

Rampion 2 Wind Farm

Category 7: Other Documents

Outline Marine Written Scheme of Investigation (tracked)

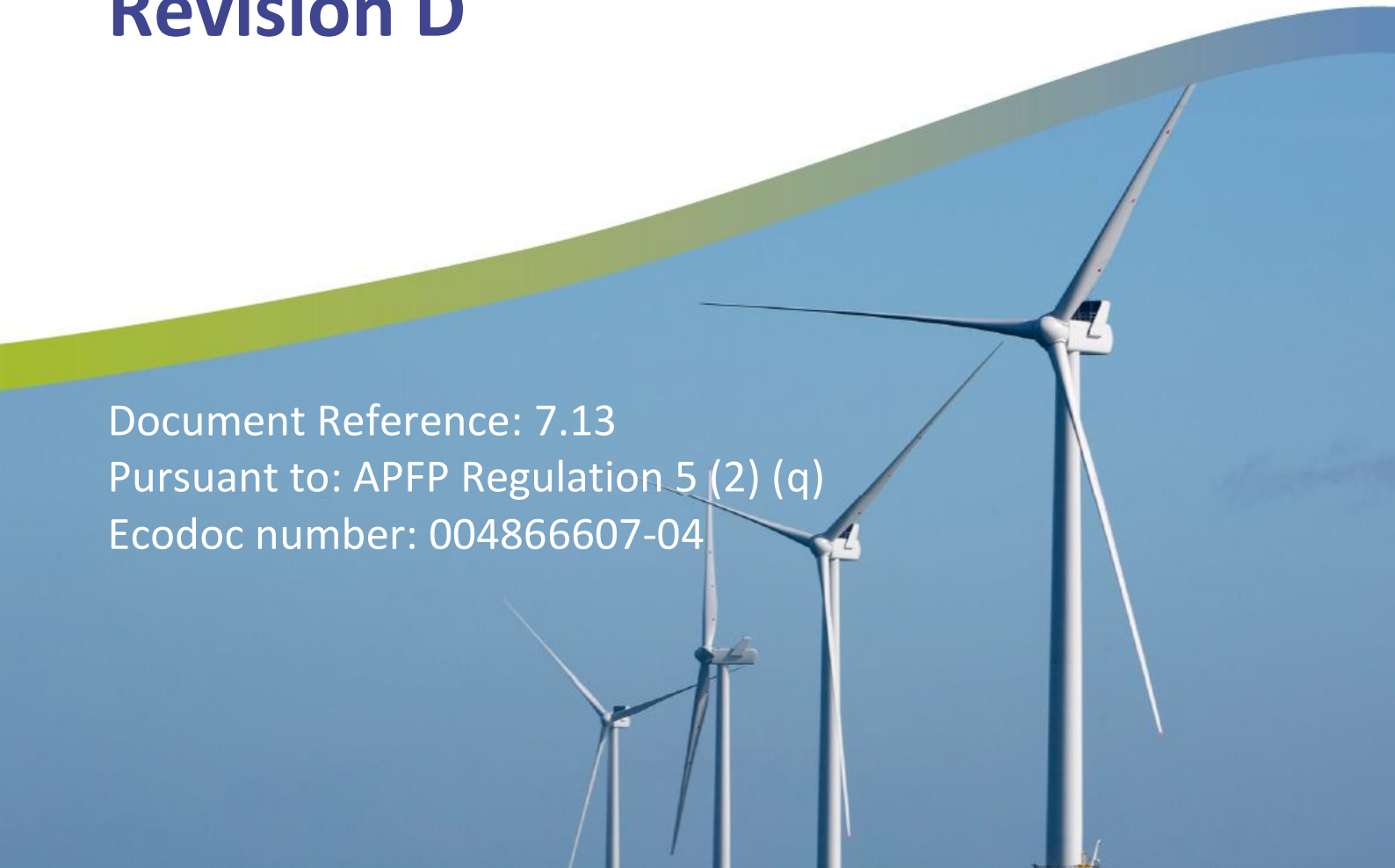
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Executive Summary

This **Outline Marine Written Schemes of Investigation (WSI) (Documenter Reference: 7.13 [REP5-076])** sets out the basis for the archaeological mitigation strategies in relation to the Rampion 2 Offshore Wind Farm (Rampion 2) and accompanies Environmental Statement (ES) **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**).

Within this Outline Marine WSI:

- The roles and responsibilities of the Contractors, Retained Archaeologist and Archaeological Contractors involved in Rampion 2, and the formal lines of communication between the Rampion 2 project team and the Archaeological Curators are set out in **Section 2: Implementation of the Outline Marine WSI** and **Section 7: Scheme of investigation**;
- **Section 3:** Proposed Development details summarises the proposed development details and **Section 4:** Site specific surveys outlines site specific surveys undertaken to date;
- The known and potential archaeological receptors that could be impacted by Rampion 2 are outlined in **Section 5:** Summary of archaeology and cultural heritage baseline, along with the importance of research frameworks in setting objectives to be delivered through work undertaken on behalf of Rampion 2;
- The agreed mitigation and archaeological actions that are to take place in various circumstances are outlined in **Section 6:** Responsibilities and communication;
- Summarised details on methodologies for archaeological actions throughout the lifetime of Rampion 2, which will be further clarified in activity-specific method statements, is outlined in **Section 8**; and
- **Annex A** includes the project specific Protocol for Archaeological Discoveries (PAD), which will be applied during any work where unknown archaeology may be encountered. The 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.

1. Introduction

- 1.1.1 This Outline Marine Written Schemes of Investigation (WSI) sets out the basis for the archaeological mitigation strategies in relation to the Rampion 2 Offshore Wind Farm (Rampion 2) and accompanies Environmental Statement (ES) **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**).

1.2 Introduction

- 1.2.1 Rampion Extension Development Limited (hereafter referred to as 'RED') is proposing to develop Rampion 2 which will be located approximately 13km to 25km offshore, in the English Channel in the south of England, adjacent to the existing Rampion Offshore Wind Farm (for ease of reference hereafter referred to as Rampion 1).
- 1.2.2 This Outline Marine WSI forms an umbrella document, for survey, investigation and assessment relevant to marine archaeology and will be supported by activity-specific method statements as required in the Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects guidance (The Crown Estate, 2021). The framework for archaeological mitigation strategies for Rampion 2 is outlined in **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**).
- 1.2.3 This document has been structured to consider required mitigation and offsetting works (further detailed in **Section 6**) within the marine archaeology study area (as defined in **Section 1.3: Marine archaeology** -and illustrated in **Figure 1-1**, located in this document p72) through archaeological actions in relation to the following offshore phases and does not consider any area of the development landward of Mean High Water Springs (MHWS) (this area landward of MHWS is covered in **Chapter 25: Historic environment, Volume 2** of the ES (**Document Reference: 6.2.25 [REP4-024]**) and its associated appendices);
- pre-construction:
 - ▶ survey and site investigations; and
 - ▶ seabed preparation.
 - construction:
 - ▶ Horizontal Directional Drill (HDD) ducts and exit pits;
 - ▶ Wind Turbine Generator (WTG) foundation and turbine installation, including scour protection;
 - ▶ installation of, inter-connector, array cables and export cables, including rock protection;
 - ▶ installation of offshore substations, including scour protection;
 - ▶ site preparations, including boulder and sand-wave clearance; and

- ▶ associated vessel works – jack-up vessels, anchorage, etc.
 - operation and maintenance:
 - ▶ presence of, interconnector, array cables and export cables;
 - ▶ presence of offshore substations;
 - ▶ presence of WTG foundations;
 - ▶ cable, substation, and WTG foundation site visits, maintenance, and repair activities
 - ▶ maintenance and repairs of cables and additional cable protection measures; and
 - ▶ associated vessel works – jack-up vessels, anchorage, etc.
 - decommissioning:
 - ▶ removal of foundations;
 - ▶ removal of cables; and
 - ▶ associated vessel works – jack-up vessels, anchorage, etc.
- 1.2.4 This document further presents expected impacts, recommended archaeological mitigation methodologies and actions for potential works within the marine environment.
- 1.2.5 Each phase of work may require a more detailed method statement which will be prepared by appropriately qualified professionals and submitted to Archaeological Curators.
- 1.2.6 The final Marine WSI will form the basis of agreement between RED, its contractors, and relevant regulators.
- 1.2.7 This Outline Marine WSI has been compiled by Maritime Archaeology to accompany **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**) and should be read in conjunction with **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).

1.3 Marine archaeology Study Area

- 1.3.1 The marine archaeology study area is defined as the offshore part of the ES Assessment Boundary area up to MHWS and surrounded by a 2km buffer to accommodate the potential imprecision of historic marine positioning and in line with the existing Rampion 1 project marine archaeology study area **Figure 1-1** (located in this document page 72).
- 1.3.2 The area from MHWS landward is covered by the onshore archaeology chapter, **Chapter 25: Historic environment, Volume 2** of the ES (**Document Reference: 6.2.25 [REP4-024]**). There is an overlap of the onshore archaeology and marine archaeology study areas and any heritage receptors within this intertidal overlap have been considered by both aspects.

- 1.3.3 The study area has been reviewed and amended in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response to feedback from the first Statutory Consultation exercise following the publication of the Preliminary Environmental Information Report (PEIR) in July 2021. The extent of the offshore array area has been reduced and no changes have been made to the export cable route corridor.

2. Implementation of the Outline Marine WSI

2.1 Introduction

- 2.1.1 This Outline Marine WSI details the primary responsibilities for the delivery of the environmental embedded measures which lies with RED. Through project documentation and procedures, the implementation of this Outline Marine WSI will involve archaeological contractors and curators.

2.2 Rampion Extension Development Limited

- 2.2.1 RED will be responsible for implementing the Outline Marine WSI. RED will ensure that all relevant project personnel understand the archaeological requirements, particularly those where reporting may be required by contractors through the project specific Protocol for Archaeological Discoveries (PAD) developed in line with the *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate, 2014). Personnel responsible for communication of actions to RED will be clearly appointed which may include specific representatives on-board work vessels.
- 2.2.2 RED will be responsible for maintaining a record of contacts with responsibility for the delivery of mitigation. This will include archaeological consultants, contractors, and curators, in addition to Nominated Contacts within survey, sampling and construction contractors.
- 2.2.3 This Outline Marine WSI provides a framework for archaeological investigations for Rampion 2. As a requirement of this Outline Marine WSI, any future archaeological works undertaken will require detailed method statements outlining methods and further mitigation. The method statements will be produced prior to survey or construction work in order to provide a detailed methodology for offshore campaigns or survey works as further detailed in **Section 8.3**.
- 2.2.4 Communication with the Archaeological Curators is the responsibility of RED. RED will engage a Retained Archaeologist to implement this Outline Marine WSI.
- 2.2.5 RED will advise the Retained Archaeologist of all requirements or responsibilities related to communication with curators and contractors, and in relation to the project's timescales, plans and requirements, ensuring that the information is shared as soon as it becomes available.

2.3 Retained Archaeologist

- 2.3.1 The Retained Archaeologist will report to RED and will provide advice to RED to inform communication with curators and contractors in relation to the implementation of the Outline Marine WSI.

2.4 Archaeological Curators

- 2.4.1 The main Archaeological Curators involved in the agreement of this Outline Marine WSI, and subsequent mitigation works are Historic England (seaward of Mean Low Water Springs (MLWS)), West Sussex County Council and East Sussex County Council (landward of MLWS).
- 2.4.2 Archaeological Curators will be provided with copies of all relevant project documentation and will be consulted in all aspects of the offshore historic environment. Advice and guidance will be sought from Historic England, for the offshore historic environment and the relevant archaeological campaigns outlined within this Outline Marine WSI.

2.5 Development Contractors

- 2.5.1 Contractors working within the marine zone, where Archaeological Exclusion Zones (AEZs), as per C-60, **Table 6-1** are in place and where the Protocol for Archaeological Discoveries (PAD), **Annex A**, is being used, must ensure all relevant personnel are aware of the associated requirements. 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. This will include understanding the Outline Marine WSI and all procedures and lines of communication for reporting unexpected archaeological discoveries.

3. Proposed Development details

- 3.1.1 Rampion Extension Development Limited (hereafter referred to as 'RED') (the Applicant) is developing the Rampion 2 Offshore Wind Farm Project (Rampion 2) located adjacent to the existing Rampion Offshore Wind Farm Project ('Rampion 1') in the English Channel.
- 3.1.2 Rampion 2 will be located between 13km and 26km from the Sussex Coast in the English Channel and the offshore array area will occupy an area of approximately 160km², see **Figure 1-1** (located in this document page 72).
- 3.1.3 The key elements of the Proposed Development will be as follows:
- up to 90 offshore wind turbine generators (WTGs) and associated foundations;
 - blade tip of the WTGs will be up to 325m above Lowest Astronomical Tide (LAT) and will have a 22m minimum air gap above Mean High Water Springs (MHWS);
 - inter-array cables connecting the WTGs to up to three offshore substations;
 - up to two offshore interconnector export cables between the offshore substations;
 - up to four offshore export cables each in its own trench, will be buried under the seabed within the final cable corridor; and
 - the export cable circuits will be High Voltage Alternating Current (HVAC), with a voltage of up to 275kV.
- 3.1.4 The key onshore elements of the Proposed Development will be as follows:
- a single landfall site near Climping, Arun District, connecting offshore and onshore cables using Horizontal Directional Drilling (HDD) installation techniques;
 - buried onshore cables in a single corridor for the maximum route length of up to 38.8km using:
 - ▶ trenching and backfilling installation techniques; and
 - ▶ trenchless and open cut crossings.
 - a new onshore substation, proposed near Cowfold, Horsham District, which will connect to an extension to the existing National Grid Bolney substation, Mid Sussex, via buried onshore cables; and
 - extension to and additional infrastructure at the existing National Grid Bolney substation, Mid Sussex District to connect Rampion 2 to the national grid electrical network.
- 3.1.5 Each foundation type and cable may require some form of seabed preparation which may include seabed levelling, ground reinforcement and removing surface, subsurface debris and trenching. Scour protection material may be required

around the base of some or all wind turbine foundations to protect them from current and wave action ensuring structural integrity.

- 3.1.6 Definitions and full details on project description refer to **Chapter 4: The Proposed Development, Volume 2** of the ES (**Document Reference: 6.2.4 [APP-045]**), and for further details on the potential impact on marine heritage receptors refer to **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**).

4. Site specific surveys

- 4.1.1 The geophysics pre-application survey data acquired in 2020 by Gardline Limited (contracted by RWE Renewables UK Ltd) consisted of shallow geophysical data including Multibeam Echosounder (MBES), Side Scan Sonar (SSS), Magnetometer (MAG), Sub-Bottom Profiler (SBP) and Ultra-High Resolution Seismic (UHRS) data across the offshore ES Assessment Boundary, including the array area and associated export cable corridor (**Figure 1-1**, located in this document page 72).
- 4.1.2 The data quality was assessed as Good, meaning suitable, clear data in which anomalies can be clearly identified and interpreted and which provides the highest probability for marine heritage receptors to be identified. The definition of survey data quality for archaeological interpretation is further detailed in **Section 2.4 Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 4.1.3 Site-specific surveys undertaken to date are summarised in **Table 4-1**.
- 4.1.4 All the marine data collected were assessed for archaeological potential and all anomalies were recorded. The results are summarised in **Section 5** and detailed in **Section 2.4** of **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).

Table 4-1 Site surveys undertaken

Survey type	Scope of survey	Coverage of study area
Geophysical survey of the offshore part of the ES Assessment Boundary undertaken in 2020	Full suite of geophysical data including side scan sonar, multibeam, magnetometer and sub-bottom profiler	Between 100% and 300% coverage of the study area, data quality and survey cover is further detailed in Figure 1-1 of this document and Section 2.4 of Appendix 16.1: Marine archaeology technical report, Volume 4 of the ES (Document Reference: 6.4.16.1 [REP3-017]).
Rampion 2 Offshore Wind Farm Characterisation Surveys Subtidal Habitats Survey undertaken by Ocean Ecology in 2021	Seabed imagery, sediment composition and chemistry, macrobenthic analysis and predictive habitat mapping setting out the environmental baseline conditions as well as	39 camera transects, 23 drop-down Video (DDV), and 39 grab locations across the ES Assessment Boundary.

representative sampling of all
main sediment types.

4.1.5 Future site-specific surveys are planned post-consent and are outlined in **Table 6-4**.

5. Summary of archaeology and cultural heritage baseline

- 5.1.1 A detailed description of the marine archaeology and cultural heritage within the Rampion 2 ES Assessment Boundary and more widely within the marine archaeology study area is provided in **Chapter 16: Marine archaeology, Volume -2** of the ES (**Document Reference: 6.2.16 [REP3-015]**) and **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**). A summary of the known and potential archaeology within the marine archaeology study area is presented below, with a focus on heritage assets which may be impacted by Rampion 2. Archaeological documents produced to date are included in **Table 5-1**.

Table 5-1 Archaeological documents produced to date

Archaeological document	Summary	Submitted / published
Rampion Extension Development Limited Rampion 2 Offshore Wind Farm Environmental Impact Assessment Scoping Report (RED, 2020)	Describes the approach, proposed scope and methodology, and summary of effects scoped in and out of the EIA.	July 2020
Rampion 2 Preliminary Environmental Information Report, Volume 2, Chapter 17: Marine archaeology (RED, 2021)	Presents the preliminary results of the assessment of the likely significant effects (EIA term) of Rampion 2 with respect to marine archaeology.	July 2021
Rampion 2 Preliminary Environmental Information Report, Volume 2, Appendix 17.1: Marine archaeology Technical Report, (RED, 2021)	Presents the technical aspects of the marine archaeology assessment in relation to the Rampion 2 Offshore Wind Farm. Identifies known and potential marine archaeological resources within the Proposed Development offshore part of the PEIR Assessment Boundary and wider marine archaeology study area and to provides an assessment of the potential effects on the marine	July 2021

Archaeological document	Summary	Submitted / published
	archaeology receptors likely to be impacted by the development of Rampion 2.	
Rampion 2 Preliminary Environmental Information Report, Volume 2, Appendix 17.2: Draft Marine Outline Written Schemes of Investigation (RED, 2021)	Presents expected impacts, recommended archaeological mitigation methodologies and actions for a range of work phases within the marine environment and summarises the known and potential marine archaeological resources within the marine archaeology study area.	July 2021
Chapter 16: Marine archaeology, Volume 2 of the ES (Document Reference: 6.2.16 [REP3-015])	Examines the likely significant effects (EIA term) that may be experienced as a result of Rampion 2 on marine archaeology receptors.	August 2023
Appendix 16.1: Marine archaeology technical report, Volume 4 of the ES (Document Reference: 6.4.16.1 [REP3-017])	Identifies known and potential marine archaeological resources within the offshore part of the Proposed Development of the ES Assessment Boundary and wider marine archaeology study area and provides an assessment of the potential effects on the marine heritage receptors likely to be impacted by the development of Rampion 2.	August 2023
Outline Marine Written Schemes of Investigation (Documenter Reference: 7.13 [REP5-076])	This document. Considers required mitigation and offsetting works through archaeological actions in relation to the offshore phases, and further presents expected impacts, recommended archaeological mitigation (in form of the embedded environmental measures) methodologies and actions for a range of work phases within the marine environment.	August 2023

5.2 Palaeolandscapes

- 5.2.1 The archaeological and palaeoenvironmental potential of the offshore Palaeolithic deposits from the English Channel and Solent region is demonstrated by the wealth of artefacts, faunal remains and peat evidence that have been identified to date. In situ offshore finds are rare to come by, with most artefacts within the marine zone being found on the seabed in a secondary context; however, deposits laid down in the marine zone during associated interstadials are of great

importance for understanding the localised geomorphological changes of the Sussex coast.

- 5.2.2 The West Sussex Coastal Plains are home to a significant Lower Palaeolithic site known as Boxgrove (c. 500,000 Before Present (BP) or Marine Isotope Stage (MIS) 13), situated some 10km inland of the present coastline of the English Channel. Earlier prehistoric finds from the English Channel are from the late Upper Palaeolithic and earlier Mesolithic, post-dating the Last Glacial Maximum (LGM) and representing a period of recolonisation of southern Britain by anatomically modern humans.
- 5.2.3 The English Channel and Solent Basin has already produced important material from this period prior to the inundation, indicating the high potential for both in situ and secondary context archaeological material within the marine archaeology study area. By the Neolithic, sea level had risen to levels similar to the present-day coastline.
- 5.2.4 As no localised models have been created for the southeast coast, it remains true that there is some potential for in situ Neolithic remains, such as occupational material, structural remains and watercraft, to be found in the intertidal and marine zone. Furthermore, there is also potential for secondary context Neolithic material, originating from eroded deposits along the coast. Bronze Age material of geoarchaeological potential such as peat can also be found in areas close to the shore.

5.3 Offshore-maritime

- 5.3.1 A broad contextual overview of human activity in the region and of the archaeological site types that may be expected to occur within the marine archaeology study area is included in [Section 3.5](#) -of [Appendix 16.1: Marine archaeology technical report, Volume 4](#) of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 5.3.2 The offshore marine archaeological resource is presented by five 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 inter-tidal context which subsequently became inundated.
 - Remains of aircraft crash sites, either coherent assemblages or scattered material, usually the result of second world war military conflict, but also numerous passenger casualties, particularly during the peak of seaplane activity during the inter-war period. Also includes aircraft, airships and other dirigibles dating to the first world war, although these rarely survive in the archaeological record.

- Structural remains other than watercraft, such as defensive structures, lighthouses or sites lost to the sea as a result of coastal erosion, may be found within the intertidal zone (between Mean Low Water Springs (MLWS) and MHWS).
- Historic Seascape Character (HSC): the historic cultural influences which shape present perception of seascape, its use, and its ability to accommodate change.

5.4 Known wrecks, aviation remains and obstructions

- 5.4.1 The archaeological assessment of geophysical data combined with the baseline conditions has concluded that there are 41 LIVE wrecks, 25 DEAD wrecks, four UNKNOWN or unconfirmed, and two LIFTED wrecks, within the marine archaeology study area (UKHO and NRHE data). The location of 28 wrecks were confirmed during the archaeological assessment of geophysical data as summarised in **Section 5.5: Embedded environmental measures for impacts post-construction** and detailed in **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 5.4.2 There are also 28 recorded vessel losses within the study area whose location within the dataset is recorded as a general area (602.17km²). These recorded losses have been cross referenced with datasets of UKHO and NRHE and represent unique records. Furthermore, seabed features potentially correlating with recorded losses have been identified as anomalies during the archaeological assessment of geophysical data and potential correlations are further discussed in **Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 5.4.3 There are 20 records classed as fishermen's fasteners recorded by the NRHE also been included in the baseline data. Records classed as fishermen's fasteners are unidentified obstructions reported by fishermen, possibly indicative of a wreck or submerged feature.
- 5.4.4 Further, there are 17 reported losses of aircraft and find sites of aircraft components within the study area, all but one, which is unidentified, date to the Second World War. Only one of the losses has associated known remains: WP275, a British Supermarine Attacker which crashed in 1956. Parts of this aircraft were dredged up in 2005 but appeared to comprise dispersed remains rather than a coherent crash site, no remains of a potential crash site were identified on the seabed in the vicinity. The location is outside Rampion 2 geophysical survey area and was included in the Rampion 1 baseline assessment but not further investigated. Where in-situ remains associated with any aviation losses are found, they will be archaeologically significant and protected under the Protection of Military Remains Act 1986.
- 5.4.5 There is always a possibility that not yet identified marine heritage receptors are located within the marine archaeology study area and ES Assessment Boundary. Unlocated marine heritage receptors are of unknown archaeological potential and heritage significance but might still be impacted by indirect or direct impacts caused by project activities.

5.5 Geophysical assessments

- 5.5.1 The assessment of geophysical data as detailed in [Section 4 of Appendix 16.1: Marine archaeology technical report, Volume 4](#) of the ES (**Document Reference: 6.4.16.1 [REP3-017]**) identified 262 anomalies (**Table 5-2**) (low, medium and high) of anthropogenic potential within the marine archaeology study area updated ahead of ES. Of these, 210 are of low archaeological potential. There are a further 1,993 magnetic anomalies of low potential. During the assessment of geophysical data 28 known wrecks (**Section 5.4: Embedded environmental measures for geophysical anomalies of archaeological potential**) were located.
- 5.5.2 The 22 medium and 30 high potential anomalies have been assigned AEZs; the radius of the AEZs is 50m for the medium potential anomalies and 100m for the high (**Figure 1-2**, located in this document p73).

Table 5-2 Anomalies of archaeological potential within the marine archaeology study area

Archaeological potential	No. anomalies
High	30
Medium	22
Low	210
Magnetic anomalies of low potential	1,993
Known wrecks identified in the geophysical data	28

5.6 Sedimentary horizons

- 5.6.1 This section summarises the interpretation of the archaeological assessment of the sub-bottom 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 [Section 4.2 of Appendix 16.1: Marine archaeology technical report, Volume 4](#) of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).

5.6.2

- [5.6.25.6.3](#) This assessment has been produced in co-operation with the onshore archaeological team and should be read in the context of the onshore Desk-based Geoarchaeological & Palaeoenvironmental Assessment Report and Technical Report (**Chapter 25: Historic environment, Volume 2 of the ES (Document Reference: 6.2.25 [REP4-024])** and **Appendix 25.1: Gazetteer of onshore heritage assets, Volume 4** of the ES [**(APP-199) Document Reference: 6.4.25.1**]). The assessment identified and assigned heritage significance to geological contexts Alluvium (Arun/Adur), River Terrace Deposits, Raised Beach Deposits,

Head Deposits, Clay-with-flints and Bedrock which have potential to be associated with the offshore units identified, and have been included in **Table 5-3** below.

- [5.6-35.6.4](#) The area of seabed that the marine archaeology study area now covers was previously large swathes of dry land that were exploited by people during the Pleistocene and early Holocene.
- [5.6-45.6.5](#) Previous studies in the area have revealed details of the submerged topography including terraces, details of the submerged floodplain, and features of the Palaeo-Arun Valley landform which runs from the terrestrial zone into the marine zone (Gupta et al, 2008).
- [5.6-55.6.6](#) The Solent and the south coast of England, areas also utilised by people during the Pleistocene and Holocene, have yielded early Palaeolithic archaeology in high concentrations, for example at Boxgrove, West Sussex (Roberts et al., 1994; Roberts and Parfitt, 1999).
- [5.6-65.6.7](#) An archaeological assessment of sub-bottom data (chirp) was undertaken which has resulted in a number of features being identified as of geoarchaeological interest. Together, the features reveal a complex system of interlinked inundated valleys and channels (**Figure 1-3**, located in this document **page 74**).
- [5.6-75.6.8](#) The channel and valley features have been mapped as detailed in **Section 4.2 of Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**). They represent an extensive deltaic river system containing a combination of shallow braided channel systems with many tributaries, numerous wider, deeper channels, and simple cut and fill features. The channel features are mostly cut into the chalk bedrock and filled with a combination of hard reflectors representing sand or gravel and softer reflectors representing silt and possible clay.
- [5.6-85.6.9](#) The outline deposit model presented in **Table 5-3** shows that the seabed in the marine archaeology study area is predominantly gravels and sands (Unit 5) which are overlying consolidated and clays (Unit 3 and 2).
- [5.6-95.6.10](#) The fine-grained sediments tend to be mobile and sand waves are widespread across much of the survey area stretching north-west to south-east. The underlying geology in the area is characterised by Upper Cretaceous Chalk (Unit 1) which is, in places, cut by channel and valley features filled with Channel/Valley infill (Unit 4).
- [5.6-105.6.11](#) The outline deposit model will be further refined following a staged geoarchaeological assessment post-application as outlined in **Section 8**.

Table 5-3 Preliminary deposit model

Unit	Sediment	Description	Epoch	Geoarchaeological potential	Onshore geological context
5	Mobile seabed sediments	Sand and gravel	Holocene	No	n/a
4	Channel/Valley infill	Soft possibly peaty clay and sand	Late Pleistocene to Early Holocene	Yes	Alluvium (Arun/Adur)
3	London Clay	Firm to hard silty clay	Tertiary	Low	Clay-with flints
2	Lambeth Group	Silt, clay and sand	Tertiary	Low	River terraces and raised, beaches
1	Cretaceous Upper Chalk Group.	Chalk and gravel	Cretaceous	No	Bedrock

5.7 Research frameworks

5.7.1 All relevant survey campaigns will incorporate specific 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 method statements for each campaign.

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

- The Coastal and Intertidal Zone Archaeological Network (CITiZAN) project;
- The Oxford Archaeology Solent Thames research framework;
- The submerged Palaeo-Arun and Solent Rivers work by Gupta *et al.* (2004 and 2008);
- The Sussex raised beaches and the Sussex/Hampshire coastal corridor by Bates, *et al.* (2004, 2007 and 2010);
- The North Sea Prehistory Research and Management Framework (Eastern English Channel, 2024); and
- The maritime resource assessment and research chapter of the South East Research Framework.

- 5.7.3 The above research, along with Rampion 1 sub-bottom data will be used to provide a wide palaeoenvironmental context in which to frame specific research questions set out in the method statements.
- 5.7.4 Contributions to our knowledge and understanding of the historic environment may also be in 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 will be further detailed in forthcoming relevant method statements.
- 5.7.5 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, along with helping RED to fulfil the South Inshore and Offshore Marine Plan objective (HM Government, 2018), S-HER-1, to identify and conserve heritage assets significant to the south marine historic environment and the Overarching National Policy Statement for Energy (EN-1) and National Policy Statement for Renewable Energy Infrastructure (EN-3) (Department of Energy and Climate Change (DECC), 2011a; 2011b) objectives to better reveal the significance of an heritage asset and benefit the historic marine environment through contribution to new knowledge that arises from investigation.

5.8 Relevant legal protection

- 5.8.1 Heritage considerations of relevance to all phases of Rampion 2 lifecycle 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 authorisation 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.

6. Embedded environmental measures

- 6.1.1 The relevant embedded environmental measures for Rampion 2 (**Table 6-1**) are formulated where marine heritage receptors and anomalies are identified in the desk-based assessment and/or geophysical assessments. The embedded environmental measures are based on guidance set out in Historic Environment Guidance for Offshore Renewable Energy Sector (COWRIE, 2007) and Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021).
- 6.1.2 RED has committed to several embedded environmental measures as part of the pre-application phase in order to reduce the potential for impacts on marine heritage receptors (see **Table 6-1** and **Graphic 6-1**).
- 6.1.3 The Outline Marine WSI was developed in consultation with the Regulator (MMO) and Archaeological Curators to form a framework that presents mitigation strategies aiming to avoid or minimise impact on marine heritage receptors. The Outline Marine WSI also summarises forthcoming surveys and associated archaeological investigations prior to pre-construction works commencing.
- 6.1.4 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 (C-57, **Table 6-1**) and follows the guidance detailed in Table 1 and Table 2 of the Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects guidance (The Crown Estate, 2021).
- 6.1.5 Any intrusive activities associated with pre-construction works will be planned using collated geophysical, and geotechnical data (C-59, **Table 6-1**), to avoid any identified marine heritage receptors and AEZs as detailed in the embedded environmental measures (C-60, **Table 6-1**), unless other mitigation is agreed with Historic England as per the Outline Marine WSI (C-57, **Table 6-1**).
- 6.1.6 A post-construction monitoring plan will be developed and submitted to Archaeological Curators which will present the approach to the monitoring required for the established AEZs (C-277), **Table 6-1**).
- 6.1.7 The 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 (C-58 and C-59, **Table 6-1**).
- 6.1.8 The post-construction monitoring plan will also focus on monitoring sites of potential archaeological interest and re-visiting areas that were identified as of archaeological significance during the construction phase and to establish any positive, negative or neutral impacts (C-277, **Table 6-1**).
- 6.1.8.1.9 As per embedded environmental measure C-298 (**Table 6-1**), where appropriate, the results of post-consent monitoring, data and reports will be made publicly available and provided to the relevant data repositories.

[6.1-96.1.10](#) A decommissioning plan will be prepared in line with any updated guidance and environmental assessments (C-111, **Table 6-1**)

Table 6-1 Embedded environmental measures

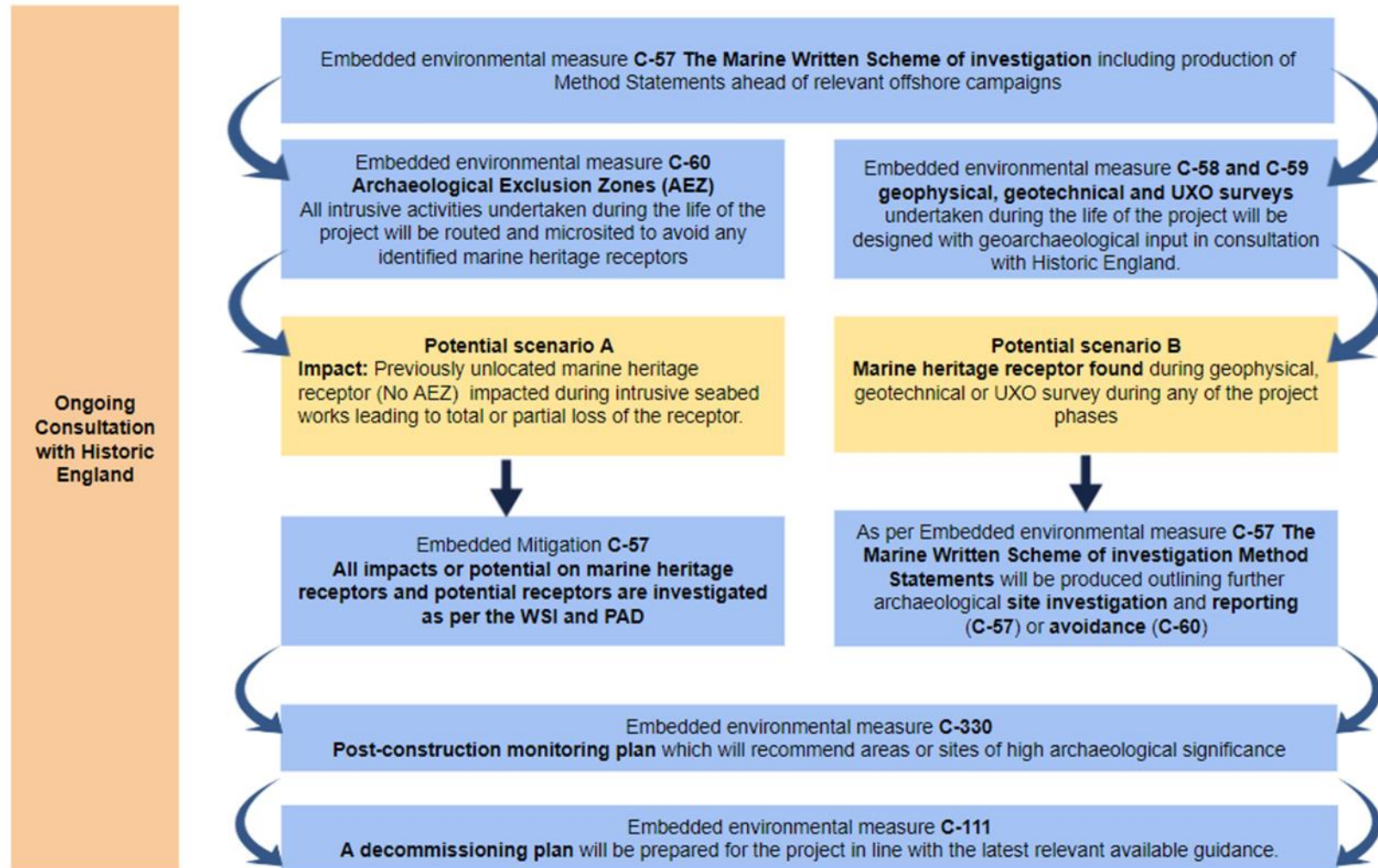
ID	Environmental measure	When environmental measure was introduced	How the environmental measures will be secured
C-57	<p>Marine Written Scheme of Investigation (WSI) will be developed in accordance with the Outline Marine Written Schemes of Investigation (WSI) (Documenter Reference: 7.13 [REP5-076]). The Marine WSI will detail environmental measures including the archaeological exclusion zones (AEZ), the implementation of a Protocol for Archaeological Discoveries in accordance with 'Protocol for Archaeological Discoveries: Offshore Renewables Projects' (The Crown Estate, 2014) and methodologies for future monitoring, survey and assessment requirements.</p>	<p>Scoping – updated at PEIR and at Examination Deadline 3</p>	<p>DCO requirements or dML conditions.</p>
C-58	<p>Offshore geophysical surveys (including Unexploded Ordnance (UXO) surveys) undertaken during the life of the project will be subject to full archaeological review where relevant in consultation with Historic England.</p>	<p>Scoping – updated at PEIR</p>	<p>DCO requirements or dML conditions.</p>
C-59	<p>Offshore geotechnical surveys undertaken during the life of the project will be undertaken following early discussions with Historic England. Areas with geoarchaeological potential will be targeted during the geotechnical sampling campaigns and the results of the geoarchaeological assessment will be presented in staged geoarchaeological reports inclusive of publication. The published results will aim to enhance the palaeogeographic knowledge and understanding the</p>	<p>Scoping – updated at PEIR and ES</p>	<p>DCO requirements or dML conditions.</p>

ID	Environmental measure	When environmental measure was introduced	How the environmental measures will be secured
	<p><u>area. Offshore geotechnical undertaken during the life of the project will be undertaken following early discussions with Historic England. Areas with geoarchaeological potential will be targeted during the geotechnical sampling campaigns and the results of the geoarchaeological assessment will be presented in staged geoarchaeological reports inclusive of publication. The published results will aim to enhance the paleogeographic knowledge and understanding of the area.</u></p>		
C-60	<p>All intrusive activities undertaken during the life of the project will be routed and microsited to avoid any identified marine heritage receptors, with Archaeological Exclusion Zones (AEZs) (buffers) as detailed in the Outline Marine Written Schemes of Investigation (WSI) (Documenter Reference: 7.13 [REP5-076]) unless other mitigation is agreed with Historic England as per the Marine WSI. Micrositing and AEZs will further be applied to yet undiscovered marine heritage receptors should they be located.</p>	<p>Scoping – updated at PEIR and ES and at Examination Deadline 3</p>	<p>DCO requirements or dML conditions.</p>
C-111	<p>A <u>De</u>commissioning plan will be prepared for the project in line with the latest relevant available guidance.</p>	<p>PEIR</p>	<p>Outline COCP and DCO requirements</p>
C-277	<p>A post-construction monitoring plan as per Marine Written Schemes of Archaeological Investigation (WSI) will be produced. The post-construction monitoring plan will recommend areas or sites of archaeological interest or</p>	<p>ES and Examination Deadline 3</p>	<p>DCO requirements or dML conditions.</p>

ID	Environmental measure	When environmental measure was introduced	How the environmental measures will be secured
	<p>significance for monitoring and outline how post-construction monitoring campaigns will collect, assess and report on changes or impacts to marine heritage receptors that may have occurred during the construction phase.</p>		
<u>C-298</u>	<p><u>Where appropriate, the results of post-consent monitoring, data and reports will be made publicly available and provided to the relevant data repositories.</u></p>	<u>Examination</u>	<p><u>DCO requirements or dML conditions.</u></p>

[6.4.106.1.11](#) The embedded environmental measures outlined in **Table 6-1** and summarised on **Graphic 6-1** have been designed to reduce or eliminate direct impact on known and potential marine heritage receptors. It is assumed that the embedded environmental measures will evolve during the development process and in response to consultation feedback. This approach is also discussed in **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**).

Graphic 6-1 Flowchart summarising the embedded environmental measures and how they are applied pro-actively throughout the life of the project (Table 6-1)



6.2 Embedded environmental measures for known wrecks and obstructions

- 6.2.1 One hundred wrecks recorded in the data provided by United Kingdom Hydrographic Office (UKHO) and National Record of the Historic Environment (NRHE) are located within the marine archaeology study area. Of the 100 wrecks, 41 are classed as LIVE. In addition, there are 17 aircraft, 20 fishermen's fasteners, 14 foul and seabed obstructions and 28 recorded losses with no corresponding UKHO records or seabed remains (**Figure 1-4**, located in this document **page 75**). 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 **Section 3.3 of Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 6.2.2 As per embedded environmental measure C-60 (**Table 6-1**) precautionary AEZs of 50m radius is recommended for all known heritage receptors, as illustrated in **Figure 1-5** (located in this document page 76). Of the 179 known marine heritage receptors 28 have been identified in the geophysical data and assigned specific AEZ, generally modelled approximately 100m around their extent as understood from the geophysical data assessment (**Table 6-2**). The records for wrecks, aircraft, fishermen's fasteners, fouls and obstructions not identified in the geophysical data are covered by a precautionary 50m AEZ.
- 6.2.3 There are currently no designated heritage assets such as Protected Wreck Sites or other sites subject to the provisions of the Protection of Military Remains Act 1986 within the marine archaeology study area.
- 6.2.4 The commitment to avoid all known marine archaeology receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated will ensure preservation *in situ* as per C-60 (**Table 6-1**).
- 6.2.5 Where marine archaeology receptors may be directly impacted or removed from the seabed justification will be clearly outlined in the relevant Method Statements produced ahead of any archaeological works and following agreement with Historic England.

Table 6-2 High and medium potential anomalies identified in the 2020 geophysical data

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0004	<i>Gerlen</i> (possibly), motor vessel	20005	MA2014	MA4012	MA6868	High	Low	100
MA0005	Unrecorded wreck	-	MA2017	MA4013	MA5093	High	n/a	100
MA0007	Unknown wreck	19961	MA2028	MA4014	MA7123	High	Medium	50
MA0008	<i>Glenarm Head</i> (possibly), steamer	19926/20012	MA2029	MA4015	MA6738	High	Medium	100
MA0009	<i>Pagenturm</i> , cargo vessel	20001	MA2031	MA4016	MA6784	High	Medium	100
MA0010	<i>HMS Minion</i> , British destroyer	20014	MA2033	MA4017	MA6705	High	Medium	100
MA0011	<i>Glenarm Head</i> , Northern Irish cargo vessel	20169	MA2036	MA4018	MA6830	High	Medium	100
MA0012	<i>London Trader</i> (possibly), steam ship	19972	MA2041	MA4031	MA7043	High	Medium	100

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0013	<i>Quail</i> , Irish cargo vessel,	20000	MA2042	MA4019	MA7268	High	Medium	100
MA0014	Unknown wreck	19970	MA2044	MA4020	MA6876	High	Medium	100
MA0015	Unknown remains of a cargo vessel	19991	MA2045	MA4021	MA6724	High	Medium	100
MA0016	Unknown freighter.	19996	MA2047	MA4022	MA6693	High	Medium	100
MA0017	<i>Ny-Eeasteyr</i> , Manx fishing vessel	20186	MA2053	MA4025	n/a	High	Low	100
MA0018	<i>Ramsgarth</i> , English cargo vessel	20049	MA2055	MA4001	MA5011	High	Medium	100
MA0019	Unknown potential wreck	82762	MA2057	MA4026	n/a	High	High	100
MA0020	<i>Ariel</i> , English cargo vessel	20023	MA2060	MA4002	MA6277	High	Medium	100
MA0021	Potential wreck, unrecorded; seen in Side Scan Sonar and bathymetric data	-	MA2062	MA4027	n/a	High	n/a	100

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
	as anomaly 28 m long and 2m above the seafloor							
MA0022	<i>Cairndhu</i> , English cargo vessel	19987	MA2065	MA4003	MA5029	High	Medium	100
MA0024	Unknown drifter or trawler. The wreck has been suggested to be either the remains of the <i>Klondyke</i> , or <i>Evadne</i> ,	19997	MA2067	MA4004	MA5028	High	Medium	100
MA0025	<i>Jaffa</i> , English cargo vessel	20010	MA2068	MA4005	MA6275	High	Medium	100
MA0026	Unknown wreck potentially the remains of a tank landing craft or fishing vessel <i>Leachs Romance</i> , previously listed as DEAD but recorded at the same location	20020/20021	MA2073	MA4006	MA6203	High	Medium	100

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0027	Wreck remains believed to comprise British Mulberry Harbour bridge sections	19988	MA2080	MA4007	MA6265	High	Medium	100
MA0028	Potential wreck or wreck debris, unrecorded; seen in geophysical data as a cluster of features	-	MA2087	MA4043	MA6477	Medium	n/a	50
MA0029	<i>War Helmet</i> , English armed cargo vessel	19984	MA2088	MA4008	MA6243	High	Medium	100
MA0030	<i>Afon Dulais</i> , Welsh cargo vessel	19947	MA2093	MA4029	MA6489	High	Medium	100
MA0031	Potential wreck, unrecorded; seen as linear anomaly in Side Scan Sonar	-	MA2094	-	n/a	Medium	n/a	50
MA0032	<i>Lightfoot</i> (possibly), British cargo vessel	19948	MA2095	-	-	High	Medium	100

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0033	<i>Gartland</i> , Scottish cargo vessel,	19971	MA2097	MA4009	MA6325	High	Medium	100
MA0034	Unknown wreck	20075	MA2112	MA4023	MA5889	High	n/a	100
MA0035	Unknown wreck	-	MA2117	--	-	Medium	n/a	50
MA0036	<i>Glenlee</i> (possibly), English cargo vessel	20055	MA2121	MA4000	MA5994	High	Medium	100
MA0037	<i>Shirala</i> (possibly), Scottish cargo vessel	20069	MA2129	MA4024	MA5931	High	High	100
MA0038	Potential wreck or wreck debris, unrecorded; seen in Side Scan Sonar as a large mound	-	MA2149	MA4032	-	Medium	n/a	50
MA0040	Potential wreck or wreck debris, unrecorded; seen in Side Scan Sonar as a cluster of features	-	MA2165	MA4033	n/a	Medium	n/a	50

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0041	Potential wreck or wreck debris, unrecorded; seen in Side Scan Sonar as a cluster of features	-	MA2167	MA4034	n/a	Medium	n/a	50
MA0042	Potential wreck or wreck debris, unrecorded; seen in Side Scan Sonar as a cluster of features	-	MA2172	MA4035	n/a	Medium	n/a	50
MA0045	Magnetic anomaly	-	--	-	MA5501	Medium	n/a	50
MA0047	Magnetic anomaly	-	-	-	MA6298	Medium	n/a	50
MA0048	Magnetic anomaly	-	-	--	MA6485	Medium	n/a	50
MA0049	Magnetic anomaly; identified in Side Scan Sonar as pair of linear anomalies	-	MA2085	MA4037	MA6224	Medium	n/a	50
MA0050	Magnetic anomaly	-	-	MA4038	MA6529	Medium	n/a	50
MA0052	Magnetic anomaly	-	-	-	MA5600	Medium	n/a	50

MA ID	Information	UKHO Wreck number	SSS ID	MBES ID	MAG ID	Archaeological potential	Archaeological significance	AEZ (m)
MA0053	Magnetic anomaly	-	-	-	MA5202	Medium	n/a	50
MA0054	Magnetic anomaly	-	-	-	MA5537	Medium	n/a	50
MA0055	Magnetic anomaly	-	-	-	MA5380	Medium	n/a	50
MA0056	Magnetic anomaly	-	-	MA4039	MA5032	Medium	n/a	50
MA0057	Magnetic anomaly	-	-	MA4040	MA5927	Medium	n/a	50
MA0058	Magnetic anomaly	-	-	-	MA5504	Medium	n/a	50
MA0059	Magnetic anomaly	-	-	-	MA6556	Medium	n/a	50
MA0060	Magnetic anomaly	-	-	-	MA5823	Medium	n/a	50
MA0061	Magnetic anomaly	-	-	-	MA5529	Medium	n/a	50
MA0062	<i>Broadhurst (possibly), steam ship</i>	19959	MA2034	MA4041	MA5097	High	n/a	100

6.2.6 Full details of locations and details are in [Section 4.1 of Appendix 16.1: Marine archaeology technical report, Volume 4 of the ES \(Document Reference: 6.4.16.1 \[\\[REP3-017\\]\]\(#\)\)](#).

6.3 Embedded environmental measures for unlocated marine heritage receptors

- 6.3.1 There is always a possibility that yet unlocated marine heritage receptors will be located within the marine archaeology study area and ES Assessment Boundary. Unlocated marine heritage receptors are of unknown archaeological potential and heritage significance but might still be impacted by indirect or direct impact caused by project activities. Large offshore renewable developments have over the last years located several previously unknown and unlocated sites of high archaeological significance within site boundaries even after construction.
- 6.3.2 Embedded environmental measures C-58 and C-59 (**Table 6-1**), when implemented throughout the project, recognise that further geophysical and geotechnical investigations followed by archaeological campaigns are essential to developing effective mitigation within the ES Assessment Boundary. The combination of these two environmental measures (C-58 and C-59) work effectively by increasing the likelihood of marine heritage receptors becoming identified and appropriately protected. The embedded environmental measures (**Table 6-1**), include detailed archaeological assessments and aim to ensure that to the extent possible, areas of impact are clear of marine heritage receptors ahead of any intrusive works or further mitigation and archaeological campaigns are undertaken.
- 6.3.3 Avoidance is considered the most effective form of protection, as per National Policy Statement for Renewable Energy Infrastructure (EN-3). In the case of previously unlocated marine heritage receptors being identified during survey or construction works Temporary Exclusion Zones (TEZs) will be established via the use of the PAD reporting (C-57) until further investigation can be undertaken to determine the character of the discovery.
- 6.3.4 These TEZs may be lifted following further investigation and in consultation with the Archaeological Curators if the features are determined to be non-archaeological, or they may form the basis of an AEZ (as per C-60, **Table 6-1**), to avoid further disturbance long-term.
- 6.3.5 The project specific PAD (C-57, **Table 6-1**) 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 PAD does not replace the process of archaeological assessment and evaluation (C-59 and C-60, **Table 6-1**), but rather acts as a safety net in the event of unexpected discoveries during the course of works.
- 6.3.6 Implementation of the PAD helps to ensure that any adverse effects of the development on sites, features or objects of potential archaeological significance encountered and/or recovered during projects works are reduced by establishing rapid communication between key stakeholders, who are then able to implement appropriate mitigation.

6.4 Embedded environmental measures for geophysical anomalies of archaeological potential

- 6.4.1 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 6-3**. The anomalies assessed as having high and medium archaeological potential can be seen in **Table 6-2**.
- 6.4.2 While generally no active conservation strategy is proposed, AEZs (as per C-58 (**Table 6-1**)) have been applied to all known wrecks and contacts of high and medium significance.
- 6.4.3 Preservation in situ is ensured by the commitment to avoid all known marine archaeology receptors and to further investigate areas of impacts ensuring that unknown receptors are located.
- 6.4.4 Where items are being removed from the seabed conservation strategies will be clearly outlined in the relevant method statements produced ahead of any archaeological works.
- 6.4.5 Anomalies of low archaeological potential and magnetic anomalies <100 nanotesla (nT) (see **Table 6-3**) without correlating seabed features have, due to the uncertainty of their archaeological potential, not been assigned AEZs. Further investigation of these sites will occur during future survey works, where direct or indirect impact cannot be avoided.

Table 6-3 Definition of archaeological potential

Archaeological potential	Archaeological definition
High	Anomalies considered to map material of archaeological interest such as wrecks or crash sites, buried, confirmed and potential palaeolandscapes, and their margins, including magnetic anomalies with a return of $\geq 100\text{nT}$.
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 and magnetic anomalies <100nT not identified over multiple datasets.

- 6.4.6 As per embedded environmental measure C-57 (**Table 6-1**) works during the construction, operational and decommissioning phases of the project should implement the project specific PAD (**Annex A**) and any objects of archaeological potential should be reported, should an archaeologist not be present.
- 6.4.7 As per embedded environmental measure C-60, (**Table 6-1**), anomalies assigned medium and high archaeological potential are probably of anthropogenic origin and of archaeological significance, and have therefore been assigned AEZs based on their archaeological potential, their archaeological significance and their extent as understood from the geophysical data assessment. A gazetteer of the anomalies identified and high and medium in the geophysical data can be found in **Table 6-2**. Illustrations of high potential anomalies can be found in **Annex E of Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**).
- 6.4.8 Thirty high potential anomalies have been assigned 100m AEZs and 22 medium potential anomalies have been assigned 50 m AEZs as per **Table 6-2** and **Figure 1-2**.

6.5 Embedded environmental measures for deposits of geoarchaeological potential

- 6.5.1 The baseline review, summarised in **Section 5**, supported by the geophysical survey data assessment, summarised in **Section 5.5: Geophysical assessments** and detailed in **Annex E of Appendix 16.1: Marine archaeology technical report, Volume 4** of the ES (**Document Reference: 6.4.16.1 [REP3-017]**) has provided information on the location of palaeolandscapes within the marine archaeology study area.
- 6.5.2 It is recognised that all phases of the development 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 **Chapter 16: Marine archaeology, Volume 2** of the ES (**Document Reference: 6.2.16 [REP3-015]**) and **Chapter 4: The Proposed Development, Volume 2** of the ES (**Document Reference: 6.2.4 [APP-045]**).
- 6.5.3 As per embedded environmental measure C-59 (**Table 6-1**) any potential impact will be offset by the collection and analysis of geotechnical data, including dedicated cores for archaeological analysis.
- 6.5.4 Geotechnical data can be gathered by sediment coring such as vibrocores or boreholes where a sleeve is mechanically driven into the seabed from a vessel and a column of the sediment passed through can be recovered. Vibrocores can generally penetrate the seabed up to 8m and the sediments are collected in polyvinyl chloride (PVC) sleeves that contain the stratigraphy of the deposits. Boreholes can generally go deeper and can reach 50 to 60m depth.
- 6.5.5 Early discussions between geotechnical and archaeological contractors concerning their respective data and sampling requirements must happen to ensure that beneficial working arrangements and timetables are agreed ahead of any geotechnical works as outlined in C-59 (**Table 6-1**).

- 6.5.6 The aims and objectives of the archaeological assessment of geotechnical data is to investigate deposits within the environment, evaluate the past human interaction, produce an overview of the submerged environment and include current research frameworks as further detailed in **Section 8.4: Archaeological campaigns** (this document).
- 6.5.7 The geoarchaeological assessment will be undertaken using a staged geoarchaeological approach to assessment and analysis of the collected geotechnical data resulting in project reports and a deposit model as described in Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (COWRIE, 2011) and further outlined in **Section 8.4: Archaeological campaigns** (this document).
- 6.5.8 All forthcoming geoarchaeological assessments will be submitted to and approved by the MMO (in accordance with Condition 11(2) of the dMLs, Schedules 11 and 12 of the **draft DCO [REP54-0054]** (updated at Deadline **65**)) and be carried out in accordance with existing interpretations of SBP data analysed to date and any further SBP data acquired will be assessed by a suitably qualified and experienced archaeological contractor to ensure that all known data is included in the continued development of the deposit model (**Section 5.6: Sedimentary horizons**) (this document).
- 6.5.9 Any 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. The assessment will also highlight any deposits of archaeological potential that may be impacted by the proposed development.
- 6.5.10 Specific geoarchaeological sample locations will be recommended in addition to the geotechnical samples collected for the overarching geotechnical campaign. Further details will be outlined in specific method statements which will include specific positions, research questions and methodologies for further assessment and research. Based on project details currently known, it is likely the potential geoarchaeological sample locations within the array area outlined in **Figure 1-6** (located in this document page 77) will be refined, with further sampling to be confirmed along the export cable corridor.

6.6 Embedded environmental measures for impacts post-construction

- 6.6.1 To confirm the effectiveness of the embedded environmental measures including the established AEZs C-60 (**Table 6-1**) and the stability of marine heritage receptors, it is expected that some marine heritage receptors identified during the pre-construction surveys will require future monitoring as per C-330 (**Table 6-1**).
- 6.6.2 Priority will be given to features and locations of high archaeological potential and significance located in proximity to installed infrastructure, particularly where archaeological potential and/or significance has been established through direct observation.

- 6.6.3 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.
- 6.6.4 The post-construction monitoring plan will be developed and submitted to the relevant Archaeological Curators and will outline the monitoring methodology and reporting structure.
- 6.6.5 As per embedded environmental measure C-298 (Table 6-1), where appropriate, the results of post-consent monitoring, data and reports will be made publicly available and provided to the relevant data repositories.

6.7 Embedded environmental measures for unexpected archaeological discoveries

- 6.7.1 Mitigation for unexpected archaeological discoveries is considered under C-58, C 59 to ensure that offshore geophysical and geotechnical surveys are subject to archaeological reviews.
- 6.7.2 Further, as per embedded environmental measure C-57 (Table 6-1), it is proposed that if any finds believed to be of archaeological potential are recovered by any operating vessels during construction, operation or decommissioning where an archaeologist is not present, they should be reported using the methodology outlined in the project specific PAD (Annex A).
- 6.7.3 The Rampion 2 PAD has been produced in reference to the Offshore Renewables Protocol for Archaeological Discoveries (The Crown Estate, 2014).
- 6.7.4 The Rampion 2 PAD aims to mitigate impact on the historic environment by enabling people working offshore to report their finds in an effective and convenient manner.
- 6.7.5 The PAD anticipates discoveries being made by project staff who report to a Site Champion (potentially the Client Representative on the vessel or other manager appointed by the contractor), who then reports to RED's nominated person to coordinate implementation of the PAD (the Nominated Contact), see Annex A.
- 6.7.6 All discoveries of archaeological material must be reported by RED, in accordance with the communication plan, to the Nominated Contact, who will 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.
- 6.7.7 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.
- 6.7.8 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 as per embedded environmental measure C-57 and the PAD.

- 6.7.9 TEZs must be respected during all activities associated with the wind farm construction, operation and maintenance, 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, operation and maintenance and decommissioning. As with AEZs, TEZs 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.
- 6.7.10 Following an assessment of the available data for the discovery, ground truthing or new information, the Retained Archaeologist will (in agreement with the Archaeological 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 Rampion 2 across all phases of development.
- 6.7.11 Further archaeological works required as a result of the discovery will be undertaken subject to method statements and followed by archaeological reporting.
- 6.7.11 6.7.12 As per embedded environmental measure C-298 (Table 6-1), where appropriate, the results of post-consent monitoring, data and reports will be made publicly available and provided to the relevant data repositories.

6.8 Further archaeological works

- 6.8.1 There are several embedded environmental measures related to the various construction, operation and decommissioning activities. The agreed embedded environmental measures; C-58 and C-59 as detailed in **Table 6-1**, can be undertaken prior to construction, other actions are linked to future activities, such as C-60 and C-111 (**Table 6-1**), which will ensure that potential impacts during the decommissioning phase will be mitigated.
- 6.8.2 Future planned works which may impact on potential marine heritage receptors and where archaeological assessment will be undertaken will require detailed method statements to be agreed by the relevant curator/s as per this Outline Marine WSI which will be used to form the Draft and final Agreed Marine WSIs.
- 6.8.3 Following The Crown Estate 2021 guidance the Outline WSI (this document) forms the framework for the assumed mitigation that will be submitted with the DCO application. A pre-commencement survey Draft Marine WSI, based on this document, will follow, to be agreed with the Regulator (MMO) prior to surveys taking place to ensure archaeological objectives continue to be taken into account.
- 6.8.4 Should consent be obtained, a final Agreed Marine WSI, based on the Draft 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 (MMO) 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.

- 6.8.5 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.
- 6.8.6 Any future survey that generates relevant data (both geophysical and geotechnical) will be reviewed, as per embedded environmental measures C-58, C-59 and C-60 (**Table 6-1**). Generally, each phase will provide incrementally greater resolution and more complete coverage as the final scheme footprint becomes more defined.
- ~~6.8.7 Further archaeological works, including documents and surveys are summarised in **Table 6-4**, as per The Crown Estate 2021 guidance. Due to its capacity to inform our understanding of our past, where relevant, HSC assessments will continue to form part of the archaeological assessments within further works.~~
- ~~6.8.7.6.8.8~~ Where appropriate and as per embedded environmental measure C-298 (**Table 6-1**), results of post-consent monitoring, collected data and reports will be made publicly available and provided to the relevant data repositories.

Table 6-4 Further site-specific documents, works and surveys

Archaeological assessment/document	Summary	Timescale
Draft Marine WSI	Based on this Outline Marine WSI, to be agreed with the Regulator (MMO) and in consultation with Historic England (Generation and Transmission Assets) and West Sussex County Council (Transmission Assets, limited to the intertidal area only) to ensure archaeological objectives are considered and impacts on marine heritage receptors are avoided and mitigated.	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.	To occur post consent
Geotechnical campaign	Archaeological core sample locations will be recommended based on desk-based and Sub-Bottom Profiler data to	To be confirmed post DCO Application

Archaeological assessment/document	Summary	Timescale
	<p>further assess the palaeoarchaeological potential of the development area. A staged 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 method statement and include specific research questions and specific details of methodologies.</p>	
Archaeological watching brief	<p>If deemed necessary, a watching brief to monitor sites of potential archaeological interest and/or significance. This would be preceded by a specific method statement.</p>	<p>To occur post consent</p>
Final Marine WSI	<p>Based on the Draft Marine WSI, to set out the overarching approach to survey and archaeological investigations agreed by the MMO ahead of the commencement of any pre-construction works. This document outlines 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 within the Final Marine WSI will be updated through the construction phase to include results from any pre-construction surveys.</p>	<p>To be finalised following ES and stakeholder comments</p>
Construction method statement	<p>A method statement to set out archaeological mitigation</p>	<p>To occur post consent</p>

Archaeological assessment/document	Summary	Timescale
	during the construction phase following any updates to the Final Marine WSI to include results from pre-construction surveys.	
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 operation and maintenance method statements	Specific method statements for post-construction monitoring and operation and maintenance activities.	To occur post consent
Decommissioning Environmental Impact Assessment, Final Marine WSI and method statements	Updates to the EIA, reflected in updates to the Draft or final Agreed WSI and further method statements.	To occur prior to decommissioning

7. Responsibilities and communication

7.1 Rampion 2

- 7.1.1 The implementation of the Final Agreed Marine WSI document will be the responsibility of RED.
- 7.1.2 Consultation with Historic England will be maintained throughout the development of the embedded environmental measures. Historic England act as a specialist advisor for 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 advise on 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 comprises of remains of any vessel, aircraft or marine structure of historic or archaeological interest.
- 7.1.3 The owners' rights and responsibilities in relation to the seabed differ from the onshore and terrestrial historic environment in that within the marine zone an historic asset 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 historic asset is not a wreck, it is considered as being owned by the landowner (in most cases The Crown Estate). In all cases, if the disturbance of historic assets is planned, their importance must be determined, and appropriate mitigation must be established.
- 7.1.4 Curatorial responsibility for the aspects of Rampion 2 seaward of MHWS resides with the terrestrial local authorities, West Sussex County Council and East Sussex County Council.
- 7.1.5 Communication with the Archaeological Curators is the responsibility of RED. RED will engage a Retained Archaeologist to implement the Final Agreed Marine WSI. RED may engage one or more archaeological contractors to deliver the mitigation measures set out within this Outline Marine WSI.
- 7.1.6 RED 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 when available.
- 7.1.7 RED is responsible for all communication with contractors engaged for construction activities.

7.2 Retained Archaeologist/Archaeological contractors

- 7.2.1 The Retained Archaeologist will report to RED.
- 7.2.2 The Retained Archaeologist will provide advice to RED to inform communication with the curators and contractors in relation to implementation of the final Agreed Marine WSI. The responsibilities of the Retained Archaeologist are as follows:
- maintaining, reviewing and updating the Marine WSI, as required;

- advising RED's contractor(s) as to which activities warrant archaeological involvement;
- advising RED's contractor(s) in the course of evaluating scope of work specifications on their capacity to meet archaeological requirements;
- advising RED on the necessary interaction with third parties with archaeological interests, including the Archaeological Curators;
- advising RED on the implementation of generic archaeological requirements applicable to all construction activities;
- advising RED on method statements for archaeological investigations (which will be submitted to the curators);
- advising RED on survey specifications required for appropriate archaeological analysis to ensure that archaeological considerations are reflected in the survey design for both archaeological and non-archaeological surveys;
- implementing, providing training on 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 Curators;
- ensuring provision for the management of RED's material archive in consultation with an appropriate museum or suitable repository;
- monitoring the preparation and submission of a post construction monitoring plan as appropriate and making it available to the Archaeological Curators; and
- advising RED on final arrangements for analysis, archive deposition, publication and popular dissemination.

7.2.3 The archaeological documents submitted up to the current stage of development are described **Table 5-1** and future documents and surveys are outlined in **Table 5-1**.

7.3 Archaeological curators

7.3.1 As required, method statements, reports, draft and final WSI and deliverables outlining AEZs will be submitted to the Archaeological Curators by RED. Method statements, see **Section 8.3: Method statements**, or other documents related to scheme-specific programming will be highlighted to the curators as requiring their agreement/acceptance within a particular timescale (typically 12 weeks). If no response is received from the curator within a reasonable period to be agreed with the curator(s), then it will be assumed that the curator(s) agree with the proposals/documentation.

7.4 Construction contractors

7.4.1 The construction contractors will report to RED and will further:

- familiarise themselves with the applicable requirements of the Final Marine 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 RED;
- inform the Retained Archaeologist of any environmental constraint or matter relating to health, safety and welfare of which they are aware that is relevant to the archaeologists' activities; and
- implement the project-specific PAD and facilitate training for relevant staff.

8. Scheme of investigation

8.1 Introduction

8.1.1 This scheme of investigation represents a general foundation for all further archaeological works that may be a condition of consent and will be updated, post-consent, to detail the specific packages of archaeological works that have been agreed. Individual method statements for each package of works will be produced to detail the nature of archaeological works to be carried out.

8.1.2 The specifications in this document are based on archaeological best practice and guidance for offshore development. The principal sources are:

- 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);
- 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 (Historic England, 2013);
- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021);
- Protocol for Archaeological Discoveries: Offshore Renewables Projects (ORPAD) (The 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); and
- Standard and Guidance for an Archaeological Watching Brief (CifA, 2014e, updated 2020).

8.1.3 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.

8.2 Archaeological recording, reporting, data management and archiving

8.2.1 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 Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021) and Historic Environment Guidance for the Offshore Renewables Energy Sector (COWRIE, 2007).

8.3 Method statements

8.3.1 Any future archaeological works, including those required as a condition of consent, will be subject to a method statement being prepared in advance of works, with appropriate time for review and agreement.

8.3.2 Each method statement will be submitted to the Archaeological Curators a minimum of 20 working days before the commencement of planned works and archaeological works will not commence unless the Archaeological Curators have confirmed their agreement.

8.3.3 The specifications for method statements are based on archaeological best practice and guidance for offshore development. The principal sources are:

- A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Second Edition) (Historic England, 2011);
- Marine Geophysics Data Acquisition, Processing and Interpretation (Historic England, 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);
- People and the Sea: A Maritime Archaeological Research Agenda for England (Research Reports No 171) (Ransley et al., 2013);
- 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)

8.3.4 Method statements will include provision for Archaeological Curators to monitor the conduct of the archaeological work as appropriate.

8.3.5 Unless otherwise agreed, the method statements will address the following matters:

- form of commission and contractual relationship with RED;
- relations between licence condition(s), Marine WSI and the method statement;
- 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 Curators; and,
- health, safety, welfare and environment.

8.4 Archaeological campaigns

- 8.4.1 For all aspects of marine geophysical investigations, RED will adhere to standards and guidance as set out in the Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021) document. The archaeological assessment of new marine geophysical data will aim to avoid significant impacts through aiding further identification and clarification of known and potential marine heritage receptors as stated in C-58 (**Table 6-1**). The acquisition and review of new data for archaeological purposes will contribute to effective planning of this project and to any requirements to offset unavoidable impacts to potential archaeology.

Geophysical surveys

- 8.4.2 The specification of any proposed marine geophysical surveys, including surveys with the primary aim either archaeological or non-archaeological, 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.
- 8.4.3 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. in order to optimise archaeological results, and thereby minimise the need for repeat surveys.
- 8.4.4 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.
- 8.4.5 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 or an archaeological contractor. The results of further geophysical interpretation will be compiled as an archaeological report consistent with guidance within Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021).

Geotechnical surveys

- 8.4.6 Archaeological involvement in the planning, acquisition and review of any geotechnical surveys including pre-construction and future monitoring surveys will be provided by a suitable archaeological contractor.
- 8.4.7 Any necessary archaeological analysis of any geotechnical material obtained, will follow a staged approach as outlined in Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector

(COWRIE, 2011), to satisfy the requirements of the Archaeological Curators and ensure that the required mitigation measures are delivered as outlined in C-59 (**Table 6-1**).

- 8.4.8 Sediment coring is usually the method used to obtain detailed information on seabed geology and stratigraphy used by offshore developers. A number of standard coring methodologies, techniques and types of equipment can be used to recover undisturbed, stratigraphic sediment samples.
- 8.4.9 Geotechnical coring can be used for providing detailed understanding of deeply buried stratigraphy in the investigation of submerged prehistory and palaeoenvironments. The assessed data can aid in the production of deposit models and contribute to models used to predict areas of high archaeological potential.
- 8.4.10 The commonly used techniques are vibrocore and boreholes where a sleeve is mechanically driven into the seabed from a vessel and a column of the sediment it passed through can be recovered.
- 8.4.11 Vibrocores can generally penetrate the seabed up to 8m and the sediments are collected in PVC sleeves that contain the stratigraphy of the deposits. Vibrocores can be opened and tested offshore or brought onshore, most commonly they are then cut into 1m sections, capped and further tested in geotechnical laboratories.
- 8.4.12 Boreholes can generally go deeper than vibrocores and can reach 50 to 60m Below Sea Bed (BSB), however the penetration depth depends on the sediments present as well as the constitution of the bedrock. When deploying boreholes, the sediment is commonly brought up in re-usable steel tubes up to 1m lengths, quickly recorded and deposited in bags noting the depth BSB while occasionally approximately 50cm samples in liners are taken at specific depths through the coring. The stratigraphy of the deposits is therefore not always contained when using boreholes.
- 8.4.13 Another method for data gathering is Cone Penetration Testing (CPT). CPT does not produce a sediment sample; it measures variations in sediment shear strength and is able to distinguish boundaries and changes in sediment units with limited benefits to geoarchaeological assessments.
- 8.4.14 Early discussions between geotechnical and archaeological contractors about their respective data and sampling needs must happen to ensure that beneficial working arrangements and timetables are agreed ahead of any geotechnical works as outlined in C-59 (**Table 6-1**).
- 8.4.15 When the geotechnical data has been gathered as per the agreed activity-specific method statement as detailed in **Section 8.3**. The aim of the archaeological assessment of geotechnical data is to:
- Investigate the environment within which the sediments samples were deposited;
 - Evaluate the potential for past human exploration of past environments;
 - Produce an overview of the geological stratigraphy; and

- Comment on the archaeological importance within the context of the palaeoenvironmental history and include current research frameworks such as *North Sea Prehistory Research and Management Framework*.

8.4.16 To meet the aims described above the archaeological assessments of geotechnical data will consist of a number of stages of work.

Stage 1 Desk Based Assessment, archaeological review of geotechnical logs and the initial formation of a deposit model

8.4.17 Core logs derived from all collected vibrocores and boreholes will be reviewed by a qualified marine archaeologist. Cores that contain sediments or layers of potential archaeological interest will be identified and recorded using the agreed methodology. Such sediments or layers are likely to be composed of fine grained sediments that are indicative of estuarine, riverine, lacustrine or coastal environments and organic material including plant material and peat

Stage 2: Splitting and recording geotechnical cores;

8.4.18 Cores identified as possessing archaeological potential during Stage 1, will be subject to detailed recording to determine the presence or absence of archaeologically relevant material. Records will include notes on sediment colour, type, inclusions, material suitable for dating and palaeoenvironmental evidence. The cores will be split, cleaned, photographed and recorded. If cores are obtained for Optically Stimulated Luminescence (OSL) dating (as determined in the Final WSI) they will be appropriately collected, stored and only opened in a suitable OSL laboratory to ensure that samples will not be compromised.

Stage 3: Sub-sampling and assessment

8.4.19 Where cores or contexts with the potential to yield archaeological information are identified during Stage 2, these would be subject to sub-sampling and assessment in laboratory conditions. The sub-sampling will generally collect between 250 - 500g and aim to gather information on insects, beetles, rodents, wood, pollen, diatoms and/or foraminifera. If appropriate, suitable samples will also be sent to specialist for further dating.

Stage 4: Analysis and dating

8.4.20 This stage will subject samples extracted during Stage 3 to detailed laboratory analysis. This stage will result in an account of the successive environments within the coring area, a model of environmental change over time, and an outline of the archaeological implications of the analysis

Stage 5: Reporting and publication

8.4.21 The format is designed to flow sequentially with each phase leading to the next and subsequent phase of work or representing the end of the assessment if the findings of any stage show that no further work is necessary.

8.4.22 The results of all the phases of the archaeological assessment undertaken will be used in the project assessment report to:

- Describe the sedimentary sequence, relative chronology and character of the area;
- Describe the topography of the area and past changes in its environment;
- Describe the archaeological potential of the deposits within the area; and
- Inform the development of a deposit or landscape model of the area.

8.4.23 Preliminary, archaeological core locations, recommended in addition to geotechnical cores based on the 2020 sub-bottom data and desk-based data can be seen in **Figure 1-6** (located in this document page 77). It is likely that these will be refined in an activity specific method statement ahead of any geoarchaeological works as per **C-59 (Table 6-1)**.

Diver and ROV surveys

8.4.24 In order to maximise the potential benefits of any proposed diver/ROV surveys undertaken primarily for engineering, ecological or other non-archaeological purposes, RED 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 method statement as detailed in **Section 8.3**.

8.4.25 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 Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021) and Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives (CifA, 2014f).

Watching briefs

8.4.26 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.

8.4.27 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 be halted 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 Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021) on reporting.

8.5 Reporting and publication

- 8.5.1 Any reports will be prepared in accordance with the guidance provided in the relevant Chartered Institute for Archaeologists (CifA) Standard and Guidance and with reference to any other activity or analysis specific guidance.
- 8.5.2 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.
- 8.5.3 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.
- 8.5.4 Where appropriate the report will provide recommendations for further assessment and/ or analysis requirements. Each report will be submitted by RED to the Archaeological Curator, as well as to appropriate National and Regional repositories, including the newly established OASIS V.

8.6 Artefacts

- 8.6.1 Artefacts that are exposed in the course of scheme 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.
- 8.6.2 In the event of the discovery of unexpected archaeology the Retained Archaeologist will be informed immediately in line with the C-57 and as described in the project specific PAD (**Annex A**). The Retained Archaeologist will notify the relevant legal authority, Rampion 2 and the Archaeological Curator as soon as possible, and the discovery will be referred to the Archaeological Curator or other relevant authority. All recovered finds will be held by the Retained Archaeologist or appointed Archaeological Contractor in appropriate conditions pending further recording, investigation, study or conservation, and reported via the Retained Archaeologist to the Receiver of Wreck.
- 8.6.3 In the event of the discovery of items that may be eligible for legal protection, the Retained Archaeologist will notify the relevant legal authority, RED and the Archaeological Curator as soon as possible.
- 8.6.4 The Retained Archaeologist will prepare and implement a finds monitoring and maintenance programme, which will cross-refer to finds management/monitoring systems maintained by RED, and their Contractor (for example, UXO Survey IDs).
- 8.6.5 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 Curators.
- 8.6.6 Contingency will be made for specialist advice and conservation needs on-site should unexpected, unusual or extremely fragile and delicate objects be recovered.

8.7 Post-fieldwork assessment

- 8.7.1 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 RED and Archaeological Curators 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.
- 8.7.2 A single post-fieldwork assessment may be carried out in respect of the investigations associated with the scheme 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.
- 8.7.3 This assessment 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.

- 8.7.4 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. This will be 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 will be 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 will be prepared, including specific questions that can be answered and the potential value of the data to local, regional and national investigation priorities.
- 8.7.5 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.

8.8 Ordnance

- 8.8.1 In the event that any item(s) of ordnance is discovered, it will be treated with extreme care as it may not be inert. Industry guidelines provided by RED and those set out in The Crown Estate 2021 guidance must be followed prior to any recording of items for archaeological purposes.
- 8.8.2 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 (various dates). Ammunition should be regarded as ordnance, irrespective of its size.
- 8.8.3 Where applicable, a relevant method statement will set out how to deal with the discovery of ordnance. It will set out whether for this stage of works RED 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.
- 8.8.4 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 method statement. 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.

- 8.8.5 Should ordnance be discovered on-board a vessel when there is no archaeologist on-board, the Contractor or specialist UXO Contractor will take the lead, and the item should be reported through the PAD, if safe to do so.
- 8.8.6 Should ordnance be discovered on-board a vessel where there is a specialist UXO Contractor on-board, 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 method statement.

8.9 Human remains

- 8.9.1 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 measures described in article 20 of the draft DCO must be followed.
- 8.9.2 Where practical, the human remains will be left in situ, covered, and protected. Where human remains have been found and development 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).

8.10 Aircraft

- 8.10.1 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 sites 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.
- 8.10.2 Application for a licence, and any subsequent work, will be undertaken in line with the Ministry of Defence, 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 Ministry of Defence (MoD).
- 8.10.3 Any finds that are suspected of being military aircraft will be reported immediately to the Retained Archaeologist (where appointed), as well as RED 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.

8.11 Wreck

- 8.11.1 At this time, there are no wrecks recorded within the marine archaeology study area under the protection of the Protection of Wrecks Act 1973, the Protection of Military Remains Act 1986 or the Ancient Monuments and Archaeological Areas Act 1979. It is possible that significant discoveries will be made during survey work and subsequently protected under these Acts.

- 8.11.2 Archaeological artefacts that have come from a ship are 'wreck' for the purposes of the Merchant Shipping Act 1995. RED, via their archaeological contractors, will ensure that the Receiver of Wreck is notified within 28 days, either on behalf of or directly by RED for all items of wreck that have been recovered.
- 8.11.3 The Retained Archaeologist will prepare the reporting forms and submit them to RED to be signed and submitted to the Receiver of Wreck. Due to the legal responsibilities under the Merchant of Shipping Act 1995; the responsibility for reporting ultimately rests with RED.
- 8.11.4 All potential wreck material identified on the seabed will also be reported to the Receiver of Wreck. The method statement covering these works will also include an explanation of the activity and how material that may be encountered on the seabed will be reported.
- 8.11.5 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.

8.12 Conservation and storage

- 8.12.1 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.
- 8.12.2 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.
- 8.12.3 The Retained Archaeologist (where appointed) or an archaeological contractor with appropriate expertise will implement recommendations arising from the Conservation Assessment.
- 8.12.4 Specialist conservation work, based on the recommendations prepared by the Retained Archaeologist will be applied following consultation with RED and the Archaeological Curators. The Retained Archaeologist is responsible for all quality assurance and monitoring of works conducted.
- 8.12.5 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 RED.
- 8.12.6 Storage for geotechnical samples will be carried out in line with the English Heritage Environmental Archaeology guidance (Campbell and Moffett, 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. The good practice for core storage will be outlined in a specific method statement and is essential to allow for geoarchaeological analysis and sampling to be carried out effectively.

8.13 Archiving

- 8.13.1 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 (ClfA, 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 Wind Farm Projects (Section 13.5: Archiving) (The Crown Estate, 2021).
- 8.13.2 Archive planning will be included within the relevant detailed method statement. Agreement with the Archaeological Curators will be sought on the most appropriate archiving repository for either individual reports or the Proposed Development as a whole.
- 8.13.3 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.
- 8.13.4 As a minimum, copies of all reports will be submitted to the NRHE of England. An Online Access to the Index of Archaeological Investigations (OASIS) form will be produced for the Proposed Development 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.
- 8.13.5 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).

- 8.13.6 All costs of archiving (whether digital, paper or object) will be met by RED. Tenders for such works will include provision for the preparation and deposition of expected archive.

9. Arrangements for review of the WSI

- 9.1.1 This Outline Marine WSI has presented mitigation measures based on the archaeological assessments undertaken in preparation of the Rampion 2 ES. This document forms the framework for mitigation that will inform the Draft Marine WSI, following review and consultation with the relevant stakeholders.
- 9.1.2 It is detailed in condition 11 of the Schedules 11 and 12 of the DCO that a WSI is in place:
- “The licensed activities or any phase of those activities must not commence unless no later than 6 months prior to the commencement a written scheme of archaeological investigation has been submitted to and approved by the MMO, in accordance with the outline offshore written scheme of investigation, and in accordance with industry good practice, in consultation with the statutory historic body.”*
- 9.1.3 The methodological frameworks for the archaeological analysis and interpretation of survey data throughout the lifetime of the project are set out in this Outline Marine WSI but may be reviewed in consultation with the Archaeological Curators prior to the Draft Marine WSI to best ensure archaeological objectives are taken into account.
- 9.1.4 Following indicative timeline set out in The Crown Estate 2021 guidance, the WSI will undergo revisions throughout the different phases of development of Rampion 2. Pre-consent, the Outline Marine WSI then Draft Marine WSI will form the framework for mitigation based on archaeological objectives, and post-consent the Final Marine WSI will set out the details of the overarching approach to survey and archaeological investigations and when supporting archaeological methodologies will be required.
- 9.1.5 Prior to pre-commencement surveys, the Draft 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), offshore substation locations, and offshore export cable routes are determined, as well as the identification of new marine heritage receptors, or changed understanding of existing receptors. The revision will constitute a final project specific WSI to be prepared prior to commencement of relevant licensed activities, to which detailed method statements will be appended.
- 9.1.6 Method statements will be produced and submitted to the Archaeological Curators for all planned archaeological works and include provision for the monitoring of progress of the investigations.

10. Glossary of terms and abbreviations

Table 10-1 Glossary of terms and abbreviations

Term (acronym)	Definition
Archaeological Exclusion Zones (AEZs)	Buffers around known marine heritage 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.
Archaeological potential	The likelihood of an identified anomaly to be of archaeological interest (such as wreck or crash sites, buried and confirmed palaeolandscapes, as well as potential outcropping palaeolandscapes and their margins) rather than solely of anthropogenic origin.
Archaeological significance	Determines the period, rarity, documentation, group value, condition, vulnerability, diversity and potential of a receptor. Assessed based on the criteria set out in the Scheduled Monuments & Nationally Important but Non-Scheduled Monuments guidance (DCMS, 2013).
Before Present (BP)	Time scale referring to the years before 1950.
Bronze Age	This period follows on from the Neolithic and is characterized by the increasing use of Bronze work. It is subdivided in the Early, Middle and Late Bronze Age. Archaeological period lasting from 2,600-700 BC.
CIfA	Chartered Institute for Archaeologists
CPT	Cone Penetration Testing
DAC	Digital Archive Centre
Decommissioning	The period during which a development and its associated processes are removed from active operation.
Deemed Marine Licence (dML)	If a Development Consent Order (DCO) is granted, this may include provision deeming a marine licence to have been issued under Part 4 of the Marine and Coastal Access Act 2009.

Term (acronym)	Definition
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Drop Down Video (DDV)	A survey method in which imagery of habitat is collected, used predominantly to survey marine environment and may be used during UXO surveys.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or 'baseline'). The impact on the significance of heritage assets is considered covered by the likely significant effect assessment.
Environmental Management Plan	Sets out the controls and processes that are to be adopted to mitigate environmental impacts of Rampion 2 as well as the measures set out to comply with consent conditions.
Environmental Measures	Mitigation strategies for Rampion 2, formulated to avoid or reduce environmental impacts where marine heritage receptors and anomalies are identified in the desk-based assessment and/or geophysical assessments. These are directly incorporated into the design of the proposed development.
Environmental Statement (ES)	The written output presenting the full findings of the Environmental Impact Assessment.
Geophysical	Relating to the physical properties of the Earth.
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 Seascape Characterisation (HSC)	Maps and describes historic cultural influences which shape seascape perceptions across marine areas and coastal land.
Impact	The changes resulting from an action.

Term (acronym)	Definition
Intertidal	The area of the shoreline which is covered at high tide and uncovered at low tide.
JNAPC	Joint Nautical Archaeology Policy Committee
Last Glacial Maximum (LGM)	Most recent time during the last glacial period that the ice sheets were at their greatest extents, approximately 26,500-19,000 years ago.
LIVE	Wreck considered to exist as a result of detection through survey
MAG	Magnetometer
Marine archaeology study area	Defined as the ES Boundary area up to MHWS and surrounded by a 2km buffer.
Marine Heritage Receptors	Physical resources such as shipwrecks, remains of aircraft, 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 Management Organisation (MMO)	MMO is an executive non-departmental public body, sponsored by the Department for Environment, Food & Rural Affairs. MMO license, regulate and plan marine activities in the seas around England so that they're carried out in a sustainable way.
MBES	Multi-beam Echo Sounder
MEDIN	Marine Environmental Data and Information Network
Mesolithic	The Middle Stone Age, falling between the Palaeolithic and the Neolithic; marks the beginning of a move from a hunter gatherer society towards food producing society. Archaeological period lasting from 10,000-4,000 BC.
MHWS	Mean High Water Springs
MIS	Marine Isotope Stage
MLWS	Mean Low Water Springs
Nanotesla (nT)	Measurement describing the magnetic field (flux) of ferrous materials as measures by a magnetometer. (one nanotesla equals 10 ⁻⁹ tesla)

Term (acronym)	Definition
Neolithic	This period follows on from the Palaeolithic and the Mesolithic and is itself succeeded by the Bronze Age. This period is characterized by the practice of a farming economy and extensive monumental constructions. Archaeological period lasting from 4,000-2,200 BC.
NRHE	National Record of the Historic Environment, a national database of known sites and features including wrecks, reported losses and find spots, held by Historic England. Currently (March 2022) being developed into the National Marine Heritage Record (NMHR).
OASIS	Online Access to the Index of Archaeological Investigations
Offshore	The sea further than two miles from the coast.
Offshore Wind Farm	An offshore wind farm is a group of wind turbines in the same location (offshore) in the sea which are used to produce electricity.
OSL	Optically Stimulated Luminescence
PAD	Offshore Renewables Protocol for Archaeological Discoveries
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 50,000-10,000 BC.
Preliminary Environmental Information Report (PEIR)	The written output of the Preliminary Environmental Impact Assessment undertaken for the Proposed Development. It was developed to support Statutory Consultation and presented the preliminary findings of the assessment to allow an informed view to be developed of the Proposed Development, the assessment approach that was undertaken, and the preliminary conclusions on the likely significant effects of the Proposed Development and environmental measures proposed.
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4 :

Term (acronym)	Definition
	The Proposed Development, Volume 2 of the ES (Document Reference: 6.2.4 [APP-045]).
Protocol for Archaeological Discoveries (PAD)	A document detailing how finds made during the lifetime of the Proposed Development should be reported.
Receiver of Wreck	Official of the British Government whose main task is to administer the law in relation to Wreck and Salvage.
RED	Rampion Extension Development Limited (the Applicant)
ROV	Remotely Operated Vehicle
SBP	Sub-Bottom Profiler
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.
Secretary of State	The Minister for Department for Energy Security and Net Zero (DESNZ).
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
SSS	Side Scan Sonar
Study area	Area where potential impacts from the Proposed Development could occur, as defined for each aspect.
TEZ	Temporary Exclusion Zones
UHRS	Ultra-High Resolution Seismic
Unexploded Ordnance (UXO)	The Minister for Department for Energy Security and Net Zero (DESNZ).
United Kingdom Hydrographic Office (UKHO)	Database of known wrecks and obstructions held and maintained by the UKHO.

Term (acronym)	Definition
Written Schemes of Investigation (WSI)	A live document forming the agreement between the client, the appointed archaeologists, contractors and the relevant stakeholders. The document sets out methods to mitigate the effects on all the known and potential archaeological receptors within the development area.
WTG	Wind Turbine Generator

11. Figures

Figure 1-1 Marine archaeology study area and geophysical survey extent

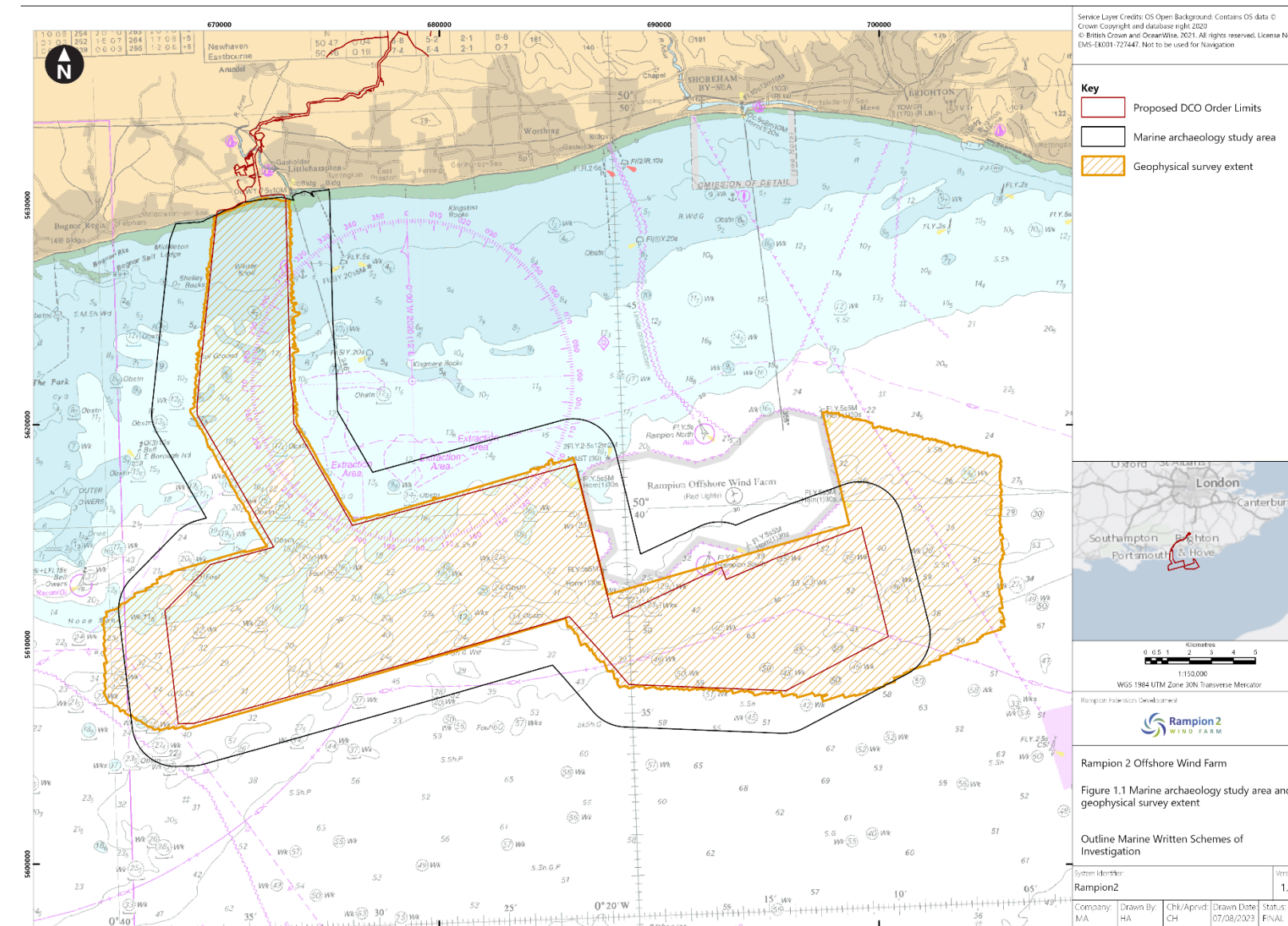


Figure 1-2 Archaeological Exclusion Zones recommended for high and medium potential anomalies

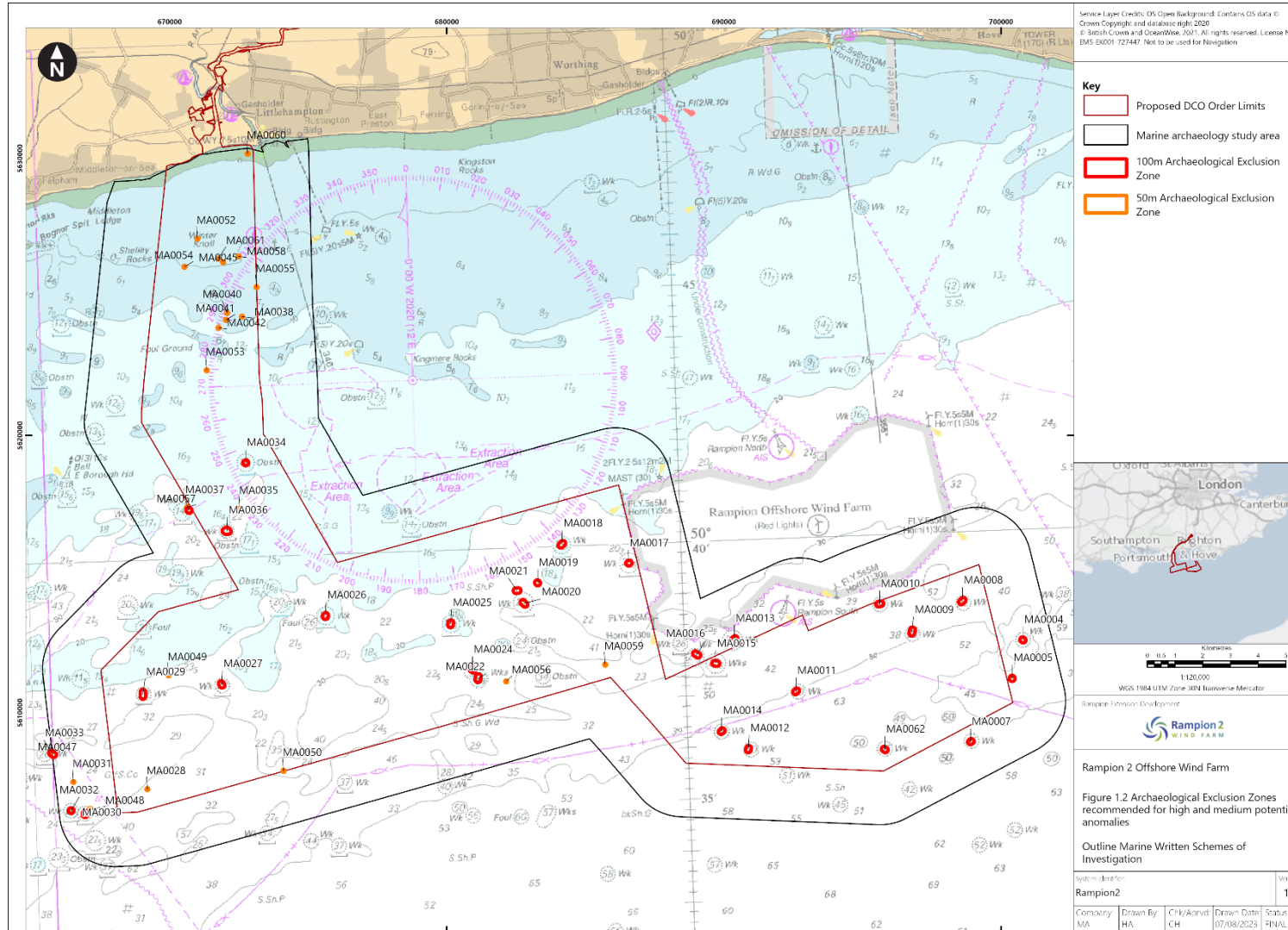


Figure 1-3 Valleys and channels of geoarchaeological potential

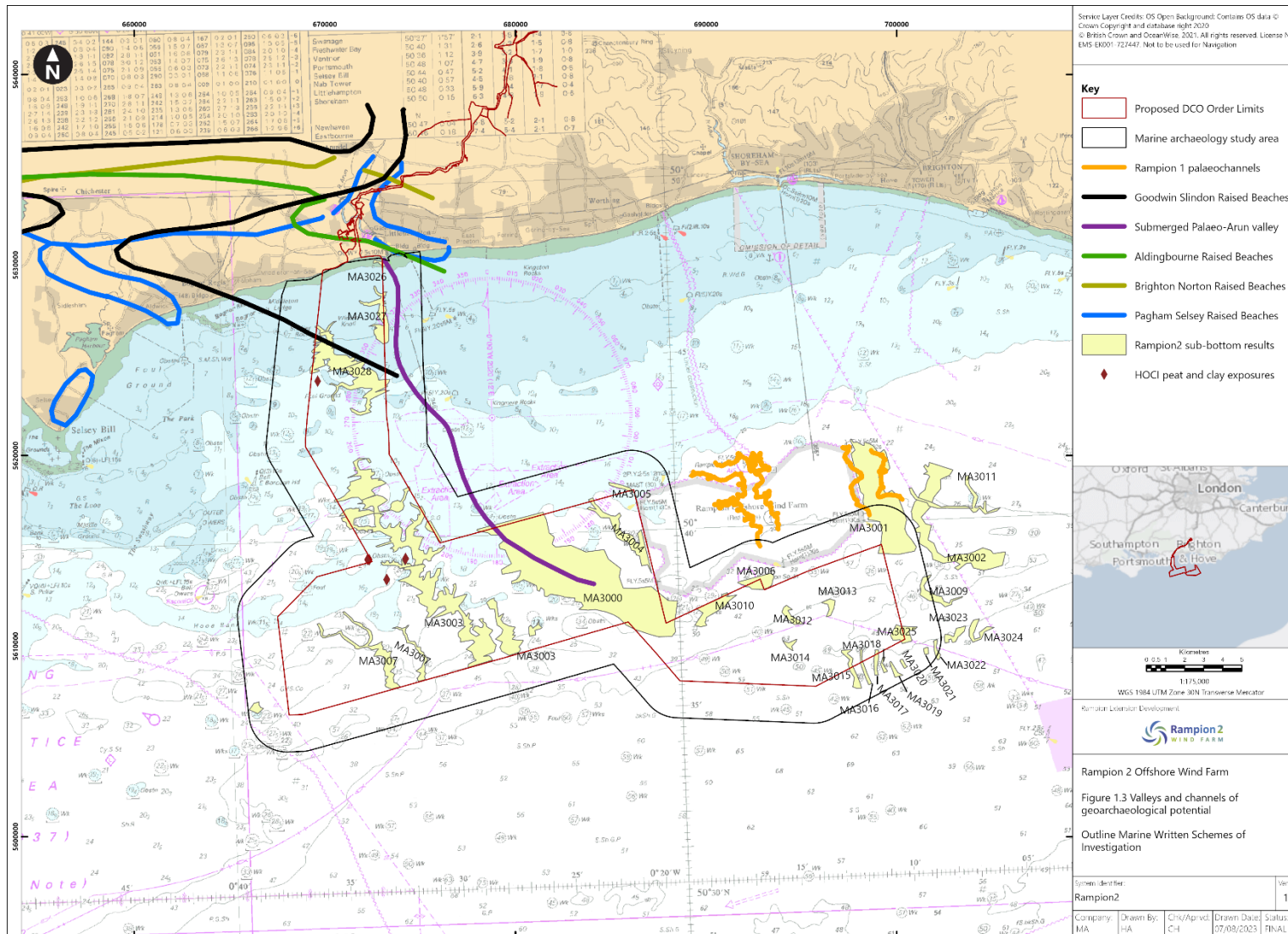


Figure 1-4 Known wrecks and obstructions within the marine archaeology study area

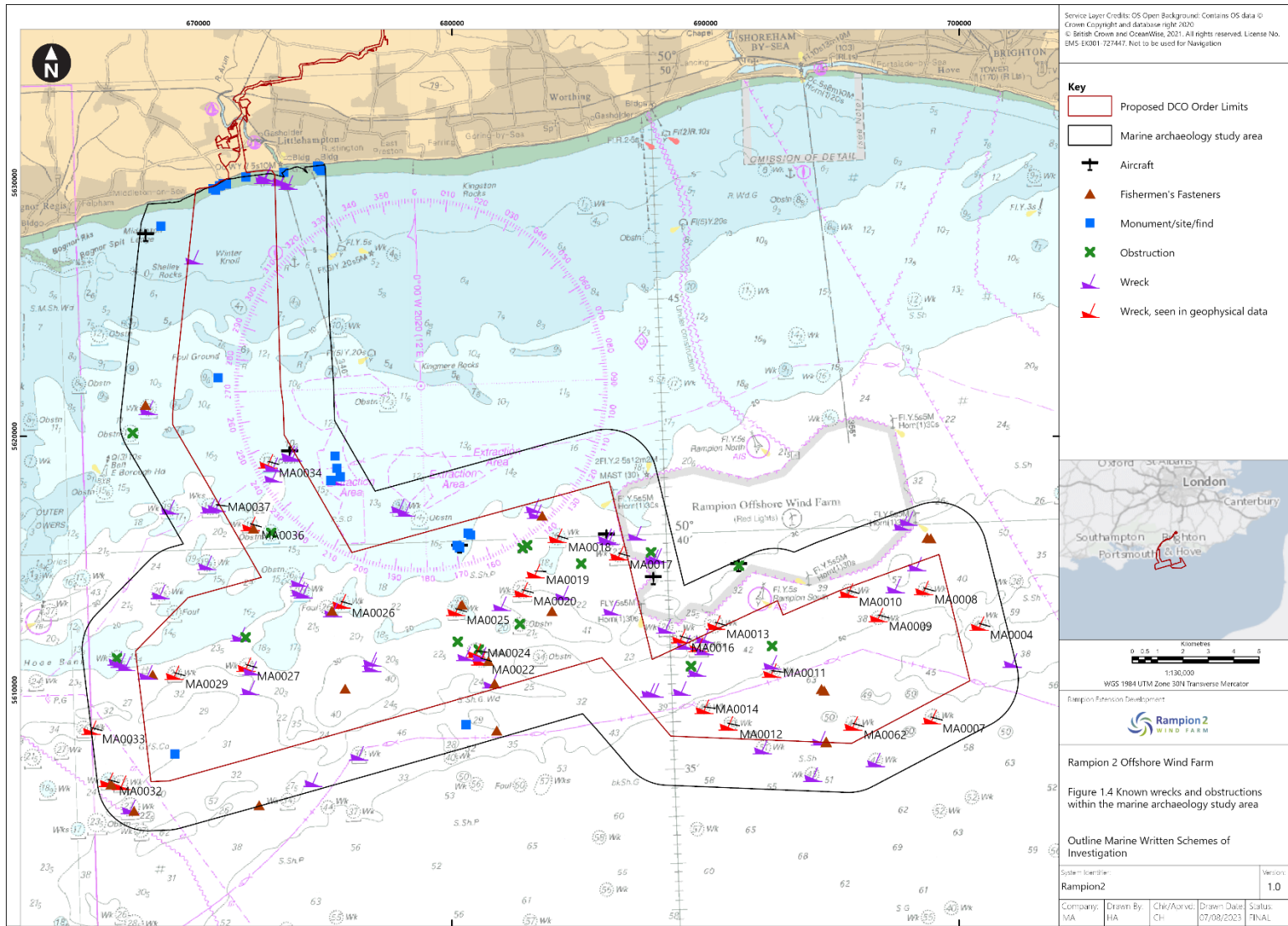


Figure 1-5 Archaeological Exclusion Zones recommended for recorded wrecks and obstructions, and high and medium potential anomalies

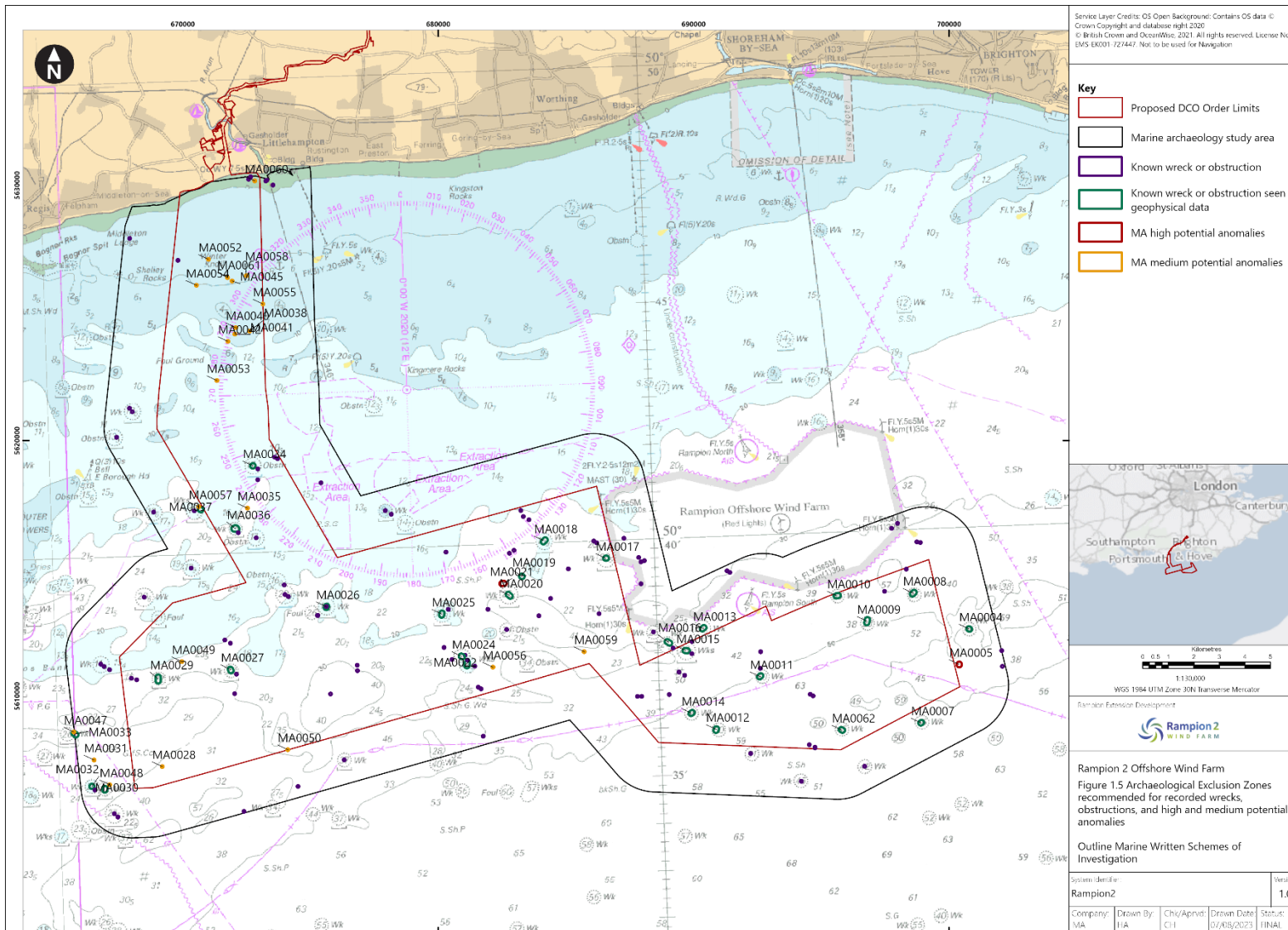
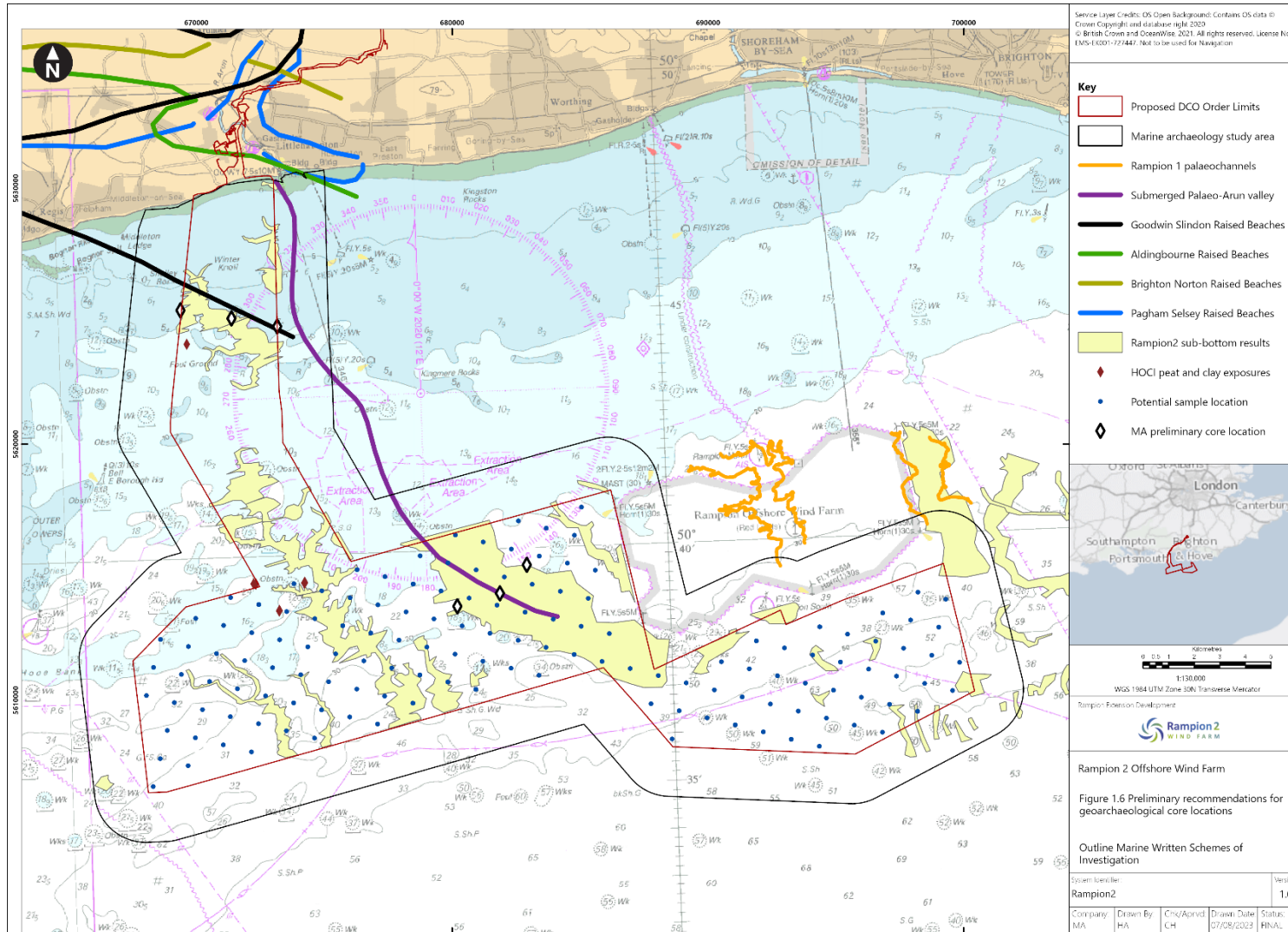


Figure 1-6: Preliminary recommendations for geoaerchaeological core locations



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Annex A.

Outline project-specific Protocol for Archaeological Discoveries (PAD)

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, objects or deposits where an archaeologist is not present on site or immediately available. This project specific 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.

This Outline PAD for Rampion 2 summarises the Protocol for Archaeological Discoveries, the roles and responsibilities of RED and relevant contractors, and contains contact details for RED's reporting chain.

This Outline PAD has been developed in reference to the Protocol for Archaeological Discoveries: Offshore Renewables Project (The Crown Estate, 2014).

Aims and objectives

The aim of this Outline PAD is to set out the proposed approach to mitigating the impact of Rampion 2 on the historic environment by implementing a project specific protocol for unexpected archaeological discoveries encountered during the course of site investigation or construction activities.

The key objectives for this protocol are to:

- set out the proposed procedures to be followed in order to avoid impacts on unexpected archaeology 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 wind farm.

Roles

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 requested. All relevant personnel will be provided with an introductory presentation outlining the tasks and procedures involved for successful implementation.

Curators

The Historic England will be the Archaeological Curator responsible for heritage matters seaward of MLWS, and West Sussex County Council and East Sussex County Council landward of MLWS. Historic England will be kept informed of any archaeological finds in relation to Rampion 2. For intertidal matters, the Historic England Science Advisor for the South East and the relevant Local Authority Archaeologist will be contacted.

Retained Archaeologist

The Retained Archaeologist, when appointed by RED, will act on behalf of RED and will act as liaison between the Nominated Contact and the Curators. See **Figure A-1**. If a Retained Archaeologist is not appointed, advice can be sought from the PAD Implementation Service provided by Wessex Archaeology.

The Retained Archaeologist will:

- advise on 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 of the find;
- advise on resolving ownership issues; and
- liaise with the relevant local authorities, museums and curators with regard to reported finds.

Nominated Contact

The Nominated Contact will be the Environment Manager and/or Principal Contractor within Rampion 2'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 in the Protocol.

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.

Site Champion

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.

All staff

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 when reporting finds of archaeological potential.

Finds identification

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

Table A-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
Concretions – iron/steel covered by a thick concrete like coating	Yes	Wreck
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 out 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

Material	Report to the Retained Archaeologist	Archaeological potential
Pieces of wood that have been shaped, jointed or fixed with wooden pegs, bolts or nails	Yes	Structure or wreck
Objects made out of 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
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

Finds handling and conservation procedures

Table A-2 summarises how the finds or objects, if recovered to the surface should be handled and stored until passed on to the Retained Archaeologist ('wet finds' refers to finds still wet when found; 'dry finds' are finds that have dried out or were found dry).

Table A-2 Finds handling procedures

Wet finds	Dry finds
Photograph the find <ul style="list-style-type: none"> ▶ Use a scale ▶ Focus on the object ▶ One item at a time ▶ Additional close-ups of important details 	Photograph the find <ul style="list-style-type: none"> ▶ Use a scale ▶ 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 water, 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.	

Preliminary record form

The reporting form as shown in **Table A-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 A-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:

(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:

Project specific roles

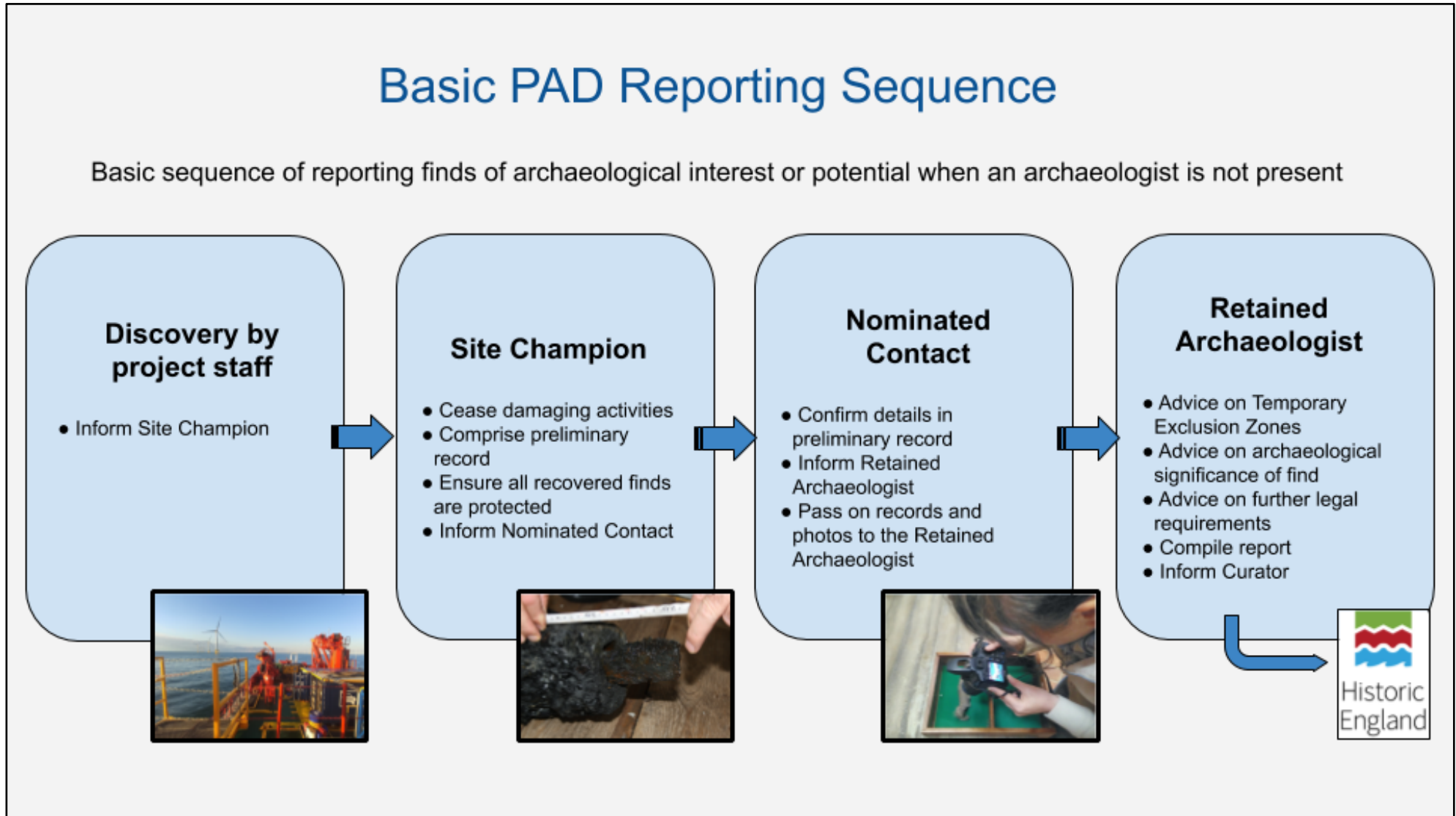
Appointed personnel as detailed in the final PAD will be responsible for the implementation of the PAD.

The appointments will be made by RED 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.

Relevant legislation

- Burial Act 1857. The Act requires a licence to be granted prior to the removal of human remains from deliberately deposited contexts.
- Protection of Military Remains Act 1986. The Act 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. The Act is 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.
- Protection of Wrecks Act 1973. Under the 1973 Act, shipwrecks and wreckage of historical, archaeological or artistic importance within 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 licence.
- 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.
- 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.

Figure A-1 Protocol for Archaeological Discoveries



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