXO Survey IDs).
50. Recovered objects 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 Curator(s).
51. Contingency will be made for specialist advice and conservation needs on-site should unexpected, unusual, or extremely fragile and delicate objects be recovered.

1.2.8 Post-Fieldwork Assessment

52. Post-fieldwork assessment of archaeological materials is currently not expected. Should the recovery of archaeological material be deemed necessary then decisions regarding the scope of post-fieldwork assessment will be made by agreement between the Applicant and Archaeological Curator(s) following submission of investigation reports. These decisions will be based on the possible importance of the results in terms of their contribution to archaeological knowledge, understanding or methodological development.
53. A single post-fieldwork assessment may be carried out in respect of the investigations associated with the Project as a whole. Such an assessment may be carried out by expanding the overarching archaeological report to include proposals in respect of analysis, publication, and archiving.
54. Should the assessment take place, it will be carried out by the Retained Archaeologist or archaeological contractor, and will address where possible the character and extent, date, integrity, state of preservation and relative quality of the archaeological features or remains, along with a costing for any further research, analysis, publication, and archiving.

55. An assessment of the potential of the archive for further analysis may include (but is not limited to) consideration of the following elements:
    - The dating and dendrochronological assessment of timbers;
    - The conservation of appropriate materials, including the X-raying of metalwork;
    - The spot-dating of all pottery from any investigation, corroborated by scanning of other categories of material;
    - The preparation of site matrices with supporting lists of contexts by type, by spot-dated phase and by structural grouping supported by appropriate scaled plans;
    - An assessment statement prepared for each category of material, including reference to quantity, provenance, range and variety, condition, and existence of other primary sources; and
    - A statement of potential for each material category and for the data set as a whole may be prepared, including specific questions that can be answered and the potential value of the data to local, regional and national investigation priorities.
56. Where warranted, a discrete post-fieldwork assessment may be undertaken of the specific sites or investigations in advance of assessment of the investigations associated with the scheme as a whole.

1.2.9 Ordnance

57. In the event that any item(s) of ordnance is discovered, primacy is given to safety requirements and procedures. Industry guidelines provided by the Applicant and those set out in TCE guidance (2021) must be followed prior to any recording of items for archaeological purposes.
58. There is the potential for ordnance to be of archaeological interest, especially when discovered with other related material from a ship or aircraft wreck. Recording should only be undertaken when it has been assessed as safe to do so. Any firearms and ammunition (e.g., from a crashed military aircraft) are likely to be subject to the Firearms Acts 1968. Ammunition should be regarded as ordnance, irrespective of its size.
59. Where applicable, a relevant MS will set out how to deal with the discovery of ordnance. It will set out whether for this stage of works the Applicant has engaged a specialist UXO Contractor and will clearly explain the communication process between them and the Retained Archaeologist or the archaeological contractor and any potential licensing requirements.
60. Should ordnance be discovered on the seabed during an archaeological diver/ROV survey, it will be reported to the dive supervisor, and the dive team will follow the procedures set out in the MS. If the diver/ROV survey is for non-archaeological purposes any information about the ordnance, such as reports from the specialist UXO Contractor should be forwarded to the Retained Archaeologist undertaking the archaeological assessment of ROV survey data. This includes reports of when the ordnance has been disposed of.
61. Should ordnance be discovered onboard a vessel when there is no archaeologist onboard, the Contractor or specialist UXO Contractor will take the lead, and the item should be reported through the Outline PAD, if safe to do so.

62. Should ordnance be discovered onboard a vessel where there is a specialist UXO Contractor onboard, the specialist UXO Contractor will take the lead. If there is no UXO contractor on-board, the archaeologist will follow procedures set out in the Archaeological Watching Brief MS.

1.2.10 Human Remains

63. In the case of the discovery of human remains, at all times they will be treated with due decency and respect. For each situation, the following actions are to be undertaken, and in any event, the Retained Archaeologist will inform the Applicant and Archaeological Curator(s):

- For human remains on land and in intertidal areas, an application should be made to the Ministry of Justice for an exhumation licence under the Burial Act 1857;
- For human remains within territorial waters where the remains have been intentionally buried, an application should be made to the Ministry of Justice for an exhumation licence; and
- In all other cases, the Retained Archaeologist will immediately inform the Coroner and the Police.

64. Where practical, the human remains will be left *in situ*, covered, and protected. Where human remains have been found and the Project will unavoidably disturb them, the remains will be fully recorded, excavated, and removed from the site in accordance with the granted exhumation license and the advice of an appointed Project Osteologist as per guidance in The Role of the Human Osteologist in an Archaeological Fieldwork Project (Historic England, 2018).

1.2.11 Aircraft

65. The majority of aircraft wrecks are military and so fall under the legal protection of the *Protection of Military Remains Act* 1986. Under this Act it is an offence to tamper with, damage, move or unearth any items at such sties unless the Ministry of Defence (MoD) has issued a licence authorising these activities. A licence is required regardless of whether the aircraft was in service of another nation's armed forces at the time of wrecking.

66. Application for a licence, and any subsequent work, will be undertaken in line with MoD's Crashed Military Aircraft of Historical Interest: Licensing of Excavations in the UK: Notes for Guidance of Recovery Groups (Revised 2018). Should human remains be discovered, they should not be touched, but must be reported immediately to the MoD.

67. Any finds that are suspected of being military aircraft will be reported immediately to the Retained Archaeologist as well as the Applicant and the Joint Casualty and Compassionate Centre of the MoD. In the case of a military aircraft being investigated under license, any human remains will be reported immediately.

1.2.12 Wreck

68. There are presently no identified sites as could be subject to the provisions of the *Protection of Wrecks Act* 1973, the *Protection of Military Remains* Act 1986 or the *Ancient Monuments and Archaeological Areas Act* 1979 that have been recorded or identified within the marine archaeology study area. It is possible that significant discoveries will be made during survey work and subsequently protected under these Acts.
69. Archaeological artefacts that have come from a ship are 'wreck' for the purposes of the *Merchant Shipping Act* 1995. The Applicant, via their archaeological contractors, will ensure that the Receiver of Wreck is notified within 28 days, either on behalf of or directly by the Applicant for all items of wreck that have been recovered.
70. The Retained Archaeologist will prepare the reporting forms and submit them to the Applicant to be signed and submitted to the Receiver of Wreck. Due to the legal responsibilities under the *Merchant Shipping Act* 1995; the responsibility for reporting ultimately rests with the Applicant.
71. All potential wreck material identified on the seabed will also be reported to the Receiver of Wreck who will assign the find a droit number. The MS covering these works will also include an explanation of the activity and how material may be encountered on the seabed and procedures for reporting.
72. Any artefacts reported to the Receiver of Wreck will be stored in a secure location until a closure letter has been received for the droit, offering title for the material, should no owner be found.

1.2.13 Conservation and Storage

73. All recovered materials, on land and underwater, will be subject to a Conservation Assessment to gauge whether special measures are required while the material is being held. This assessment will take place no more than four weeks after recovery.
74. This Conservation Assessment will be carried out by the Retained Archaeologist or an archaeological contractor with an appropriate level of expertise, with advice from appropriate specialists and guidance.
75. The Retained Archaeologist (where appointed) or an archaeological contractor with appropriate expertise will implement recommendations arising from the Conservation Assessment.
76. Specialist conservation work, based on the recommendations prepared by the Retained Archaeologist will be applied following consultation with the Applicant and the Archaeological Curator(s). The Retained Archaeologist is responsible for all quality assurance and monitoring of works conducted.
77. Where no special measures are recommended, finds will be conserved, bagged, boxed, and stored in accordance with industry guidelines. The cost of long-term care and conservation of recovered artefacts will be the responsibility of the Applicant.

78. Storage for geotechnical samples will be carried out in line with the Environmental archaeology: a guide to the theory and practice of methods from sampling and recovery to post-excavation (Campbell *et al.*, 2011), including keeping samples in stable conditions, away from light, air and heat; keeping relevant records safe and accessible; and avoiding long term storage wherever possible. Good practice for core storage will be outlined in a specific MS and is essential to allow for geoarchaeological analysis and sampling to be carried out effectively.

1.2.14 Archiving

79. Archiving will follow best practice as laid out within:

- Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation. Archaeological Archives Forum (Brown, 2011);
- Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (CIfA, 2014f, updated 2020);
- Dig Digital: A guide to managing digital data generated from archaeological investigations (DigVentures, 2019); and
- Archaeological Written Schemes of Investigation for Offshore Windfarm Projects (Section 13.5: Archiving) (Crown Estate, 2021).

80. Archive planning will be included within the relevant detailed MSs. Agreement with the Archaeological Curator(s) will be sought on the most appropriate archiving repository for either individual reports or the Project as a whole.

81. The data management plan of the archaeological archive will:

- Ensure that records and materials are well-organised, and have the potential for re-use, further research and/or other curatorial use that will further our archaeological understanding;
- Increase the opportunities for promotion of, and engagement with, the archaeological archive;
- Enable a better understanding of, and preparation for, the preservation requirements of the working Project archive prior to the transfer of the archaeological archive into a repository;
- Help ensure all relevant procedures and guidance have been considered and followed at all stages of the Project;
- Promote better collaboration between all stakeholders;
- Improve the active management of the working Project archive, the adequate location of funds and staffing, and the efficient use of available storage space and resources; and
- Implement the FAIR principles of ensuring data is findable, accessible, interoperable and reusable.

82. As a minimum, copies of all reports will be submitted to the National Record of the Historic Environment (NRHE) (currently undergoing updates) of England. An OASIS form will be produced for the Project and copies of associated reports will be attached to this report. The NRHE of England will also be provided with notice of submission of the OASIS form.

83. An accession number will be obtained from the receiving repository and the Project archive will then be deposited with any potential finds. The receiving repository will be notified of archaeological investigations in advance of fieldwork. For offshore digital data, it may be appropriate to archive this with a Marine Environmental Data and Information Network (MEDIN) Digital Archive Centre (DAC).
84. All costs of archiving (whether digital, paper or object) will be met by the Applicant. Tenders for such works will include provision for the preparation and deposition of expected archive.

1.3 Implementation of the Marine WSI

1.3.1 Introduction

85. The primary responsibilities for the delivery of the embedded mitigation presented in the Marine WSI lies with the Applicant. Through Project documentation and procedures, the implementation of this Marine WSI will involve archaeological contractors and curators. A Final Agreed WSI will based on this Outline WSI and will be submitted to the post consent.

1.3.2 The Applicant: Implementation

86. The Applicant will be responsible for implementing the Marine WSI. They will ensure that all relevant Project personnel understand the archaeological requirements, particularly those where reporting may be required by contractors through the Protocol for Archaeological Discoveries (PAD) (Crown Estate, 2014). Personnel responsible for communication of actions to the Applicant will be clearly appointed which many include specific representatives on board work vessels. The Applicant will be responsible for the delivery of the PAD in its entirety, should consent be obtained.
87. The Applicant will be responsible for maintaining an up-to-date record of contacts related to the delivery of mitigation. This will include archaeological consultants, contractors, and curators.
88. This Marine WSI provides a framework for archaeological investigations for the Project. In support of the Marine WSI, any future archaeological works undertaken will require detailed MSs outlining methods and further mitigation. These MSs will be produced in consultation with Historic England prior to survey or construction work in order to provide a detailed methodology for each package of development or survey works.

1.3.3 Retained Archaeologist: Implementation

89. Communication with the Archaeological Curator(s) is the responsibility of the Applicant. The Applicant will engage a Retained Archaeologist to implement this Marine WSI.
90. The Applicant will advise the Retained Archaeologist of all requirements or responsibilities related to communication with curators and contractors, or in relation to Project timescales, plans and requirements, ensuring that the information is shared as soon as it becomes available.
91. The Retained Archaeologist will report to and provide advice to the Applicant to inform communication with curators and contractors in relation to the implementation of the Marine WSI.

1.3.4 Archaeological Curators: Implementation

92. The main Archaeological Curator involved in the agreement of this Marine WSI, and subsequent mitigation works is Historic England (seaward of Mean Low Water Springs (MLWS).
93. Historic England will be provided with copies of all relevant project documentation and will be consulted in all aspects of the offshore historic environment. Historic England will provide guidance and advice for the offshore historic environment and the package of archaeological works agreed upon.

1.3.5 Development Contractors: Implementation

94. Contractors working within the marine zone, where Archaeological Exclusion Zones (AEZs) are in place and where the PAD is being used, must ensure all relevant personnel are aware of the associated requirements. The avoidance of AEZs must also note that the use of anchors and lines, which could impact upstanding features, are adequately considered in the planning of operations. This will include understanding the Marine WSI and all procedures and lines of communication for reporting unexpected archaeological discoveries.

1.4 Proposed Development Details

95. All offshore elements will be installed within the marine archaeology study area (2). The key offshore elements of the Project will be as follows:

- Up to 100 WTGs and associated foundations;
- Up to four OSSs and associated foundations;
- Up to two ORCPs and associated foundations;
- One accommodation platform;
- 351km maximum length of inter-array cables;
- Maximum length of offshore interlink cables, 123.75km;
- Up to four offshore export cables may be installed with a maximum length per cable of 128.7km and a total length of 514.8km;
- Two ANS; and
- Biogenic Reef area.

96. The Project Design Envelope approach has been adopted to include sufficient flexibility within the Project design to allow for further refinement during detailed design assuming the DCO application is successful. Therefore, parameters and options are presented here as well as in Volume 1, Chapter 3 Project Description (document reference 6.1.3). The design will be refined prior to the consent application and submission. The final design will be developed from within the parameters stated after consent has been granted.

1.5 Site-Specific Surveys

97. Geophysical survey data was acquired in 2021 and 2022 by Enviros Survey & Consultancy Ltd (Enviros) and consisted of shallow geophysical data including Multi-Beam Echosounder (MBES), Side Scan Sonar (SSS), Magnetometer (MAG), Sub-Bottom Profiler (SBP) and Ultra-High Resolution Seismic (UHRS) data across the array area and Offshore ECC. Further detailed in Volume 2, Appendix 13.1.

98. The data quality of the SSS, MBES and SBP was assessed as good, meaning suitable, clear data in which anomalies can be clearly identified and interpreted and which provides the highest probability for Historic Environment receptors to be identified. The exception to this was the MAG data, which was assessed as adequate, meaning data which has been moderately affected by conditions such as weather, sea state or background noise, in which anomalies can been seen but are difficult to identify and interpret. The definition of survey data quality for archaeological interpretation is further detailed in Volume 2, Appendix 13.1.

99. All marine data collected covering the array area, Offshore ECC and associated buffer have been assessed for archaeological potential and all anomalies found subsequently recorded. The results from the assessment are summarised in Section 1.6 and detailed in Volume 2, Appendix 13.1.

1.6 Summary of Archaeological and Cultural Heritage Baseline

100. The date and context for the marine and intertidal archaeological documents produced to date are summarised in Table 1.1.

Table 1.1 Archaeological Documents Produced to Date

Archaeological document	Summary	Submitted
Outer Dowsing Offshore Wind Environmental Impact Assessment Scoping Report	Identified the Historic Environment receptors of relevance to the Project array area and Offshore ECC. Described the likely potential effects from the construction, operation, and maintenance, and decommissioning of the offshore and intertidal components (up to MHWS) of the Project on Historic Environment receptors and set out the proposed scope and methods for the Environmental Impact Assessment (EIA).	August 2022
ES Volume 1, Chapter 13: Marine and Intertidal Archaeology	Identifies the marine archaeological and cultural heritage receptor of relevance to the Project. Describes the potential effects from the construction, operation, and maintenance, and decommissioning of the offshore and intertidal components (up to MHWS) of the Project on Historic Environment receptors and sets out the scope and proposed methods for the EIA.	Submitted alongside this document.
ES Volume 2, Appendix 13.1: Marine and Intertidal Archaeology Technical Report	A desk-based study of the environmental baseline for marine and intertidal archaeology and cultural heritage within the study area, which encompasses the proposed Project footprint, as well as an archaeological assessment of geophysical data collected for the array area of the Project.	Submitted alongside this document.
Marine and Intertidal Archaeology Geoarchaeological assessment Phase One (Array)	A Phase One archaeological assessment of the geoarchaeological potential of the vibrocores collected within the array area to date.	Submitted alongside this document.

Archaeological document	Summary	Submitted
Marine and Intertidal Archaeology Geoarchaeological assessment Phase One (ECC)	A Phase One archaeological assessment of the geoarchaeological potential of the vibrocores collected within the ECC to date.	Submitted alongside this document.

101. A broad contextual overview of human activity in the region and of the marine archaeology site types that may be expected to occur within the marine archaeology study area is included in Volume 2, Appendix 13.1. A summary of the known and potential archaeology within the marine archaeology study area is presented below, with a focus on marine archaeological and cultural heritage receptor which may be impacted by the Project.

1.6.1 Offshore Maritime

102. The offshore marine archaeological resource is presented by four main classes of material and features:

- Submerged prehistoric landscapes caused by changes to sea level and eventual stabilisation of sea level at or near to the present position of the coast. Such landscapes may contain highly significant evidence of prehistoric human occupation and/or environmental change;
- Archaeological remains of watercraft deposited when vessels sank while at sea or became abandoned in an intertidal context which subsequently became inundated;
- Remains of aircraft crash sites, either coherent assemblages or scattered material, usually the result of World War Two (WWII) military conflict, but also numerous passenger casualties, particularly during the peak of seaplane activity during the World War One (WWI), though these rarely survive in the archaeological record;
- Structural remains other than watercraft, including such elements as fish traps, abandoned quays, hards, defensive structures or sites lost to coastal erosion may be found within the intertidal zone (between MHWS and MLWS). Historic Environment receptors located seaward of MHWS have been considered in this section; and

103. Historic Seascape Character has also been assessed. The historic cultural influences which shape present perception of seascapes, its uses and its ability to accommodate change.

104. The marine archaeology study area has been assessed and described as a whole for the baseline. A summary of the baseline and records within the array area, Offshore ECC and 1km buffer are described below.

1.6.2 Submerged Landscapes

105. The area of seabed that the marine archaeology study area covers was previously a large swathe of dry land that was inhabited during the Pleistocene and early Holocene (Mesolithic). There have been numerous glacial cycles resulting in periods of lower and higher sea-level compared to today. The dynamic processes of climate and landscape change throughout the Pleistocene as a result of warming and cooling cycles and fluctuations in sea-level resulted in repeated (re)colonisation and abandonment of these landscapes (Cohen et al., 2017). Large swathes of land that are now submerged would have been inhabited and exploited by our human ancestors, and any archaeological finds from the Palaeolithic period in the offshore zone are likely to be from periods when the sea-level was lower.

106. The potential for submerged landscapes within the marine archaeological study area is high. To the south of the marine archaeology study area, at Happisburg and Pakefield, the earliest evidence of hominin occupation of northern Europe (c. 900 kiloannum (ka) to 800 ka) comes from sites, features, and finds within the coastal and marine zone (Parfitt et al., 2005, 2010; Bynoe, 2018).

107. Due to the effects of ice scouring during each successive glacial period, the North Sea Basin has the highest potential for Palaeolithic material from within the last 100,000 years and increases significantly following the last glacial maximum, at the onset of the Holocene (Flemming, 2002). This is because these former Pleistocene land surfaces have not been eroded or reworked by younger landscapes (Cohen *et al*. 2017).

108. The prehistoric landscape under the North Sea, referred to as Doggerland, was a core area of human habitation during the Holocene, in particular after the ice sheets receded and when sea-levels rose between 18,000 and 5,500 BC (Gaffney et al., 2017). Coastal and submerged peat deposits, likely to be Holocene deposits, can provide a rare opportunity to enhance the understandings of changing human behaviours during the Mesolithic.

109. Along the Lincolnshire coast, where the Offshore ECC makes landfall there is one site designated as a Site of Special Scientific Interest (SSSI), Chapel Point to Wolla Bank SSSI, which lies within the marine archaeology study area. While there are no designated archaeological features within Chapel Point to Wolla Bank SSSI, paleoenvironmental deposits that consist of Holocene sediments and special geological features may be preserved.

110. Peat deposits are also an important archive of past human activities that not only preserve archaeological material, but they are also historic landscapes (Historic England, 2021). Due to the anoxic conditions, organic remains can be preserved within peat deposits for thousands of years.

111. The Historic England Peat Database highlights ten records of peat along the coast near the Offshore ECC landfall site and 33 records throughout the North Sea. Exact coordinates for most of these locations are not confirmed, but the number of records indicates high probability that peat could be found within the marine archaeology study area, these have been included as Annex C of Volume 2, Appendix 13.1.

112. There are currently no protected areas or statutory designations in relation to submerged landscapes within the marine archaeology study area.

1.6.3 Known Wrecks, Aviation Remains, Obstructions, Fouls and Sites

Maritime Archaeology

113. Within the marine archaeology study area there are ~~56~~ 49 recorded Historic Environment receptors (including wrecks, obstructions, fouls and discrete finds). These receptors are compiled from the United Kingdom Hydrographic Office (UKHO), NRHE and Lincolnshire Historic Environment Record (HER) and are outlined in Table 1.2. Where a receptor was included in multiple datasets the UKHO positional data, which uses the World Geodetic System 1984 (WGS84) datum, will be used due to its' higher positional accuracy to that of the British National Grid format of the NRHE and Lincolnshire HER data.

114. The archaeological assessment of the baseline conditions has concluded that there are ~~20~~ 17 LIVE wrecks, ~~5~~ 4 DEAD wrecks, and ~~11~~ 9 UNKNOWN or unconfirmed wrecks within the marine archaeology study area (Table 1.2). Of these ~~54~~ 49 Historic Environment receptor records, 16 of them are located within the array area and 1km buffer around the array area while the remaining ~~38~~ 33 are in the ECC and 1km buffer surrounding the ECC. All recorded wrecks seen within the geophysical data have been assigned 100m AEZs while those not seen in the geophysical data have been assigned 50m AEZs (Figure 1Figure 2).

Table 1.2 Known Historic Environment Receptor Distribution within the marine archaeology study area

Types	Quantity
Wrecks	~~36~~30
Aircrafts	0
Obstructions and fouls	~~15~~16
Discrete finds and sites	3

115. A further 17 Historic Environment receptor records are present in the compensation areas; 4 within the ANSs and 13 within the reef areas. A full list of these are in Annex D Volume 2, Appendix 13.1: Marine and Intertidal Archaeology Technical Report.

Aviation Archaeology

116. No aircraft remains are currently known to be located within the marine archaeology study area or compensation areas. Remains of aircraft crash sites, either coherent assemblages or scattered material are usually the result of WWII military conflict with 118 RAF aircraft losses recorded along the Lincolnshire coastline as well as ten German aircraft losses as further detailed in Aircraft Crash Sites at Sea (Wessex Archaeology, 2008).

117. The numerous passenger casualties, particularly during the peak of seaplane activity during the inter-war period are the other most likely potential source. Aviation remains include aircraft, airships, and other dirigibles dating to the WWI, although these rarely survive in the archaeological record.

118. The Project has presently not identified any sites subject to the provisions of the *Protection of Military Remains* Act 1986 within the marine archaeology study area.

119. Where *in situ* remains associated with any military aviation losses are found, they will be archaeologically significant and protected under the *Protection of Military Remains Act* 1986.

1.6.4 Geophysical Assessments

120. The archaeological assessment of geophysical data to date, as detailed in Volume 2, Appendix 13.1, identified 1,~~153~~ 836 anomalies of archaeological potential within the ~~array~~ marine archaeology study area. ~~During the assessment of the geophysical data of the array area, the locations of three known wrecks, and seven known obstructions/fouls correlated with anomalies seen in the archaeological assessment as detailed in Volume 2, Appendix~~ An additional uncharted wreck was located within the array area during the assessment of geophysical data and is included within the High potential anomalies in Table 1.3.

121. All High potential anomalies have been assigned 100m AEZs, all Medium potential anomalies have been assigned 50m AEZs and all Low potential anomalies have not been assigned any AEZs (Figure 2).

Table 1.3 Summary of Archaeological Anomalies within the Marine Archaeology Study Area as Seen in the Geophysical Data

Archaeological Potential	Number of anomalies
High	~~23~~21
Medium	~~168~~146
Low	~~2,256~~1,669
Total	~~2,244~~1,836

350000

400000

5950000

5900000

N

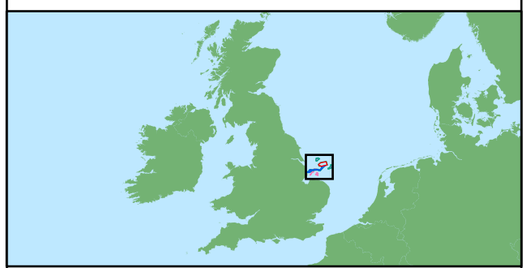
Skegness

Legend

- Array Area
- Offshore Export Cable Corridor
- 1km Buffer
- ORCP Area
- Artificial Nesting Structure Area
- Biogenic Reef Restoration Area
- Offshore Restricted Build Area

AEZs (meters)

- 50
- 100



Coordinate System: WGS 1984 UTM Zone 31N

0 9 18 km

Scale: 1:350,000

A3 Page Size

Outline Written Scheme of Investigation

AEZs Recommended for Recorded Wrecks, Obstructions, High Geophysical Anomalies and Medium Geophysical Anomalies within the Array Area, Offshore ECC and associated buffer

Figure 2

OUTER DOWSING OFFSHORE WIND

Date: 17/09/2024
Produced By: LR
Revision: 0.1

MARITIME ARCHAEOLOGY

1.6.5 Sedimentary Horizons

122. This section summarises the interpretation of the archaeological assessment of the SBP data and places the current understanding of the complex prehistoric landscapes and the correlation between marine and terrestrial sediment phases in context. For further detail refer to Volume 2, Appendix 13.1.

123. The nature, extent, and distribution of preserved palaeolandscapes is being mapped and understood as survey methods are developing. The contextual relationship between channels, micro and macro fauna, submerged forests, and identified and potential sites, both in the marine zone and terrestrial area, are becoming more apparent as the volume of data is increasing and this should continue to be assessed as per the phased approach outlined in Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (COWRIE, 2011).

124. The assessment of sub-bottom data within the array area shows that the seafloor morphology is made up of bedforms including, mega ripples, sand waves and sandbanks as well as deeper areas such as bathymetric depressions, also known as tunnel valleys.

125. The sediments identified within the array area from the sub-bottom data geoarchaeological assessment include Holocene gravely sand, silt and clays (Unit A) and Quaternary sediments, Unit B, Unit C and Unit D (Table 1.4). The features described in detail below and illustrated in Plate 1 and Plate 2.

126. Further, a clear palaeochannel system was identified, the palaeochannels are cut into the base of Unit A and seen incising the underlying Quaternary sediments, Unit B and Unit C (Table 1.4).

127. The Paleochannel systems are generally stretching across the marine archaeology study area in the array area in a north north-west to south south-east direction and can reach depths up to 32m Below Sea Floor (BSF) as illustrated in Plate 1 and Plate 2. No blanking, indication of peat or shallow gas was noted within the array area, however some was found within the ECC as further discussed in Volume 2, Appendix 13.1.

128. The outline deposit model presented in Table 1.4 will be further refined following a phased geoarchaeological assessment as detailed in Section 1.2.4 of this Outline Marine WSI.

Table 1.4 Outline Deposit Model

Unit	Stratigraphy	Description	Epoch	Geoarchaeological potential
Unit A	Holocene mobile sands	Mobile loose to medium gravelly or silty SAND, in places GRAVEL or CLAY.	Holocene	Sedimentary low geoarchaeological potential, however archaeological artefacts may be located within these sediments
Unit B	Botney Cut Formation	Laminated fine SAND with very soft to soft CLAY	Quaternary, Marine Isotope Stage 2	Potential to contain material of geoarchaeological interest
Unit C	Bolders Bank Formation	Fine to medium SAND and soft to stiff CLAY with sand,	Quaternary, Marine Isotope Stage 3-2	Potential to contain material of geoarchaeological interest

		gravel chalk and pebbles. At base GRAVEL		
Unit D	Egmond Ground Formation	Medium to fine SAND and gravels	Quaternary, Marine Isotope Stage 11	Limited potential to contain material of geoarchaeological interest
Unit E	Swarte Bank Formation	Stiff to very stiff CLAY	Quaternary Marine Isotope Stage 12	Potential to contain material of geoarchaeological interest
Unit F	Bedrock Formation	Cretaceous CHALK	Cretaceous	No geoarchaeological interest

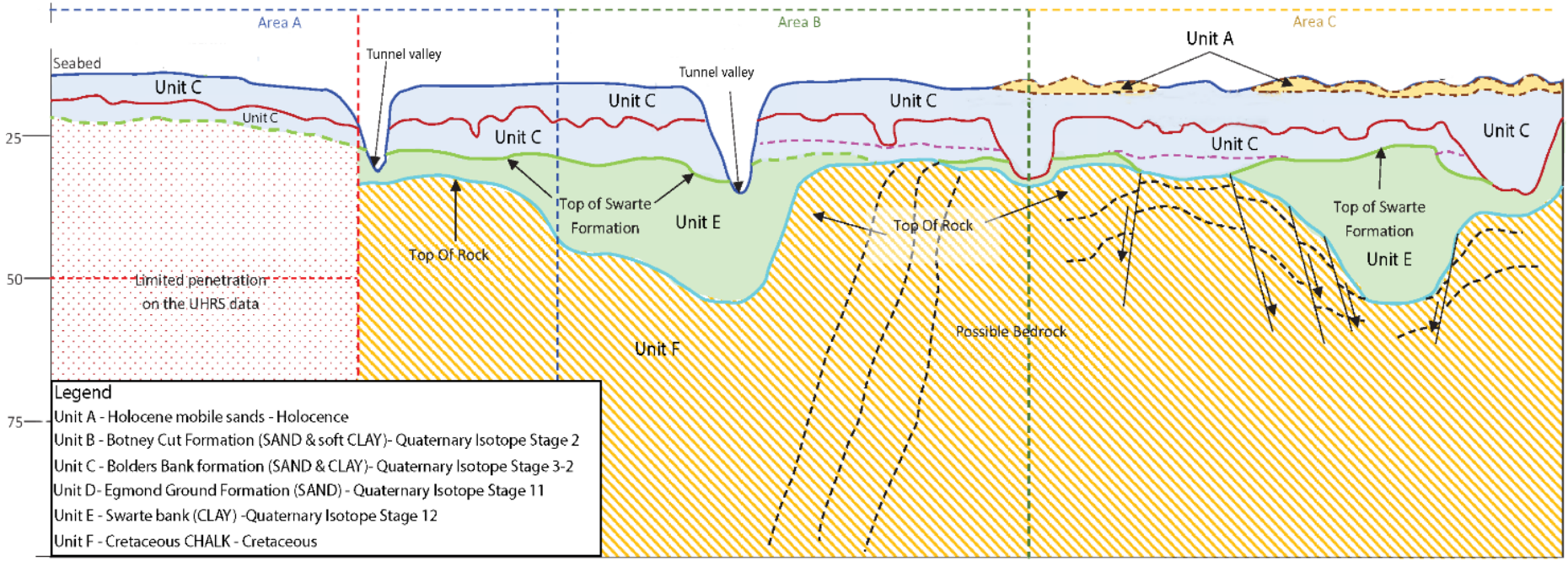


Plate 1: Illustrated outline deposit model (array area). Adapted from Outer Dowsing Offshore WindFarm Geophysical UHRS And Light Geotechnical Survey East Anglia, Offshore UK, ENVIROS Survey & Consultancy Limited, 2022.

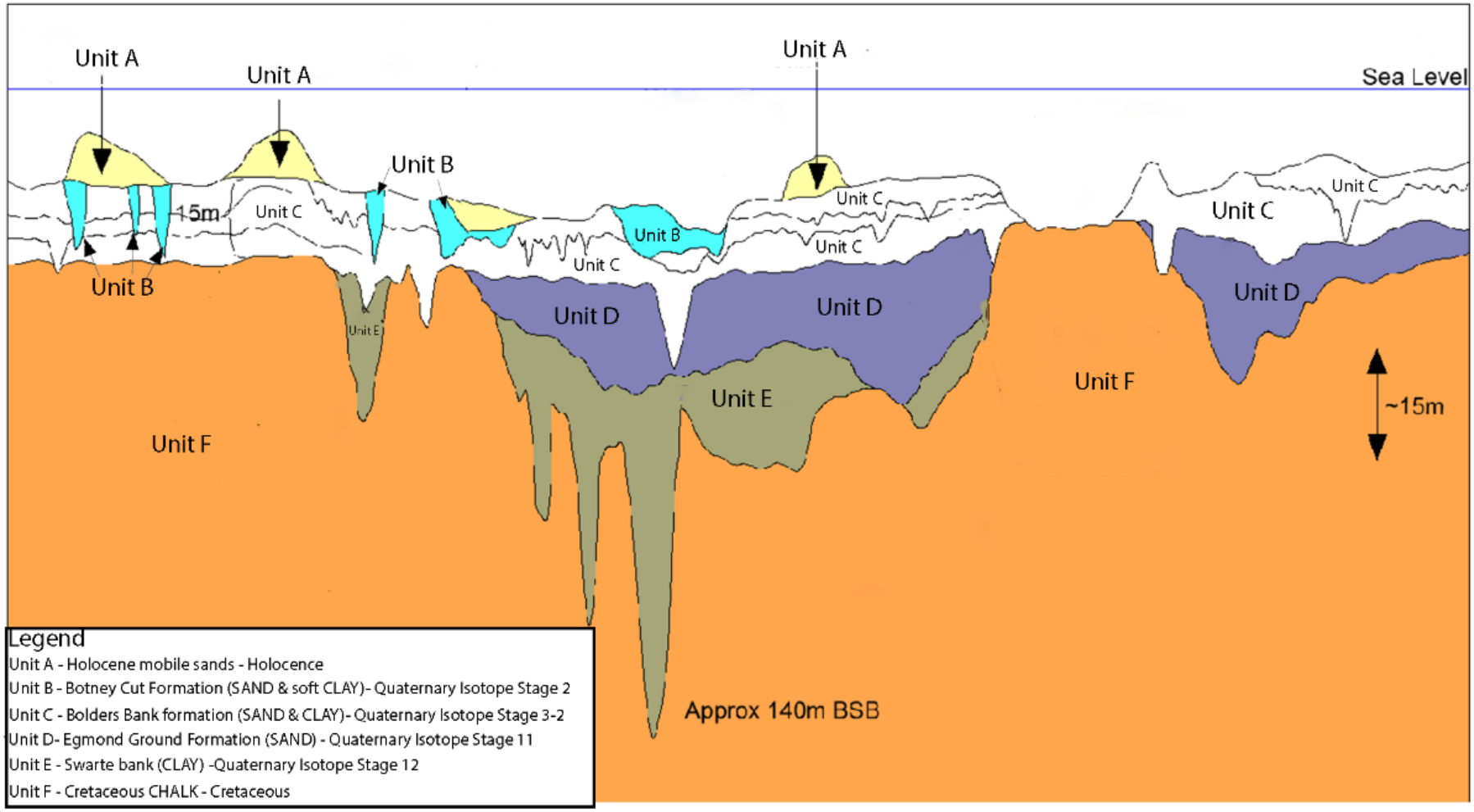


Plate 2: Illustrated outline deposit model (ECC). Adapted from Offshore & Nearshore Geophysical & Geotechnical Results & Charts (Vol. 5). GEOxyz, 2023.

400000

5950000

N

MA3006

MA3007

MA3004

MA3005

MA3000

MA3001

MA3002

MA3003

5950000

400000

Legend

- Array Area
- Offshore Export Cable Corridor
- 1km Buffer
- Offshore Restricted Build Area
- SBP Palaeochannels (MA3000-MA3007)
- NSPP Fluvial Channels
- NSPP Lakes

Coordinate System: WGS 1984 UTM Zone 31N

0 3.5 7 km

Scale: 1:130,000

A3 Page Size

Outline Written Scheme of Investigation

Records and Geoarchaeological Features within the Array Area

Figure 3

OUTER DOWSING OFFSHORE WIND

Date: 17/09/2024
Produced By: LR
Revision: 0.1

MARITIME ARCHAEOLOGY

1.6.6 Research Frameworks

129. All future survey campaigns will incorporate relevant local and national research frameworks to contribute to the knowledge and understanding of the historic environment. Specific research questions will be included in the MSs for each campaign.

130. Past and ongoing research projects and agendas in this area for which further research may be relevant include but are not limited to:

- The North Sea Prehistory Research Management Framework (NSPRMF), Research Framework Network (2023);
- East Midlands Historic Environment Research Framework (EMHERF), Research Framework Network (2022);
- A Maritime Archaeological Research Agenda for England, Research Framework Network (2022); and
- Rapid Coastal Zone Assessment: Yorkshire and Lincolnshire, Humber Archaeology (2009).

131. Contributions to our knowledge and understanding of the historic environment may also be in the form of project-led data gathering, assessment and publications made available to the public. These works will tie in with current research frameworks relevant to the area and specific research questions. Most of the research objectives within the framework relate to the maritime environment belonging from the palaeolithic, including:

- The location of the area adjacent to the submerged landscapes of Doggerland adds to its unique character, and provides valuable opportunities for study of the relationship between the terrestrial and marine archaeological resource.
- The submerged landscapes of Doggerland present major opportunities for landscape analysis in the form of submarine palaeochannels, preinundation land surfaces and peats.
- Encourage the mapping of Pleistocene and Holocene landscapes, including the submerged landscapes of Doggerland.
- How can we elucidate further the archaeological potential of the submerged landscapes of Doggerland?
- Explore the submerged Pleistocene landscapes of Doggerland.

132. One of the research objectives derives from the High Medieval framework:

- Can we identify, investigate and date sites associated with the region's key extractive industries (especially iron, coal, lead and alabaster), the production and distribution of cloth and leather-work, and freshwater or marine fishing?

133. Project-led research has the capacity to positively contribute to public knowledge and new understanding about palaeoenvironmental remains, buried sedimentary deposits and the evolution of past landscapes in the coastal and marine area.

134. The above research, along with the Project's SBP data will be used to provide a wide palaeoenvironmental context in which to frame specific research questions set out in the MSs.

1.6.7 Relevant Legal Protection

135. Legal obligations for heritage of relevance to all phases of the Project's lifecycle within the marine archaeology study area are:

- Under the *Protection of Wrecks Act* 1973, if a wreck of historical, archaeological or artistic importance were to be discovered then it would be possible for it to be designated at very short notice. This has the potential to disrupt construction activities and associated timetables;
- Under the *Protection of Military Remains* Act 1986, if a crashed military aircraft was discovered in the course of construction, then it is automatically protected. It is then an offence to undertake unauthorised disturbance of the site unless under licence;
- Under the *Burial Act* 1857, if human remains are discovered in the course of site investigations or construction they cannot be exhumed without authority from the Secretary of State (SoS);
- Under the *Ancient Monuments and Archaeological Areas Act* 1979, sites that warrant protection due to them being of national importance as 'ancient monuments' must have a consent from the SoS before any works can be undertaken; and
- Finders of gold and silver objects (over 300 years old) and some base metal assemblages (prehistoric) as defined in the *Treasure Act* 1996 Act (the Act is supplemented by the Treasure (Designation) Order 2002) are required to report such finds by contacting the Coroner and delivering the items for handover as per the Coroners' instructions.

136. Section 1.2 of this Outline Marine WSI details where the legal protection is applicable. Further relevant government policies and how they are considered is presented in Table 13.1, Volume 1, Chapter 13.

1.7 Mitigation Measures

1.7.1 Introduction

137. Mitigation measures for marine and intertidal archaeology are split between known Historic Environment receptors which are embedded in the Project design, and unknown Historic Environment receptors which are additional mitigation measure.

138. The embedded mitigation measures for the Project are formulated where Historic Environment receptors and anomalies are identified in the desk-based assessment and/or geophysical assessments. These mitigation measures have been identified and adopted as part of the Project design and include Project design measures, compliance with elements of good practice and the use of standard protocols.

139. The embedded mitigation measures are based on guidance set out in Historic Environment Guidance for the Offshore Renewable Energy Sector (COWRIE, 2007) and TCE guidance (2021).

140. The below mitigation measures will be adopted from the pre-application phase to reduce the potential for impacts on Historic Environment receptors. They will likely evolve over the Project phases as the EIA progresses and in response to consultation and include further mitigation measures that have been identified as good or standard practice and incorporate actions that would be undertaken to meet existing legislation requirements.

141. This Outline Marine WSI is being developed in consultation with the Regulator and Archaeological Curator(s) to form a framework that presents mitigation strategies aiming to avoid or minimise impact on Historic Environment receptors. The Outline Marine WSI also summarises forthcoming surveys and associated archaeological investigations prior to pre-construction works commencing.

142. This Outline Marine WSI states when supporting archaeological methodologies will be required and to whom and how they are to be submitted for approval prior to work commencing, and follows the guidance detailed in Table 1 and Table 2 of the TCE guidance (2021).

143. Any intrusive activities associated with pre-construction works will be planned to avoid any features assessed as having potential archaeological interest or significance where possible and AEZs around receptors deemed to be of medium or high potential as detailed in this Outline Marine WSI, unless other mitigation is agreed with Historic England.

144. An archaeological post-construction monitoring plan will be developed and submitted to the Archaeological Curator(s) which will present the approach to monitoring required for the established AEZs.

145. The archaeological post-construction monitoring plan will focus on monitoring sites of potential archaeological interest and revisiting areas that were identified as of archaeological significance during the construction phase, and to establish any impacts (positive, negative, or neutral).

146. The archaeological post-construction monitoring plan will further outline how geophysical survey data, drop-down video (DDV) and Remotely Operated Vehicle (ROV) imagery (if available) will be reviewed and compared with results from pre-construction data acquired for each of the features requiring monitoring as detailed in Section 1.2.

147. A decommissioning plan will be prepared in line with any updated guidance and environmental assessments.

Marine Written Schemes of Investigation (WSI)

148. This Outline Marine WSI sets out the recommended AEZs for known Historic Environment receptors and geophysical anomalies, provides information about areas of archaeological potential and where further geotechnical works may provide archaeological data, outlines the implementation of a Project specific Outline PAD in accordance with the Protocol for Archaeological Discoveries: Offshore Renewables Projects (Crown Estate, 2014), sets out procedures for further works to include archaeological input even when their main purpose is non-archaeological, so that the potential for information and efficiency is maximised and outlines future monitoring and assessment requirements.

149. During the pre-consent phase, a Draft Marine WSI (based on the Outline Marine WSI) will be produced prior to any pre-commencement survey, pre-consent which details all aspects of any further archaeological work and details the mitigation measures embedded into the Project design (Crown Estate, 2021). This will further outline when supporting archaeological methodologies will be required, and to whom and how they are to be submitted for approval prior to work commencing. The implementation of this Outline Marine WSI (at every phase of the document) is the mitigation, rather than the document itself.

150. Throughout the lifetime of the Project this Outline Marine WSI submitted alongside the DCO application will evolve to the Draft Marine WSI should any pre-commencement surveys take place, through to the final Agreed Marine WSI, which will be developed post-consent. These documents will be produced in line with TCE guidance (2021).

151. The mitigation set out in the Outline Marine WSI (and all future phase of the document) will be discussed and agreed in consultation with the Archaeological Curator(s). It is anticipated that the agreement of a final Agreed Marine WSI will be a condition of the dML.

Archaeological Exclusion Zones (AEZ)

152. AEZ are recommended around all recorded wrecks and obstructions, as well as those assessed as High and Medium archaeological potential identified in the geophysical assessment. The avoidance of marine heritage assets remaining *in situ* follows best archaeological practice, and impact by the proposed development will be avoided through the implementation of buffers around the known extents of sites.

153. The final layout of the Project will consider the locations of all AEZs. Where it is deemed that impacts cannot be avoided, measures to reduce, remedy or offset disturbances will be agreed with the Archaeological Curator(s).

154. AEZs have the potential to be amended (enlarged or reduced) or removed at a later date, subject to further data and review. Any changes to the AEZs which may occur will be agreed with the Archaeological Curator(s).

155. AEZs of 50m are recommended around anomalies of Medium archaeological potential (Table 1.3 and Figure 3) and records for wrecks and obstructions which did not correlate with geophysical anomalies. For anomalies of High archaeological potential identified in the geophysical data AEZs of 100m are recommended (Table 1.3 and Figure 3).

156. The extent of the AEZs is based around the visible extent of the anomaly, where it can be identified. In the case of recorded anomalies not identified in the geophysical data as well as anomalies identified only in the magnetometer data the AEZs are based around the centre point of the recorded location.

157. For anomalies assessed as low archaeological potential no AEZ have been recommended at this time.

158. It is possible these anomalies could represent material from wreck sites or other marine areas of significance but are not currently identifiable as such. If these anomalies are likely to be impacted, they should be assessed on a case-by-case basis, in agreement with the Archaeological Curator(s). Further assessment may be in the form of investigation undertaken in conjunction with ROV or unexploded ordnance (UXO) surveys.

159. Temporary Exclusion Zones (TEZ) as a reactive measure may be applied in the case of unexpected discoveries of potential archaeology while further investigation and assessment is carried out.

160. Once established, AEZs may be altered (enlarged, reduced, moved or removed) as a result of further archaeological assessment of data or field evaluation, however, the alteration of AEZs will only be undertaken with the agreement of the relevant stakeholders and the Archaeological Curator(s). Following alteration, a new plan giving details of the current AEZs will be drawn up and issued to each relevant party.

Micrositing

161. Avoidance of Historic Environment receptors by micrositing where possible is recommended as best practise if there is potential for them to be impacted by the development.

Protocol for Archaeological Discoveries (PAD)

162. There is potential for previously unknown sites or material of archaeological potential to be encountered during development works. As per the Outline Marine WSI, a Project specific Outline PAD will be adopted to ensure impacts to these unexpected discoveries can be reduced.

163. The Outline PAD acts as a safety net alongside other mitigation measures to ensure reactive and effective reporting of any unexpected finds of archaeological potential can be investigated, assessed and potential impacts are avoided.

164. TEZs may be established around areas of possible archaeological potential until further investigation and assessment can be conducted.

Archaeological Assessment of Available Data

165. Offshore geophysical surveys (including UXO surveys) undertaken during the life of the Project will be subject to full archaeological review, where relevant. Archaeological review will be in consultation with Historic England.

166. The archaeological assessment of geophysical data gathered to date has been undertaken by a qualified and experienced marine archaeologist. Following delivery of the survey data as specified above, the raw data were processed and interpreted as per guidance in Marine Geophysics Data Acquisition, Processing and Interpretation (English Heritage, 2013).

167. All anomalies of archaeological potential were assessed against the criteria in Table 1.5 and the results of the assessment of all datasets were further reviewed against the baseline data collated for the marine archaeology study area.

Table 1.5 Definition of Archaeological Potential

Archaeological Potential	Archaeological Definition
High	Anomalies considered to map material of archaeological interest such as wreck or aviation crash sites, buried and confirmed palaeolandscapes and their margins. As per EN-1 (March 2023), "there will be archaeological interest in a heritage asset if it holds, or may potentially hold, evidence of past human activity worthy of expert investigation at some point".
Medium	Anomalies that consist of defined structural outlines or coherent material distributions with strong backscatter, or clearly upstanding objects with shadow, or pronounced scour features; or a combination of these, interpreted as of possible archaeological interest but where further investigation would be required for more detailed interpretation.
Low	Anomalies considered to be of anthropogenic origin but likely related to modern activity with little or no archaeological significance such as modern debris, ropes, chains or fishing gear.

168. Offshore geotechnical surveys prior to construction will be undertaken following early discussions with Historic England. Areas with geoarchaeological potential that may be affected by development activities will be targeted during geotechnical sampling campaigns and the results of the geoarchaeological assessment will be presented in phased geoarchaeological reports inclusive of publication. The published results will aim to enhance the palaeogeographic knowledge and understanding of the area.

169. Specialist archaeological input will be incorporated, as a proactive measure, into the survey methodologies and techniques through to the identification of anomalies and subsequent avoidance strategies and mitigation.

170. The marine archaeology study area is of known importance for historic military and merchant activity, as well as for geoarchaeology. Any features assessed as having potential archaeological interest or significance will be avoided where possible, or where impacts cannot be avoided will be further investigated and risk of impacts managed. Any locations of potential geoarchaeological interest or significance that may be affected by development activities will be targeted, where possible, during geotechnical works to contribute to the characterisation of the palaeoenvironment and deposit model. Additional archaeologically specific cores will also be collected.

Archaeological Post-Construction Monitoring Plan

171. An archaeological post-construction monitoring plan will be produced within the Agreed Outline Marine WSI (the iteration of this Outline Marine WSI which will be developed post-consent and pre-construction). The archaeological post-construction monitoring plan should focus on areas of identified archaeological interest and outline proposed measures to avoid or monitor such sites. It will also outline how any archaeological post-construction monitoring campaigns will collect, archaeologically assess, and report on changes to marine archaeological and cultural heritage receptor that may have occurred during the construction phase.

1.7.2 The Implementation of Mitigation Measures

Mitigation for Known Wrecks and Obstructions

172. There are ~~56~~ 49 wrecks and obstructions recorded in the UKHO, NRHE and Lincolnshire HER dataset within the marine archaeology study area. Within these records there are ~~20~~ 17 LIVE wrecks (three of which correspond with geophysical anomalies in the data assessed to date). The archaeological significance of these known wrecks is assessed based on the criteria set out in the Scheduled Monuments & Nationally Important but Non-Scheduled Monuments guidance (DCMS, 2013) and detailed in Volume 2, Appendix 13.1.

173. Precautionary AEZs are recommended for all known Historic Environment receptors, as illustrated in Figure 2. Of the ~~56~~ 49 recorded wrecks and obstructions (Section 1.6), ~~17~~ 16 are within the array area. Records that correspond with anomalies identified in the geophysical data and have been assigned 100m AEZs (further detailed in Annex A and Annex B of Volume 2, Appendix 13.1). The records for wrecks, fouls and obstructions not identified in the geophysical data are covered by a precautionary 50m AEZ based around their recorded location (Table 1.6) (further detailed in Annex A and Annex B of Volume 2, Appendix 13.1).

174. There are presently no identified sites no designated Historic Environment receptors such as could be subject to the provisions of the *Protection of Wrecks Act* 1973 or the *Protection of Military Remains Act* 1986 within the marine archaeology study area.

175. The commitment to avoid all known Historic Environment receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated will ensure preservation *in situ*, which is in keeping with current best practice.

176. Where Historic Environment receptors cannot be preserved in situ, justification for continued archaeological work including potential impacts will be clearly outlined in the relevant MSs produced ahead of any archaeological works and following agreement with Historic England.

Table 1.6 AEZs for Known Wrecks and Obstructions within the Marine Archaeology Study Area

Classification	UKHO ID	Name	Status	Location within MASA	AEZ (m)
Obstruction	9424	Obstruction	LIVE	Array Area	100
Wreck	9426	Unknown	LIVE	Array Area	100
Obstruction	9429	Obstruction	LIVE	Array Area	100
Wreck	9440	Unknown	LIVE	Array Area	100
Obstruction	9441	Obstruction	LIVE	Array Area	100
Obstruction	9443	Obstruction	LIVE	Array Area	100
Obstruction	9445	Obstruction	LIVE	Array Area	100
Obstruction	9482	Obstruction	LIVE	Array Area	100
Obstruction	9483	Obstruction	LIVE	Array Area	100
Wreck	9339	SV Excelsior	DEAD	Array Area	50
Wreck	9341	SV Dauntless (possibly)	LIVE	Array Area	50
Wreck	9417	MV Basto	LIVE	Array Area	50
Obstruction	9427	Obstruction	LIVE	Array Area	50
Obstruction	9442	Obstruction	LIVE	Array Area	50
Foul	9536	Foul Ground	LIVE	Array Area	50
Wreck	8630	SS Konstantinos Hadjipateras	LIVE	Offshore ECC	100
Wreck	8635	SS Capitaine Edmond Laborie	LIVE	Offshore ECC	100
Wreck	92149	Unknown	UNKNOWN	Offshore ECC	100
Wreck	93354	Unknown	UNKNOWN	Offshore ECC	100
Wreck	93355	Unknown	UNKNOWN	Offshore ECC	100
Wreck	93877	Unknown	UNKNOWN	Offshore ECC	100
Wreck	8617	MV Arduity	LIVE	Offshore ECC	50
Wreck	8633	SS Costanza	DEAD	Offshore ECC	50
~~Wreck~~	~~8998~~	~~Unknown~~	~~LIVE~~	~~Offshore ECC~~	~~50~~
Wreck	8999	Unknown	LIVE	Offshore ECC	50
Wreck	9093	Unknown	DEAD	Offshore ECC	50
Obstruction	9162	Obstruction	LIVE	Offshore ECC	50
~~Wreck~~	~~94444~~	~~Unknown~~	~~UNKNOWN~~	~~Offshore ECC~~	~~50~~

Classification	UKHO ID	Name	Status	Location within MASA	AEZ (m)
Wreck	9324	La Combattante (possibly)	LIVE	1km buffer	100
Wreck	85316	Unknown	UNKNOWN	1km buffer	100
Wreck	93359	Unknown	UNKNOWN	1km buffer	100
~~Wreck~~	~~93634~~	~~Unknown~~	~~UNKNOWN~~	~~1km buffer~~	~~100~~
Wreck	93878	Unknown	UNKNOWN	1km buffer	100
Wreck	8614	Unknown	LIVE	1km buffer	50
Wreck	8626	SS Argo	LIVE	1km buffer	50
Wreck	8629	Unknown	LIVE	1km buffer	50
Wreck	8632	SS Fane	LIVE	1km buffer	50
Wreck	8636	MFV Lindy Sue	DEAD	1km buffer	50
~~Wreck~~	~~8638~~	~~Unknown~~	~~LIVE~~	~~1km buffer~~	~~50~~
~~Wreck~~	~~8639~~	~~Unknown~~	~~LIVE~~	~~1km buffer~~	~~50~~
Wreck	8646	SS Carrier	DEAD	1km buffer	50
Obstruction	9163	Unknown	DEAD	1km buffer	50
Wreck	9171	Unknown	LIVE	1km buffer	50
Wreck	9314	Unknown	LIVE	1km buffer	50
Obstruction	9316	Obstruction	DEAD	1km buffer	50
Wreck	9320	SS Chatwood (possibly)	LIVE	1km buffer	50
Foul	9325	Foul Ground	LIVE	1km buffer	50
Obstruction	9444	Obstruction	LIVE	1km buffer	50
Wreck	9502	Unknown	LIVE	1km buffer	50
Wreck	81902	Unknown	UNKNOWN	1km buffer	50
Wreck	92757	Unknown	UNKNOWN	1km buffer	50

Mitigation For Unlocated Marine Archaeological and Cultural Heritage Receptor

177. It is possible that offshore renewable developments will subsequently identify previously unknown and unlocated sites of archaeological interest which should be considered as heritage assets within the marine archaeology study area. Unlocated Historic Environment receptors are of unknown archaeological potential and heritage significance but might still be impacted by indirect or direct impact caused by Project activities. In recent years large offshore renewable developments have located several previously unknown and unlocated sites of High archaeological significance within marine archaeology study area, even after construction.

178. Further geophysical and geotechnical investigations followed by archaeological campaigns are essential to developing effective mitigation within the array area and Offshore ECC. The combination of geophysical and geotechnical surveys completed to a standard where they can be archaeologically assessed and with archaeological objectives work effectively by increasing the likelihood of Historic Environment receptors becoming identified and ultimately protected. Detailed archaeological assessments aim to ensure that to the extent possible, areas of impact are clear of Historic Environment receptors ahead of any intrusive works or further mitigation and archaeological campaigns are taken.

179. Avoidance is considered the most effective form of protection, as per NPS EN-3 (NPS, 2023)). In the case of previously unlocated Historic Environment receptors being identified during survey or construction works, will be established via the use of the PAD reporting until further investigation can be undertaken to determine the character of the discovery. The Protocol makes provision for the implementation of TEZs around areas of possible archaeological interest, for prompt advice, and, if necessary for archaeological inspection of important features through further archaeological assessment that can take place in the form of further geophysical or ROV surveys prior to further construction in the vicinity.

180. These TEZs may be lifted following further investigation and in consultation with the Archaeological Curator(s) if the features are determined to be non-archaeological, or they may form the basis of an AEZ, to avoid further disturbance long-term.

181. The Project specific Outline PAD will be applied during any work where unknown archaeology may be encountered and is designed to operate when it is not practical or safe for an archaeologist to be present. The Outline PAD does not replace the process of archaeological assessment and evaluation but rather acts as a safety net in the event of unexpected discoveries during the course of works.

182. Implementation of the Outline PAD helps to ensure that any adverse effects of the Project on sites, features or objects of potential archaeological significance encountered and/or recovered during Project works are reduced by establishing rapid communication between key stakeholders, who are then able to implement appropriate mitigation.

Mitigation for Geophysical Anomalies of Archaeological Potential

183. The combined geophysical data assessments undertaken to identify material of archaeological potential identified anomalies of Low, Medium, and High archaeological potential within the marine archaeology study area as detailed in Table 1.5.

184. While generally no active conservation strategy is proposed, anomalies assessed as being of Medium or High archaeological potential are probably of anthropogenic origin and/or archaeological significance and have therefore been assigned AEZs based on their archaeological potential, their archaeological significance and their size as understood from the geophysical data assessment. A gazetteer of the anomalies identified as High and Medium potential and illustrations of High potential anomalies can be found in Annex A of Volume 2, Appendix 13.1.

185. Preservation *in situ* is ensured by the commitment to avoid all known Historic Environment receptors and to further investigate areas of impacts increasing the potential for unknown receptors to be located.

186. Where items are being removed from the seabed, conservation strategies will be clearly outlined in the relevant MSs produced and submitted to the Archaeological Curator(s) ahead of any archaeological works.

187. Anomalies of low archaeological potential and magnetic anomalies <100 nanotesla (nT) without correlating seabed features have not been assigned AEZs due to the uncertainty of their archaeological potential. Further investigation of these sites will occur during future survey works, where possible, and avoidance of these features by micrositing where possible is recommended as best practise if there is potential for them to be impacted by the Project.

188. It is possible that geophysical anomalies could represent material from wreck sites or other Historic Environment receptors of significance but are not currently identifiable as such. If these anomalies are likely to be impacted, they should be archaeologically assessed on a case-by-case basis during the future survey works, in agreement with the Archaeological Curator(s) in order to establish their archaeological potential. If archaeological potential can be confirmed, an AEZ may be put in place to protect the heritage asset. Further assessment may be in the form of investigation undertaken in conjunction with ROV or UXO surveys when an archaeologist will be present on the vessel.

189. Works during the construction, operation and decommissioning phases of the Project should implement the Project specific Outline PAD (Appendices Annex A) and any objects of archaeological potential should be reported, should an archaeologist not be present.

190. Within the array area and associated 1km buffer 23 High potential anomalies have been assigned 100m AEZs (MA003 and MA004 share an AEZ), and 168 Medium potential anomalies have been assigned 50m AEZs (145 of these are magnetic anomalies of over 100nT that do not correspond with any other geophysical data records).

191. While the magnetometer data in isolation cannot confirm if the object detected is of archaeological potential, a precautionary approach of avoidance is recommended for these 168 targets of 50m. All areas on impact will be further investigated as per mitigation measures outlined in Section 1.7. After such survey, the anomaly be removed from the list of constraints if proved not of archaeological potential or be given an updated exclusion zone.

Mitigation for Deposits of Geoarchaeological Potential

192. The baseline review, supported by the geophysical survey data assessment, summarised in Section 1.6, and detailed in Volume 2, Appendix 13.1, has provided information on the location of palaeolandscapes and areas of geoarchaeological potential within the marine archaeology study area.

193. It is recognised that all phases of the Project may cause direct impact to deposits which have the potential to be of geoarchaeological interest, however, the impact to the mentioned sediments will be restricted to the required burial and penetration depths, as outlined in the Maximum Design Scenario presented in Tabe 13.8, Volume 1, Chapter 13.

194. Any potential impact will be offset by the collection and archaeological assessment of geotechnical data, including dedicated cores for archaeological analysis. The geoarchaeological assessment will be undertaken using a phased approach to assessment and analysis of the collected geotechnical data resulting in Project reports and a deposit model as prescribed in COWRIE guidance (2011) and further outlined in Section 1.6. This collection of geotechnical data and its subsequent geoarchaeological analysis will be used to contribute to seabed mapping and modelling of submerged prehistoric landscapes, resulting in a greater understanding of the prehistoric past and the use and habitation of submerged former terrestrial landscapes.

195. Specific archaeological sample locations will be recommended in addition to the geotechnical samples collected for the overarching geotechnical campaign will be outlined in a specific MS.

Mitigation for Impacts Post-Construction

196. To confirm the effectiveness of the established AEZs and other recommended mitigation, and the stability of Historic Environment receptors, it is expected that some Historic Environment receptors identified during the pre-construction surveys will require further monitoring.

197. Priority will be given to features and locations of High archaeological potential and/or significance located in proximity to installed infrastructure, particularly where archaeological potential and/or significance has been established through direct observation.

198. In addition to wrecks or wreck assemblages, attention will also be given to a range of feature types including discrete objects (historic anchors, aircraft components), magnetic anomalies with some degree of surface expression, possible debris, and areas of seabed disturbance.

199. The archaeological post-construction monitoring plan will be developed and submitted to the relevant Archaeological Curator(s) and will outline the monitoring methodology and reporting structure.

Mitigation for Unexpected Archaeological Discoveries

200. Mitigation for unexpected archaeological discoveries is considered under the recommended archaeological objectives for geophysical and geotechnical surveys, and their subsequent archaeological review.

201. Additionally, any finds believed to be of archaeological potential that are identified and/or recovered by any operating vessels during construction, O&M or decommissioning phases and where an archaeologist is not present will be reported using the methodology outlined in the Project specific Outline PAD (Annex A)

202. The Project specific Outline PAD (Annex A) has been produced in reference to the TCE guidance (2014). The Outline PAD aims to mitigate impact on the historic environment by enabling people working offshore to report their finds in an effective and convenient manner.

203. The Outline PAD anticipates discoveries being made by Project staff who report to a Site Champion (potentially the Client Representative on the vessel or another manager appointed by the contractor), who then reports to the Project's nominated person to coordinate implementation of the Outline PAD (the Nominated Contact) (see Section 1.2).

204. All discoveries of archaeological material must be reported by the Project, in accordance with the communication plan, to the Nominated Contact, who will then inform the Retained Archaeologist. If the find constitutes 'wreck' within the terms of the Merchant Shipping Act 1995 then the Retained Archaeologist will produce a report to the Receiver of Wreck. Full contact details for all relevant parties are included in (Annex A) of this document.

205. Any finds discovered will be safeguarded for instance, kept in water in a clean, covered container. It is not recommended to remove concretion, clean the finds, or in any other way interfere with them.

206. Following the application of the embedded environmental measures outlined above, there may be other discoveries during offshore works or geophysical data assessments that have not been previously characterised through the archaeological assessments. Any discoveries that are of archaeological potential may require TEZs to be established.

207. TEZs must be respected during all activities associated with the windfarm construction, O&M, and decommissioning phases. Measures will be put in place to communicate the position of TEZs to all contractors and to monitor compliance with the TEZs during construction, O&M, and decommissioning. As with AEZs, TEZs must also consider that the use of anchors and lines, which could impact upstanding features, are adequately considered in the planning of operations.

208. Following an assessment of the available data for the discovery, ground truthing or new information, the Retained Archaeologist will (in agreement with the curator, Historic England), provide advice on whether the TEZ may be lifted or will form the basis of a permanent AEZ and become applicable for all activities associated with the Project across all phases of the Project.

209. Further archaeological works required as a result of the discovery could include survey, recording and/ or excavation, to any depth likely to be impacted, prior to the impact occurring and will be detailed in a specific MS.

1.7.3 Further Archaeological Works

210. There are several recommended mitigation measures related to the various construction, O&M, and decommissioning activities. The geophysical and geotechnical surveys can be undertaken prior to construction, other actions linked to future activities, such as AEZs and the archaeological post-construction monitoring plan, which will ensure that potential impacts during the decommissioning phase will be mitigated.

211. Future planned works which may have an impact on potential Historic Environment receptors and where archaeological assessment will be undertaken will require detailed MSs to be agreed by the relevant curator/s as per Section 1.2 in this Outline Marine WSI which will be used to form the Draft and final Agreed Marine WSIs.

212. Following TCE guidance (2021) this Outline Marine WSI forms the framework for the assumed mitigation will be submitted with the DCO application. Prior to pre-commencement surveys, a Outline Marine WSI based on this document, to be agreed with the Regulator prior to surveys taking place, will ensure archaeological objectives continue to be considered.

213. Should consent be obtained, a final Agreed Marine WSI, based on the Outline Marine WSI, will be submitted. This final Agreed Marine WSI will set out the overarching approach to survey and archaeological investigation agreed by the Regulator prior to pre-construction works commencing; outline when supporting archaeological methodologies will be required and to who and how they are to be submitted for approval prior to work commencing. The datasets in the final Agreed Marine WSI will be updated during the construction phase with results from pre-construction surveys.

214. Archaeological works may be undertaken as separate investigations depending on the timing of work or as part of other Project campaigns. Reports generated from each site investigation or survey will be made available between relevant contractors as soon as they become available.

215. Any future surveys that generate relevant data (both geophysical and geotechnical) will be reviewed. Generally, each phase will provide incrementally greater resolution and more complete coverage as the final scheme footprint becomes more defined.

216. Further archaeological works, including documents and surveys are summarised in Table 1.7, as per TCE guidance (2021).

Table 1.7 Further Archaeological Works

Archaeological assessment/document	Summary	Timescale
Draft Marine WSI	Pre-commencement survey Draft WSI (based on the Outline WSI) to be agreed with the Regulator prior to surveys taking place to ensure archaeological objectives are taken into account (pre-consent).	To be submitted post DCO application.
PAD training	Training for all relevant Project staff and contractors for what to do and who to contact in the event of the discovery of unexpected or unidentified archaeology.	Ongoing, the next training session is to occur prior to geotechnical surveys scheduled for 2024
Geotechnical campaign	Archaeological core sample locations will be recommended based on desk-based and Sub-Bottom Profiler data to further assess the palaeoarchaeological potential of the marine archaeology study area. A phased approach to core sampling will be undertaken to further assess where sites of palaeoarchaeological importance are located and what can be determined from the sediments they contain. All survey works will be preceded by a specific MS and include specific research questions and specific details of methodologies.	To occur post consent submission.
Archaeological watching briefs	If deemed necessary, a watching brief to monitor sites of potential archaeological interest and/or significance. This would be preceded by a specific MS.	To occur post consent
Final Agreed Marine WSI	Final Agreed WSI (based on the Outline or Draft WSI) to set out overarching approach to survey and archaeological investigations agreed by Regulator prior to pre-construction works commencing (post-consent). Outlines when supporting archaeological methodologies will be required, and to who and how they are to be submitted for approval prior to work commencing.	To be finalised following ES and stakeholder comments. To be submitted as per dML drafting.
Construction MS	A MS to set out archaeological mitigation during the construction phase following any updates to the final Agreed Marine WSI to include results from pre-construction surveys.	To occur post consent
Archaeological post-construction monitoring plan document	An outline for the archaeological post-construction monitoring plan to understand the potential changes to known archaeological sites and ensure appropriate mitigation can be established.	To occur post consent
Post-construction and O&M MSs	Specific MSs for post-construction monitoring and O&M activities.	To occur post consent

1.8 Responsibilities and Communication

1.8.1 The Applicant

217. The implementation of the final Agreed WSI document will be the responsibility of the Applicant.

218. Consultations with Historic England will be maintained throughout the mitigation works. Historic England act as a statutory consultee to the Marine Management Organisation (MMO) for the English area of the UK Territorial Sea to ensure the protection of the environment including sites of historic or archaeological interest during licensable activities. Historic England Coastal & Marine planning offer advice on relevant licensable activities within the adjacent UK marine area (200 nautical miles offshore or the median line with an adjacent state) with the need to protect the environment, inclusive of any site that is comprised of remains of any vessel, aircraft or marine structure of historic or archaeological interest (https://historicengland.org.uk/advice/planning/marine-planning/marine-historic-environment/).

219. The owners' rights and responsibilities, in relation to the seabed, differ from the onshore and terrestrial historic environment because within the marine zone a marine archaeological and cultural heritage receptor will either be reported to and reconciled by the Receiver of Wreck (in the case of a wreck or wreck material being discovered) if there is any attempt to recover it, or where the marine archaeological and cultural heritage receptor is not a wreck, it is considered as being owned by the landowner (in most cases TCE). In all cases, if the disturbance of marine archaeological and cultural heritage receptor is planned, their importance must be determined, and appropriate mitigation must be established.

220. Curatorial responsibility for the aspects of the Project landward of MLWS resides with the terrestrial local authorities which in this case is the Lincolnshire County Council.

221. Communication with the Archaeological Curator(s) is the responsibility of the Applicant.

222. The Applicant:

- Will engage a Retained Archaeologist to implement the final Agreed WSI;
- May engage one or more archaeological contractors to deliver the mitigation measures set out within this Outline Marine WSI;
- Will advise the Retained Archaeologist of all requirements or responsibilities related to communication with curators and contractors, or in relation to scheme-wide documentation such as Environmental Management Plans; and
- Is responsible for all communication with contractors engaged for construction activities.

1.8.2 Retained Archaeologist/Archaeological Contractors

223. The Retained Archaeologist will report to the Applicant and will provide advice to the Applicant to inform communication with the curators and contractors in relation to implementation of the final Agreed WSI.

224. The responsibilities of the Retained Archaeologist are as follow:

- Maintaining, reviewing and updating the WSIs (Outline, Draft and final Agreed), as required;
- Advising the Applicant's contractor(s) as to which activities warrant archaeological involvement;
- Advising the Applicant's contractor(s) in the course of evaluating scope of work specifications on their capacity to meet archaeological requirements;
- Advising the Applicant on the necessary interaction with third parties with archaeological interests, including the Archaeological Curator(s);
- Advising the Applicant on the implementation of generic archaeological requirements applicable to all construction activities;
- Advising the Applicant on MSs for archaeological investigations (which will be submitted to the curators);
- Advise the Applicant on survey specifications required for appropriate archaeological analysis so that archaeological considerations are reflected in the survey design for both archaeological and non-archaeological surveys;
- Implementing and monitoring the PAD;
- Monitoring the work of and liaising with the archaeological contractor(s) where this is not the Retained Archaeologist;
- Reviewing available geophysical and geotechnical data and/or reports that can inform the location of AEZs;
- Monitoring the preparation and submission of archaeological reports as appropriate and making them available to the Archaeological Curator(s);
- Ensuring provision for the management of the Applicant's material archive in consultation with an appropriate museum or suitable repository;
- Monitoring the preparation and submission of an archaeological post-construction monitoring plan as appropriate and making it available to the Archaeological Curator(s); and
- Advising the Applicant on final arrangements for analysis, archive deposition, publication and popular dissemination.

225. The archaeological documents submitted up to the current stage of Project are described in Table 1.1.

1.8.3 Archaeological Curators

226. As required, MSs, reports and deliverables outlining AEZs will be submitted to the Archaeological Curator(s) by the Applicant. A MS or other documents related to scheme-specific programming will be highlighted to the curators as requiring their agreement/acceptance within a particular timescale (no less than 21 working days). Construction Contractors

227. The construction contractors will report to the Applicant and will further:

- Familiarise themselves with the applicable requirements of the final Agreed WSI and make it available to their staff;
- Obey legal obligations in respect of 'wreck' and 'treasure' under the *Merchant Shipping Act* 1995 and the *Treasure Act* 1996 respectively;
- Respect constraint maps, AEZs and TEZs;
- Assist and afford access to archaeologists employed by the Applicant;
- Inform the Retained Archaeologist of any environmental constraints or matters relating to health, safety, and welfare of which they are aware that is relevant to the archaeologists' activities; and
- Implement the Project-specific Outline PAD and facilitate training for relevant staff.

228. All legal obligations as outlined in 8.5.42 must be conveyed to the contractor.

1.9 Arrangements for Review of the WSI

229. This Outline Marine WSI has presented mitigation measures based on the archaeological assessments undertaken in preparation of the Project's ES to accompany the DCO application. This document forms the framework for mitigation which will inform the Draft Marine WSI should any pre-commencement surveys take place pre-consent following review and consultation with the relevant stakeholders, final Agreed Marine WSI, which will be developed post-consent (Crown Estate, 2021).

230. It is expected that the dML will include a condition requiring that a Outline Marine WSI is in place and that licensed activities, or any phase of those activities, must not commence unless a Outline Marine WSI developed in consultation with the statutory historic body has been submitted to and approved by the MMO.

231. The methodological frameworks for the archaeological analysis and interpretation of survey data are set out in this Outline Marine WSI (submitted alongside the DCO application) but may be reviewed in consultation with the Archaeological Curator(s) prior to the Draft Marine WSI (should any pre-commencement surveys take place, pre-consent) to best ensure archaeological objectives are considered (Crown Estate, 2021).

232. Following indicative timeline set out in TCE guidance (2021), the WSI will undergo revisions throughout the different phases of the Project:

- Outline Marine WSI produced pre-consent should inform a Draft Marine WSI to be implemented should any pre-commencement surveys take place pre-consent and should form the framework for mitigation delivery in accordance with any Development Consent Order (including Deemed Marine Licences).
- Post-consent, the formally agreed final Agreed Marine WSI will be prepared prior to commencement of relevant marine licensed activities and will set out the details of the overarching approach to survey and archaeological investigations and when supporting archaeological methodologies will be required.

233. Prior to pre-commencement surveys, the Outline Marine WSI will need to be refined and updated, for approval by the MMO in consultation with Historic England, once the final distribution footprint of turbines (including quantity and spacing), OSS and other platform locations, and Offshore ECC routes etc are determined, as well as the identification of new marine archaeological and cultural heritage receptor or changed understanding of existing receptors. The revision will constitute a final Agreed Marine WSI to be prepared prior to commencement of relevant licensed activities, to which detailed MSs will be appended.

234. MSs will be produced and submitted to the Archaeological Curator(s) for all planned archaeological works and include provision for the monitoring of progress of the investigations.

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Appendices

Annex A

1.11 Introduction

235. The Protocol for Archaeological Discoveries: Offshore Renewables Projects (PAD) is a system developed for monitoring and reporting unexpected and incidental archaeological and historical finds, sites, object or deposits where an archaeologist is not present on site or immediately available. This Project-specific Outline PAD document should be used at all stages of the development process and should be considered as a safety net and not as a replacement for other archaeological mitigation strategies.

236. This Outline PAD for Outer Dowsing Offshore Wind (ODOW) ("the Project") summarises the roles and responsibilities of GT R4 Limited (trading as Outer Dowsing Offshore Wind) ("the Applicant") and relevant contractors and contains contact details for the Applicant's reporting chain.

237. This Outline PAD has been developed based on the Protocol for Archaeological Discoveries Offshore Renewables Projects (The Crown Estate, 2014).

1.11.1 Aims and Objectives

238. The aim of this Outline PAD is to set out the proposed approach to mitigating the impact of the Project on the historic environment by implementing a Project-specific protocol for unexpected archaeological discoveries if encountered during the course of site investigations or construction activities.

239. The key objectives for this protocol are to:

- Set out procedures to be followed in order to avoid impacts on unexpected archaeological objects encountered during the course of the development programme; and
- Ensure that all contractors are familiar with the requirements of the protocol through the provision of awareness training and guidance on how to implement the protocol for on-site and office-based staff. Such training will focus on identifying, recording, and reporting archaeologically significant features and material that may be encountered during development, operation and decommissioning of the windfarm.

1.11.2 Relevant Legislation

240. Relevant legislation is outline below:

- The *Burial Act* 1857 - requires a license to be granted prior to the removal of human remains from deliberately deposited contexts;
- The *Protection of Military Remains* Act 1986 – protects the resting places of military personnel from unauthorised disturbance. It allows the Ministry of Defence (MoD) to protect vessels and aircraft that were in military service when they were lost or wrecked;

- The *Treasure Act* 1996 – supplemented by the Treasure (Designation) Order 2002. Finders of gold and silver objects (over 300 years old) and some base metal assemblages (prehistoric) as defined in the Act are required to report such finds by contacting the Coroner and delivering the items for hand over as per the Coroners' instructions;
- The *Protection of Wrecks* Act 1973 – under this Act shipwrecks and wreckage of historical, archaeological, or artistic importance within United Kingdom (UK) territorial waters can be protected by way of designation. Once a wreck has been designated it is an offence to carry out certain activities on or around the site without a license;
- The *Merchant Shipping Act* 1995 – if any material is recovered which falls within the definition of 'wreck' the Receiver of Wreck has to be notified and will seek to identify the original owner so that it can be claimed; and
- The *Ancient Monuments and Archaeological Areas Act* 1979 – monuments that are of national importance within UK territorial waters can be protected by being added to the schedule of monuments protected under this Act. It is an offence to damage or carry out a range of specified activities on such a 'scheduled monument' unless authorised to do so.

1.12 Roles and Responsibilities

241. Appointed personnel as detailed in the Final PAD will be responsible for the implementation of the PAD.

242. To ensure that the PAD is being implemented, personnel assigned a role will be required to confirm that they are willing and competent to undertake the tasks required. All relevant personnel will be provided with an introductory presentation outlining the tasks and procedures involved for successful implementation.

243. The appointments will be made by the Applicant in agreement with the Retained Archaeologist. The PAD document will be circulated among relevant staff and if any changes to named personnel should occur, the document will be immediately updated and re-circulated.

1.12.1 Curators

244. Historic England, Coastal and Marine Planning will be the Archaeological Curator responsible for heritage matters seaward of MLWS, and Lincolnshire County Council landward of MLWS. Historic England will be kept informed of any archaeological finds in relation to the Project. For intertidal matters, the Historic England Regional Science Advisor and the relevant Local Authority Archaeologist will be contacted.

1.12.2 Retained Archaeologists

245. The Retained Archaeologist, when appointed by the Applicant, will act on behalf of the Applicant as liaison between the Nominated Contact and the Curators (see Plate 3). If a Retained Archaeologist is **not** appointed, advice can be sought from the PAD Implementation Service provided by Wessex Archaeology at protocol@wessexarch.co.uk.

- The Retained Archaeologist will:
- Advice on Temporary Exclusion Zones (TEZs) and mitigation strategies;

- Advise on the need for a Watching Brief;
- Advise on material conservation, identification, and character of finds;
- Advise on immediate actions to be taken in respect for the find;
- Advise on resolving ownership issues; and
- Liaise with the relevant local authorities, museums, and curators with regard to reported finds.

1.12.3 Nominated Contact

246. The Nominated Contact will be the Environment Manager and/or Principal Contractor within the Applicant's Project team. The Nominated Contact will be responsible for all communications regarding archaeology recovered during the development of the Project. The Nominated Contact will take part in the introductory training session and, if the role is passed on to another member of staff, then the new Nominated Contact will ensure that they receive suitable training to undertake the responsibilities outlined in the PAD.

247. The Nominated Contact will:

- Take part in PAD training;
- Keep updated records of the Retained Archaeologist and Curator contact details;
- Designate Site Champion(s) and liaise with the Site Champion(s);
- Notify the Retained Archaeologist of any finds, sites, objects, or deposits as soon as possible;
- Ensure that the records produced by the Site Champion are correct and pass all information on to the Retained Archaeologist;
- If necessary, ensure that a TEZ is established and maintained until further advice is received from the Retained Archaeologist and/or the Curator; and
- Make finds available for inspection by the Retained Archaeologist and/or the Curator.

1.12.4 Site Champion

248. One Site Champion on each vessel will be appointed by the Nominated Contact. The Site Champion will:

- Take part in PAD training;
- Act as the first point of contact for technical staff and crew working on the vessel;
- Liaise with the Nominated Contact;
- Ensure that no operations take place where a feature, anomaly or artefact has been located until the Nominated Contact and Retained Archaeologist have been informed and further advice has been received;
- Examine any deployed equipment to ensure that archaeological material has not been trapped, if relevant;
- Note the occurrence, time, and exact position of any finds in the vessel's log;

- Fill in a Preliminary Record Form;
- Notify the Nominated Contact as soon as possible and pass on all logs, drawings, and photos; and
- Ensure that all finds recovered are stored appropriately in accordance with the training provided.

1.12.5 All Staff

249. Staff on-board vessels that have 'eyes on the seabed' or operate in a supervisory role as well as staff from the onshore facilities at a management level with responsibilities regarding the offshore zone (particularly environmental planning) will be provided with training, where relevant, to ensure that they are aware of the reporting procedures and will report all finds, sites, objects or deposits to their Site Champion. The staff will follow the flowchart presented below in Plate 3 when reporting finds of archaeological potential.

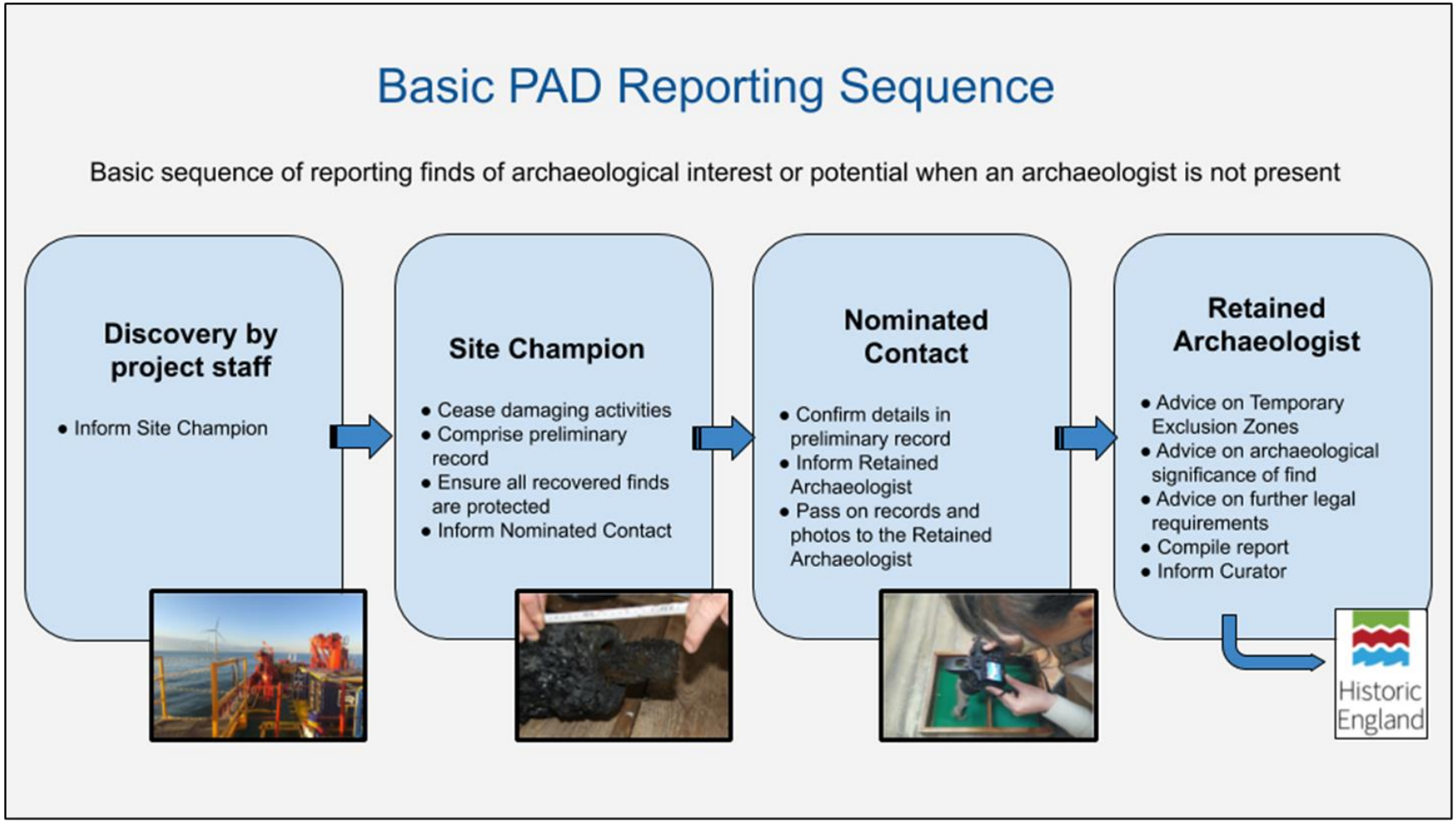

Plate 3: PAD Reporting Sequence

1.13 Archaeological Finds Protocols

1.13.1 Finds Identification

250. Finds and sites can encompass one object or a collection of objects. Table 8.5A.1 outlines a summary of materials that should be reported to the Retained Archaeologist.

Table 8.5A.1: Materials of Archaeological Potential

Material	Report to the Retained Archaeologist	Archaeological Potential
Rubber plastic and modern materials found with aluminium objects	Yes	Potential aircraft. Military aircraft are also subject to legal requirements under the Protection of Military Remains Act 1986
Rubber, plastic, Bakelite and other modern materials	No	n/a
Iron and steel	Yes	Wreck/aircraft or associated debris
Concretions – iron/steel covered by a thick concrete like coating	Yes	Wreck or associated debris
Aluminium, copper, copper alloy (bronze, brass) and precious metals	Yes	Archaeologically important objects
Ordnance (cannonballs, bullets, shells)	Yes	Unexploded Ordnance (UXO) guidance should always take precedence over archaeological requirements
Animal bone, teeth, and tusks	Yes	Prehistoric animals, evidence of transport, butchering and consumption
Human bones	Yes	Human bones are also subject to legal requirements under the Burial Act 1857
Objects made of bone (combs, harpoon points, decorative items)	Yes	Archaeologically important objects
Light coloured wood, or wood that floats easily	No	Unlikely to be of archaeological interest
Roundwood with bark – such as branches	No	Unlikely to be of archaeological interest
Roundwood that has clearly been shaped or made into a point	Yes	Part of a structure
Pieces of wood that have been shaped, jointed, or fixed with wooden pegs, bolts, or nails	Yes	Structure or wreck
Objects made from dark, waterlogged wood (bowls, handles, shafts etc.)	Yes	Archaeologically important objects
Small to medium size stones that are shaped, polished and/or pierced	Yes	Prehistoric objects (axe heads, knife blades) of archaeological importance
Large blocks of stone that have been pierced or shaped	Yes	Anchors or weights of archaeological importance
Large collection of stones in the same area	Yes	Ballast mound or navigational cairn
Pottery	Yes	All fragments possess archaeological potential

Material	Report to the Retained Archaeologist	Archaeological Potential
Bricks with modern proportions and V-shaped hollows ('frogs')	No	n/a
Bricks that are unfrogged, 'small', 'thin' or otherwise unusual	Yes	Archaeologically important objects
Peat (black or brown fibrous soil)	Yes	Likely of geoarchaeological interest

1.13.2 Finds Handling and Conservation Procedures

251. Table 8.5A.2 summarises how the finds or objects, if recovered to the surface should be handled and stored, until passed on to the Retained Archaeologist

252. Here 'wet finds' refers to finds still wet when found; 'dry finds' are finds that have dried out or were found dry.

Table 8.5A.2: Finds Handling Procedures

Wet Finds	Dry Finds
Photograph the find ▪ Focus on the object ▪ One item at a time ▪ Additional close ups of important details	Photograph the find ▪ Focus on the object ▪ One item at a time ▪ Additional close ups of important details
Fill in the Preliminary Record Form.	Fill in the Preliminary Record Form.
Place the finds in separate watertight plastic containers of appropriate size.	Do not put in water
Check the container regularly and top up with water when needed.	Label the container and ensure that associated finds are kept together.
Label the container and ensure that associated finds are kept together.	Do not clean or empty the find.
Do not clean or empty the find.	If the item breaks, do not glue it back together.
If the item breaks, do not glue it back together	Place the container in a dark, cold place.
Place the container in a dark, cold place.	

1.13.3 Preliminary Record Form

253. The reporting form as shown in Table 8.5A.3 is to be used as guidance when reporting a find of archaeological potential. The information can be provided via email and presented in any format used by the contractors.

Table 8.5A.3: Preliminary Record Form

Company Name:
Vessel/Team Name:
Site Name:
Date:
Time of compiling information:
Name of compiler (Site Champion):
Name of finder (if different to above):
Time at which discovery was encountered:
Vessel position at time when anomaly was encountered:

Company Name:
(If on land) Name of vessel from which find originated:
(If on land) Name of area from which find originated:
(If on land) Date on which find was located:
Original position of the anomaly on the seabed, if known:
Notes on likely accuracy of original position stated above (how accurate is the position and is the position the original position or has the material been moved by operations?):
Description of the find:
Apparent size of the find:
Details of any other finds recovered from the same area:
Details of photographs, drawings or other records made of the find:
Details of treatment or storage of find:
Date and time Nominated Contact informed:
General notes:
Signed: Date: