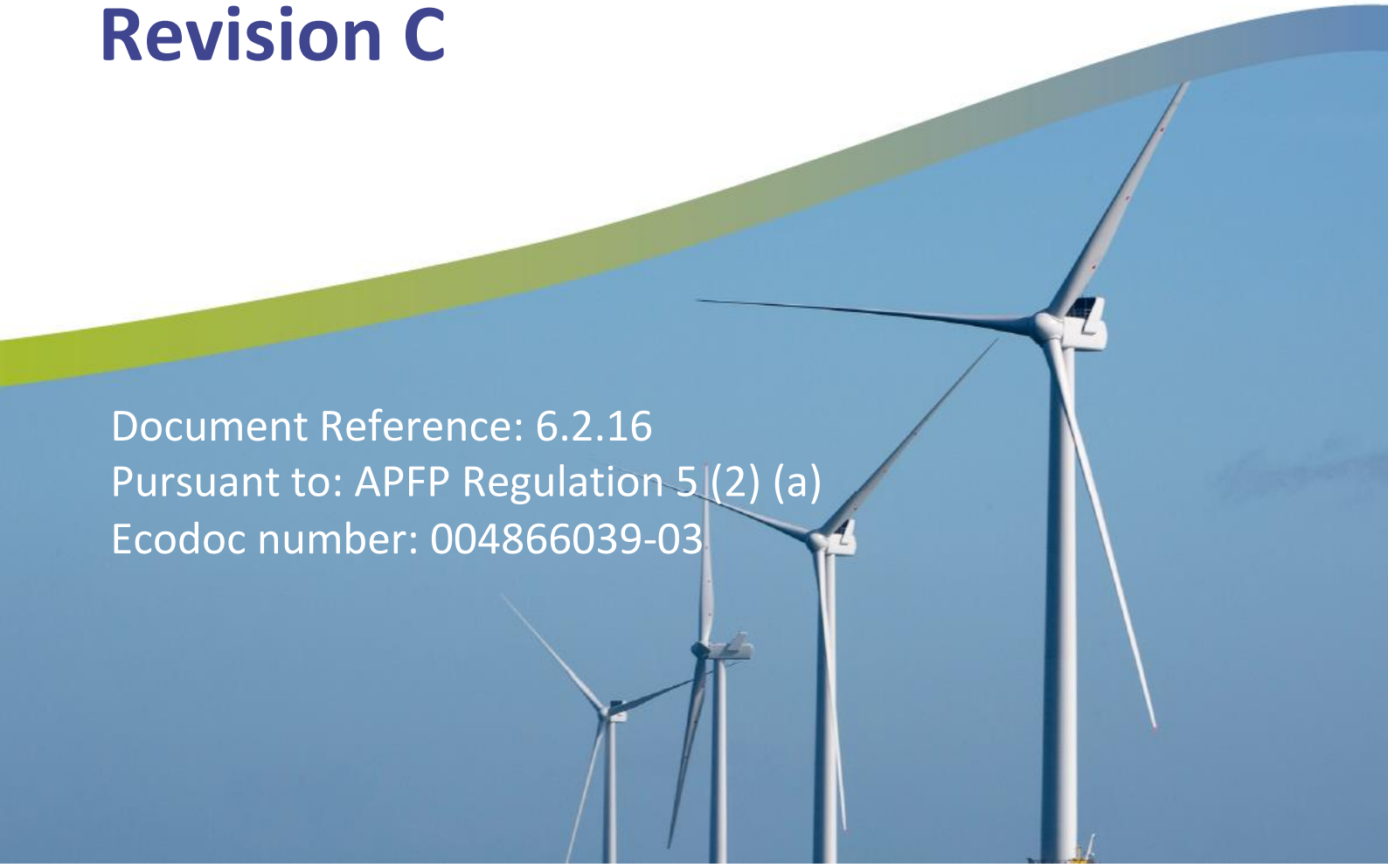
Rampion 2 Wind Farm

Category 6: Environmental Statement

Volume 2, Chapter 16: Marine archaeology (clean)

Date: August 2024

Revision C



Document Reference: 6.2.16
Pursuant to: APFP Regulation 5 (2) (a)
Ecodoc number: 004866039-03

Document revisions

Revision	Date	Status/reason for issue	Author	Checked by	Approved by
A	04/08/2023	Final for DCO Application	GoBe	RED	RED
B	25/04/2024	Deadline 3	GoBe	RED	RED
C	01/08/2024	Updated at Deadline 6	GoBe	RED	RED

Contents

List of Tables

List of Figures, Volume 3

List of Appendices, Volume 4

Executive Summary

The Environmental Statement (ES) identifies any likely significant effects on other marine archaeology resulting from the proposed construction, operation and decommissioning of the offshore infrastructure.

The assessment has considered the following impacts during the construction phase: removal of sediment containing undisturbed archaeological context, penetration, compression and disturbance of piling foundations, cable laying operations, jack up barges and anchoring of construction vessels, disturbance of sediment containing potential marine heritage receptors and changes to the Historic Seascape Characterisation (HSC). The following impacts during the operation and maintenance phase: Penetration, compression and disturbance effects of maintenance activities at wind turbine generator substation foundations and along the inter-array, export cables, at jackup barges and anchoring operations of maintenance vessels, disturbance of sediment containing potential marine heritage receptors and scour effects caused by the presence of the Proposed Development. The following impacts during the decommissioning phase: penetration, compression and disturbance effects of jack up barges and anchoring decommissioning vessels, drawdown of sediment into voids left by removed wind turbine generator foundations and changes to the HSC.

The information used in the Environmental Statement has come from both desk-based studies and site surveys within the study area.

Page intentionally blank

16. Marine archaeology

16.1 Introduction

16.1.1 This chapter of the Environmental Statement (ES) presents the results of the assessment of the likely significant effects (in EIA terms) of Rampion 2 with respect to marine archaeology, including historic and pre-historic landscapes, sunken vessels, aviation remains and structures.

16.1.2 The chapter is also supported by and should be read in conjunction with the following appendix and DCO document:

- **Appendix 16.1 Marine Archaeology Technical Report, Volume 4** of the ES (Document Reference: 6.4.16.1);
- **Outline Marine Written Scheme of Investigation (offshore)** (Document Reference: 7.13);
- It should be further be read in conjunction with the project description provided in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4);
- and the relevant parts of the following chapters and appendices:
  - **Chapter 6: Coastal processes, Volume 2** of the ES (Document Reference: 6.2.6) (outlining geological aspects changes relevant to pre-history);
  - **Chapter 15: Seascape landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) (associated with Historic Seascape Characterisation); and
  - **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) (due to overlapping study areas in the intertidal zone; and
  - **Commitments register** (Document Reference: 7.22) (full description of all environmental measures).

16.1.3 This technical chapter describes:

- the legislation, planning policy and other documentation that has informed the assessment (**Section 16.2**: Relevant legislation, planning policy and other documentation);
- the outcome of consultation and engagement that has been undertaken to date, including how matters relating to marine archaeology within the statutory Consultation period, have been addressed (**Section 16.3**: Consultation and engagement);
- the scope of the assessment for marine archaeology (**Section 16.4**: Scope of the assessment);

- the methods used for the baseline data gathering and potential limitations (**Section 16.5**: Methodology for baseline data gathering);
- the overall baseline (**Section 16.6**: Baseline conditions);
- embedded environmental measures relevant to marine archaeology and the relevant maximum design scenario (**Section 16.7**: Basis for ES assessment);
- the assessment methods used for the ES (**Section 16.8:** Methodology for ES assessment);
- the assessment of marine archaeology effects during the construction, operation and maintenance and decommissioning phases and cumulatively (**Section 16.9:** Assessment of effects: Construction phase to **Section 16.12:** Assessment of cumulative effects);
- consideration of transboundary effects (**Section 16.13:** Transboundary effects);
- inter-related effects (**Section 16.14:** Inter-related effects);
- a summary of residual effects for marine archaeology (**Section 16.15:** Summary of residual effects);
- a glossary of terms and abbreviations is provided in **Section 16.16:** Glossary of terms and abbreviations; and
- a references list is provided in **Section 16.17**.

16.2 Relevant legislation, planning policy and other documentation

Introduction

16.2.1 This section identifies the legislation, policy and other documentation that has informed the assessment of significance of effects with respect to marine archaeology. Further information on policies relevant to the EIA and their status is provided in **Chapter 2: Policy and legislative context, Volume 2** of the ES (Document Reference: 6.2.2).

16.2.2 This section details and outlines the relevance to the assessment on potential effects on marine heritage receptors within relevant legislation in **Table 16-1**, the national planning policy relevant to marine archaeology in **Table 16-2**, the Emerging national planning policy relevant to marine archaeology in **Table 16-3**, outlines the local planning policies relevant to the assessment of the potential effects on marine archaeology in **Table 16-4**, followed by a list of other relevant information and guidance.

Legislation and national planning policy

16.2.3 **Table 16-1**, details the legislation relevant to assessment of the effects on marine heritage receptors. The national planning policy relevant to marine archaeology in

is included in **Table 16-2**, the Emerging national planning policy relevant to marine archaeology is outlined in **Table 16-3**.

Table 16-1 Legislation relevant to marine archaeology

Legislation description	Relevance to assessment
Marine and Coastal Access Act 2009	
The Act sets out a framework for the management of marine functions and activities for areas which include waters in or adjacent to England up to the seaward limits of the territorial sea. It provides for the preparation and adoption of marine plans and for the regulation of licensable activities in the marine environment through the grant and enforcement of conditions on marine licences.	Rampion 2 will need to consider and comply with the requirements of the adopted Marine Policy Statement and South Marine Plan as they relate to the impact of the Proposed Development on marine heritage. A number of the embedded environmental measures will be secured through the deemed grant of a marine licence pursuant to the Act. The significance of marine heritage receptors within the marine archaeology study area is presented in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The embedded environmental measures are presented in **Table 16-16**.
Merchant Shipping Act 1995	
The Receiver of Wreck administers the Merchant Shipping Act 1995, in the UK in relation to wreck and salvage. The Receiver is responsible for processing incoming reports of wreck and cargo.	Rampion 2 may cause impact on objects associated with wrecks. If any material is recovered during works associated with Rampion 2 which fall within the definition of 'wreck', the Receiver of Wreck must be notified and will seek to identify the original owner, as detailed in **Outline Marine Written Scheme of Investigation** (Application Reference Number 7.13).
Protection of Wrecks Act 1973	
Acts to secure the protection of wrecks within designated areas in territorial waters, and the sites of such wrecks, from interference by unauthorised persons.	Heritage features regarded as of special interest or significance may become designated within the Rampion 2 area. There is currently no protected wreck sites identified within the Rampion 2 marine archaeology study area as presented in **Section 3.2 Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Legislation description	Relevance to assessment
	Licenses for work on protected wreck sites are the responsibility of the Secretary of State for Culture, Media and Sport and is not part of the development consent.
The Protection of Military Remains Act 1986	
Provides protection for the wreckage of military aircraft and certain military wrecks. Designations can be either as a Controlled Site or Protected Place where access may be permitted but any operations which may disturb the site are illegal unless licensed by the Ministry of Defence.	If any material associated with a vessel or aircraft that were in military service when lost or wrecked is located, the area will be protected under this Act. All military aircraft are automatically protected under this legislation; however, vessels must be designated individually. There are several reported aircraft losses within the Rampion 2 marine archaeology study area that will require a licence (obtained from the Secretary of State, Chapter 35 Section 4 of this Act) under this Act before any works that may impact them can commence. However, no material remains from aircrafts have been located during the baseline assessment, as summarised in **Section 3.2, Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Burial Act 1857	
The Act requires a licence to be granted prior to the removal of human remains from deliberately deposited contexts.	If human remains are discovered during works associated with Rampion 2, they will be protected under this Act. The actions required where humans remain are found are further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).
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 handover as per the Coroner's instructions.	Should any relevant material be found during works associated with Rampion 2, advice from the Coroner must be sought and their instructions adhered to (as detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Legislation description	Relevance to assessment
Ancient Monuments and Archaeological Areas Act 1979	
Monuments that are of national importance within UK territorial waters can be protected by being designated within the schedule of monuments protected under this Act.	It is an offence to damage or carry out a range of specified activities on a 'Scheduled Monument' unless authorised to do so. There are currently no Scheduled Monuments in the Rampion 2 marine archaeology study area as presented in **Section 3.2, Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1)**,**

16.2.4 **Table 16-2** lists the national planning policy relevant to the assessment of the effects on marine heritage receptors.

Table 16-2 National planning policy relevant to marine archaeology

Policy description	Relevance to assessment
UK Marine Policy Statement	
2.6.6 – 2.6.9 Historic environment The UK Administration states that heritage assets should be enjoyed and conserved through the planning process in a manner appropriate and proportionate to their significance.	As marine activities have the potential to result in adverse effects on the historic environment both directly and indirectly, including damage to or destruction of heritage assets, all available evidence to identify the significance of the heritage assets within the marine archaeology area is presented in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).The recommended mitigation, in form of embedded environmental measures is presented in **Section 16.8.**
Overarching National Policy Statement for Energy (EN-1). July 2011. Section 5.8 Historic Environment.	
Paragraph *5.8.8* *"As part of the ES (see Section 4.2) the applicant should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets*	Known and unknown heritage assets may be affected by the proposed Rampion 2 development. All known heritage assets and their archaeological significance in the marine zone have been described in detail in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6.**

Policy description	Relevance to assessment
and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset. As a minimum the applicant should have consulted the relevant Historic Environment Record (or, where the development is in English or Welsh waters, English Heritage or Cadw) and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact"	
Paragraph 5.8.9 "*Where a development site includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact*"	The archaeological potential within the marine archaeology study area (**Section 16.4**) has been considered and assessed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and is further summarised in **Section 16.6**.
Paragraph 5.8.10 *"The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents"*	The archaeological significance and potential impact on the marine heritage receptors of the Proposed Development are discussed in **Section 16.9** (construction), **Section 16.10** (Operation and Maintenance), and **Section 16.11** (Decommissioning).
Paragraph 5.8.11 "In considering applications, the IPC should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development, including by development affecting the setting of a heritage asset, taking account of:	The archaeological significance and potential impact on the marine heritage receptors of the Proposed Development are discussed in **Section 16.9** (construction), **Section 16.10** (Operation and Maintenance), and **Section 16.11** (Decommissioning). Further details are provided within **Appendix 16.1: Marine archaeological technical report,**

Policy description	Relevance to assessment
●evidence provided with the application; ● any designation records; ● the Historic Environment Record, and similar sources of information121; ● the heritage assets themselves; ●the outcome of consultations with interested parties; and ● where appropriate and when the need to understand the significance of the heritage asset demands it, expert advice.	**Volume 4** of the ES (Document Reference: 6.4.16.1).
Paragraph 5.8.12 "*In considering the impact of a proposed development on any heritage assets, the IPC should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development."*	**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines all provisions made, and standards expected for mitigation of potential impacts on marine heritage receptors. The document also outlines the incorporation of relevant local and national research frameworks in future works to contribute to the knowledge and understanding of the historic environment and the value they hold. The securement of the WSI document is detailed as Embedded environmental measure C-57 (**Table 16-16**) and is reflected in the Development Consent Order (DCO) (Requirement 13 (2)).
Paragraph 5.8.13 "*The IPC should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution they can make to sustainable communities and economic vitality. The IPC should take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials and use. The IPC should have regard to any relevant local authority development plans or local impact report on the proposed development*	While not directly applicable to marine heritage receptors, the **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines all provisions made, and standards expected for mitigation of potential impacts on marine heritage receptors. The document also outlines the incorporation of relevant local and national research frameworks in future works to contribute to the knowledge and understanding of the historic environment. The securement of the WSI document is detailed as Embedded environmental measure C-57 (**Table 16-16**) and is reflected in the Development Consent Order (DCO) (Requirement 13 (2)).

Policy description	Relevance to assessment
in respect of the factors set out in footnote 122" *"122 This can be by virtue of:* *● heritage assets having an influence on the character of the environment and an area's sense of place;* *● heritage assets having a potential to be a catalyst for regeneration in an area, particularly through leisure, tourism and economic development;* *● heritage assets being a stimulus to inspire new development of imaginative and high quality design;* *● the re-use of existing fabric, minimising waste; and* *● the mixed and flexible patterns of land use in historic areas that are likely to be, and remain, sustainable."*	
Paragraph 5.8.14 *"There should be a presumption in favour of the conservation of designated heritage assets and the more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II listed building park or garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including Scheduled Monuments; registered battlefields; grade I and II* listed buildings; grade I and II* registered*	Potential direct or indirect effects on marine heritage receptors have been assessed in **Table 16-19**. **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines all provisions made, and standards expected for mitigation of potential impacts on marine heritage receptors.

Policy description	Relevance to assessment
parks and gardens; and World Heritage Sites, should be wholly exceptional."	
Paragraph 5.8.15 "*Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset the greater the justification will be needed for any loss. Where the application will lead to substantial harm to or total loss of significance of a designated heritage asset the IPC should refuse consent unless it can be demonstrated that the substantial harm to or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm*."	Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. Potential direct or indirect effects on marine heritage receptors have been assessed in **Table 16-19**.
Paragraph 5.8.17 *"Where loss of significance of any heritage asset is justified on the merits of the new development, the IPC should consider imposing a condition on the consent or requiring the applicant to enter into an obligation that will prevent the loss occurring until it is reasonably certain that the relevant part of the development is to proceed."*	Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. Potential direct or indirect effects on marine heritage receptors have been assessed in **Table 16-19**. **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines all provisions made for further assessment of marine heritage receptors. The securement of the WSI document is detailed as Embedded environmental measure C-57 (**Table 16-16**) and is reflected in the Development Consent Order (DCO) (Requirement 13 (2)).
Paragraph 5.8.19 "A documentary record of our past is not as valuable as retaining the heritage asset and therefore the ability to record evidence of the asset should not be a factor in deciding whether consent should be given."	The **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) is secured through embedded environmental measure C-57 (**Table 16-15**). The embedded environmental measure C-57 is reflected in the DCO (Requirement 13 (2)).

Policy description	Relevance to assessment
	As outlined in the WSI document **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) which is secured through embedded environmental measure C-60 (**Table 16-15**),the commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated will ensure preservation *in situ*. Where items might be removed from the seabed, conservation strategies will be clearly outlined in the relevant Method Statements produced ahead of any such archaeological works.
Paragraph 5.8.20 "*Where the loss of the whole or a material part of a heritage asset's significance is justified, the IPC should require the developer to record and advance understanding of the significance of the heritage asset before it is lost. The extent of the requirement should be proportionate to the nature and level of the asset's significance. Developers should be required to publish this evidence and deposit copies of the reports with the relevant Historic Environment Record. They should also be required to deposit the archive generated in a local museum or other public depository willing to receive it*"	**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines all provisions made, and standards expected for archaeological recording of marine heritage receptors. The document further details where archives and material will be deposited. The securement of the WSI document is detailed as Embedded environmental measure C-57 (**Table 16-16**) and is reflected in the Development Consent Order (DCO) (Requirement 13 (2)).
Paragraph 5.8.21 *"Where appropriate, the IPC should impose requirements on a consent that such work is carried out in a timely manner in accordance with a written scheme of investigation that meets the requirements of this Section and has been agreed in writing with the relevant Local Authority (where the development is in English waters, the Marine Management Organisation and English Heritage, or where it is in*	Embedded environmental measures relevant to marine archaeology are set out in **Table 16-16**, C-57 details how the WSI (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)) will be implemented. The embedded environmental measure C-57 is reflected in the DCO (Requirement13 (2)).

Policy description	Relevance to assessment
Welsh waters, the MMO and Cadw)) and that the completion of the exercise is properly secured"	
Paragraph 5.8.22 "*Where the IPC considers there to be a high probability that a development site may include as yet undiscovered heritage assets with archaeological interest, the IPC should consider requirements to ensure that appropriate procedures are in place for the identification and treatment of such assets discovered during construction*"	The Protocol for Archaeological Discoveries (PAD) is appended to the WSI (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)) and defines the procedure that will be followed if as yet undiscovered heritage assets with archaeological interest (here defined as marine heritage receptors) are identified during the construction, operation and maintenance or decommissioning phases of Rampion 2. The securement of the WSI document is detailed as Embedded environmental measure C-57 (**Table 16-16**). The embedded environmental measure C-57 is reflected in the DCO (Requirement 13 (2)).
National Policy Statement for Renewable Energy Infrastructure (EN-3). July 2011. Section 2.6 Offshore Wind, Offshore Wind Farm Impacts – Historic environment.	
Paragraph 2.6.138 "*Heritage assets, as described in Section 5.8 of EN-1, may exist offshore and within the intertidal areas (the area between high tide and low tide marks). Such heritage assets can include remains from pre-historic settlements which existed prior to sea level rises as well as wreck sites and other features of historic maritime significance*"	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) presents and details the archaeological desk-based assessments and outlines heritage assets, (here defined as marine heritage receptors).
Paragraph 2.6.139 "*"Heritage assets can be affected by offshore wind farm development in two principal ways:* ● *from the direct effect of the physical siting of the development itself such as the installation of the wind turbine foundations and electricity cables or the siting of plant required during the construction period; and;*	Potential direct or indirect effects on marine heritage receptors have been assessed in **Table 16-19**.

Policy description	Relevance to assessment
● *from indirect changes to the physical marine environment (such as scour, coastal erosion or sediment deposition) caused by the proposed infrastructure itself or its construction"*	
Paragraph 2.6.140 "*Consultation with the relevant statutory consultees (including English Heritage or Cadw) should be undertaken by the applicants at an early stage of the development)*"	Consultations with Historic England and other stakeholders throughout the project development are outlined in **Section 16.3**.
Paragraph 2.6.141 "*Assessment should be undertaken as set out in Section 5.8 of EN-1. Desk-based studies should take into account any geotechnical or geophysical surveys that have been undertaken to aid the wind farm design*"	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) presents and details the archaeological assessments of the geophysical data collected to date. The results are also summarised in **Section 16.6**. Geotechnical surveys are planned post-consent, with locations targeted for archaeologically specific cores based on the geophysical data and records.
Paragraph 2.6.142 "*Assessment should include the identification of any beneficial effects on the historic marine environment, for example through improved access or the contribution to new knowledge that arises from investigation*"	Beneficial effects on potential marine heritage receptors are discussed in **Sections 16.9** to **16.15**.
Paragraph 2.6.143 "*Where elements of an application (whether offshore or onshore) interact with features of historic maritime significance that are located onshore, the effects should be assessed in accordance with the policy at Section 5.8 in EN-1*"	The onshore and offshore archaeological resources have been cross-referenced and technical reports (**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1 and **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25)) have been shared between archaeological contractors. The offshore and onshore archaeological assessments overlap at the intertidal zone as outlined in the respective technical reports.
Paragraph 2.6.144 "*The IPC should be satisfied that offshore wind farms and associated*	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and details all known wrecks

Policy description	Relevance to assessment
infrastructure have been designed sensitively taking into account known heritage assets and their status, for example features designated as Protected Wrecks"	and obstructions. There are currently no protected wrecks sites within the archaeology study area. The **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) details Archaeological Exclusion Zones (AEZ) (as per C-60 (**Table 16-16**)) that have been applied to all known wrecks and anomalies of high and medium significance as summarised in **Section 16.6**. and presented in **Table 16-16**.
Paragraph 2.6.145 "*Avoidance of important heritage assets, including archaeological sites and historic wrecks, is the most effective form of protection and can be achieved through the implementation of exclusion zones around such heritage assets which preclude development activities within their boundaries*"	Archaeological Exclusion Zones (AEZ) (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance as outlined in **Section 16.6**. The embedded environmental measures are further detailed in **Section 16.7** and presented in **Table 16-16**.
Paragraph 2.6.145 "*As set out in paragraphs 2.6.44 and 2.6.45 above, where requested by applicants, the IPC should consider granting consents that allow for micrositing to be undertaken within a specified tolerance. This allows changes to be made to the precise location of infrastructure during the construction phase so that account can be taken of unforeseen circumstances such as the discovery of marine archaeological remains."*	All intrusive construction activities will be routed and microsited to avoid any identified marine heritage receptors with AEZs, as per C-60 (**Table 16-16**).

16.2.5 **Table 16-3** lists the emerging national planning policy considerations relevant to the assessment of the effects on marine heritage receptors.

Table 16-3 Emerging national planning policy relevant to marine archaeology

Policy description	Relevance to assessment
Draft Overarching National Policy Statement for Energy (EN-1). March 2023. Section 5.9 Historic Environment	
Paragraph 5.9.9 "*The applicant should undertake an assessment of any likely significant heritage impacts of the proposed development as part of the EIA and describe these in the ES (see Section 4.2). This should include consideration of heritage assets above, at, and below the surface of the ground. Consideration will also need to be given to the possible impacts, including cumulative, on the wider historic environment. The assessment should include reference to any historic landscape or seascape character assessment and associated studies as a means of assessing impacts relevant to the proposed project*"	All known and unknown marine heritage receptors in the marine zone that may be affected by the proposed Rampion 2 development and their archaeological significance have been described in detail in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**. Potential impact on the marine heritage receptors of the Proposed Development is discussed in **Sections 16.9** to **16.15**. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained.
Paragraph 5.9.10 "*As part of the ES the applicant should provide a description of the significance of the heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the applicant should have consulted the relevant Historic Environment Record (or, where the development is in English or Welsh waters, Historic England or Cadw) and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact.*"	All known and unknown marine heritage receptors in the marine zone that may be affected by the proposed Rampion 2 development and their archaeological significance have been described in detail in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**. The sources consulted are presented in **Table 16-11**.
Paragraph 5.9.11 "*Where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant*	Heritage assets in the marine zone as defined in **Table 16-8** and the archaeological potential within the marine archaeology study area have been considered and assessed in **Appendix 16.1: Marine archaeological technical**

Policy description	Relevance to assessment
should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, accurate representative visualisations may be necessary to explain the impact."	**report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained.
Paragraph 5.9.12 "*The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents. Studies will be required on those heritage assets affected by noise, vibration, light and indirect impacts, the extent and detail of these studies will be proportionate to the significance of the heritage asset affected*"	The archaeological significance and potential impact on the marine heritage identified within the Proposed Development was undertaken according to the methodology outlined in **Section 16.8**. **Table 16-15** outlines the maximum design scenario and relevant activities that may impact archaeological receptors. **Sections 16.9** to **16.15** further details how marine archaeological receptors may be affected.
Paragraph 5.9.13 *"The applicant is encouraged, where opportunities exist, to prepare proposals which can make a positive contribution to the historic environment, and to consider how their scheme takes account of the significance of heritage assets affected. This can include, where possible:* *• enhancing, through a range of measures such a sensitive design, the significance of heritage assets or setting affected* *• considering where required the development of archive capacity which could deliver significant public benefits* *• considering how visual or noise impacts can affect heritage assets, and whether there may be opportunities to enhance access to, or interpretation, understanding and appreciation of, the heritage assets affected by the scheme"*	Positive contributions to knowledge and enhancement of understanding of the historic environment can be realised through data gathering, interpretation and publication. The works will contribute to current research frameworks in the region and will be further detailed in forthcoming Method Statements. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations which will undergo archaeological assessment will also ensure the commitment to continued assessment of heritage potential is maintained. Further schemes of investigation are included in the **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and secured through embedded environmental measure C-57 (**Table 16-15**).

Policy description	Relevance to assessment
	The embedded environmental measure C-57 is reflected in the DCO (Requirement 13 (2)).
Paragraph 5.9.14 "*Careful consideration in preparing the scheme will be required on whether the impacts on the historic environment will be direct or indirect, temporary or permanent*"	Potential direct, indirect, or temporary effects on marine heritage receptors have been summarised in **Table 16-9** and further detailed in **Sections 16.9** to **16.15**.
Paragraph 5.9.15 "*Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably*"	Positive contributions to knowledge and enhancement of understanding of the historic environment can be realised through data gathering, interpretation and publication. The works will contribute to current research frameworks in the region and will be further detailed in forthcoming Method Statements. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained. Further schemes of investigation are included in the **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and secured through embedded environmental measure C-57 (**Table 16-15**). The embedded environmental measure C-57 is reflected in the DCO (Requirement 13 (2)).
Paragraph 5.9.16 "*A documentary record of our past is not as valuable as retaining the heritage asset, and therefore the ability to record evidence of the asset should not be a factor in deciding whether such loss should be permitted, and whether or not consent should be given*"	As outlined in the WSI document **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) which is secured through embedded environmental measure C-60 (**Table 16-15**),the commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and

Policy description	Relevance to assessment
	impact mitigated will ensure preservation *in situ*. Where items might be removed from the seabed, conservation strategies will be clearly outlined in the relevant Method Statements produced ahead of any such archaeological works. The embedded environmental measure C-57 is reflected in the DCO (Requirement 13 (2)).
Paragraph 5.9.17 "*Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State will require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the asset's importance and significance and the impact. The applicant should be required to publish this evidence and to deposit copies of the reports with the relevant Historic Environmental Record. They should also be required to deposit the archive generated in a local museum or other public repository willing to receive it*"	As outlined in the WSI document **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) which is secured through embedded environmental measure C-57 (**Table 16-15**), positive contributions to knowledge and understanding of the historic environment can be realised through data gathering, interpretation and publication. The works will contribute to current research frameworks in the region and will be further detailed in forthcoming relevant Method Statements, which will consider relevant research frameworks to reflect and enhance the ongoing research in the area.
Paragraph 5.9.18 "*Where appropriate, the Secretary of State will impose requirements on the Development Consent Order to ensure that the work is undertaken in a timely manner, in accordance with a written scheme of investigation that complies with the policy in this NPS and which has been agreed in writing with the relevant local authority, and to ensure that the completion of the exercise is properly secured*"	The WSI document **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) which is secured through embedded environmental measure C-57 (**Table 16-15**), outlines all provisions made and standards expected for archaeological recording of marine heritage receptors. The document further details where archives and material will be deposited. Securement of the WSI document as detailed in **Table 16-15** is expected to be reflected in the DCO requirements or DML conditions.

Policy description	Relevance to assessment
	Consultation with Historic England undertaken as part of this project is outlined in **Section 16.3**.
Paragraph 5.9.19 "*Where there is a high probability (based on an adequate assessment) that a development site may include, as yet undiscovered heritage assets with archaeological interest, the Secretary of State will consider requirements to ensure appropriate procedures are in place for the identification and treatment of such assets discovered during construction*"	Embedded mitigations relevant to marine heritage receptors are set out in **Table 16-15** and detail how data will be collected and assessed to ensure that as yet undiscovered marine heritage receptors are identified. Should unidentified marine heritage receptors be located during project works, a Protocol for Archaeological Discoveries (PAD) is implemented as per embedded mitigation C-57 (**Table 16-15**). The embedded mitigations are expected to be reflected in the DCO requirements or DML conditions.
Paragraph 5.9.20 "*In determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development, including by development affecting the setting of a heritage asset (including assets whose setting may be affected by the proposed development), taking account of:* *• relevant information provided with the application and, where applicable, relevant information submitted during the examination of the application* *• any designation records, Including those on the National Heritage List for England* *• historic landscape character records* *• the relevant Historic Environment Record(s), and similar sources of information* *• representations made by interested parties during the examination process* *• expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it*"	The significance of the known marine heritage receptors within the offshore zone and potential impact on known and unknown marine heritage receptors identified has been undertaken according to the methodology outlined in **Section 16.8**. The results of the assessments, including setting in the context of Historic Seascape Characterisation (HSC), are detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and are summarised in **Section 16.6**
Paragraph 5.9.21 "*The Secretary of State must also comply with the requirements on listed buildings,*	There are currently no listed buildings, conservation areas or Scheduled Monuments within the Proposed

Policy description	Relevance to assessment
conservation areas and scheduled monuments, set out in Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010"	Development area. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated will ensure preservation *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Where marine heritage receptors are 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.
Paragraph 5.9.22 "*In considering the impact of a proposed development on any heritage assets, the Secretary of State should consider the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal*."	The significance of the known marine heritage receptors within the offshore zone and potential impact on known and unknown marine heritage receptors identified has been undertaken according to the methodology outlined in **Section 16.8**. The results of the assessments, including the heritage significance of the known receptors as well as the potential to locate receptors of heritage significance during works are detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential and significance is maintained.
Paragraph 5.9.23 "*The Secretary of State should consider the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that*	Positive contributions to knowledge and understanding of the historic environment can be realised through data gathering, interpretation and publication. The works will contribute to current research frameworks in the region and will be further

Policy description	Relevance to assessment
their conservation can make to sustainable communities, including to their quality of life, their economic vitality, and to the public's enjoyment of these assets. The Secretary of State should also take into account the desirability of the new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting)."	detailed in forthcoming relevant Method Statements, which will consider relevant research frameworks to reflect and enhance the ongoing research in the area. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained and will contribute to our understanding of the marine historic environment. The **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13), is secured through embedded environmental measure C-57 (**Table 16-16**). The embedded environmental measure C--57 is reflected in the DCO (Requirement 13 (2)).
Paragraph 5.9.24 "*The Secretary of State should also consider the desirability of the new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting)*"	As detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13), which is secured through embedded environmental measure C-57 (**Table 16-16**) and is expected to be reflected in the DCO requirements or DML conditions, positive contributions to knowledge and enhancement of understanding of the historic environment can be realised through data gathering, interpretation and publication. The works will contribute to current research frameworks in the region and will be further detailed in forthcoming Method Statements.
Paragraph 5.9.25 "*When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight*	While generally no active conservation strategy is proposed, AEZs (as per C-60 (**Table 16-16**) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of

Policy description	Relevance to assessment
should be. This is irrespective of whether any potential harm amounts to substantial harm, total loss, or less than substantial harm to its significance."	impacts ensuring that unknown receptors are located, and impact mitigated, will ensure preservation *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Where items might be removed from the seabed, conservation strategies will be clearly outlined in the relevant Method Statements produced ahead of any such archaeological works.
Paragraph 5.9.26 "*The Secretary of State should give considerable importance and weight to the desirability of preserving all heritage assets. Any harm or loss of significance of a designated heritage asset (from its alteration or destruction, or from development within its setting) should require clear and convincing justification. Substantial harm to or loss of significance of a grade II listed building park or garden should be exceptional. Substantial harm to or loss of significance of assets of the highest significance, including Scheduled Monuments; Protected Wreck Sites; Registered Battlefields; grade I and II* Listed Buildings; grade I and II* Registered Parks and Gardens; and World Heritage Sites, should be wholly exceptional*."	There are currently no scheduled or designated heritage assets such as protected wreck sites or Scheduled Monuments within the Proposed Development area. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated, will ensure preservation *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Where marine heritage receptors are 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.
Paragraph 5.9.28 "*Substantial harm to or loss of significance of assets of the highest significance, including Scheduled Monuments; Protected Wreck Sites; Registered Battlefields; grade I and II* Listed Buildings; grade I and II* Registered Parks and Gardens; and World Heritage Sites, should be wholly exceptional*"	There are currently no designated heritage assets such as protected wreck sites or schedules ancient monuments within the Proposed Development area. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located and impact mitigated will ensure preservation *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document

Policy description	Relevance to assessment
	Reference: 7.13). Where marine heritage receptors are 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.
Paragraph 5.9.29 "*Where the proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm to or loss of significance is necessary to achieve substantial public benefits that outweigh that harm or loss, or all the following apply:* *• the nature of the heritage asset prevents all reasonable uses of the site* *• no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation* *• conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible* *• the harm or loss is outweighed by the benefit of bringing the site back into use.*"	No impact on marine heritage receptors is expected to lead to harm or total loss of significance. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of impacts (as per C-58 and C-59) ensuring that unknown receptors are located, and impact mitigated, will ensure perseverance *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Where marine heritage receptors are 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.
Paragraph 5.9.30 "*Where the proposed development will lead to less than substantial harm to the significance of the designated heritage asset, this harm should be weighed against the public benefits of the proposal, including, where appropriate securing its optimum* *viable use*."	No impact on marine heritage receptors is expected to lead to harm or total loss of significance as per the embedded environmental measures outlined in **Table 16-16**. However, impact is expected on potential deposits of geoarchaeological significance. The benefit of the impact will be demonstrated by undertaking a staged approach to geoarchaeological assessment and analysis (C -59,**Table 16-16**) which will enhance our understanding by gathering, researching and presenting information and will lead to publication as defined in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and the COWRIE 2011 guidance**.**

Policy description	Relevance to assessment
Paragraph 5.9.31 "*In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset*."	No impact on marine heritage receptors is expected to lead to harm or total loss of significance. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The commitment to avoid all known marine heritage receptors and to further investigate the area of impacts ensuring that unknown receptors are located, and impact mitigated, will ensure perseverance *in situ,* as further detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Where marine heritage receptors are 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.
Paragraph 5.9.33 "*Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the Secretary of State should not take its deteriorated state into account in any decision*."	All known wreck sites, their archaeological significance, condition, and vulnerability, where known, is described in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Paragraph 5.9.34 "*When considering applications for development affecting the setting of a designated heritage asset, the Secretary of State should give appropriate weight to the desirability of preserving the setting such assets and treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the Secretary of State should give great weight to any negative effects, when weighing them against the wider benefits of the application. The greater the negative impact on the significance of the designated heritage asset, the greater the benefits that will be needed to justify approval*"	The significance of the known marine heritage receptors within the offshore zone and potential impact on known and unknown marine heritage receptors identified has been undertaken according to the methodology outlined in **Section 16.8**. The results of the assessments, including setting in the context of Historic Seascape Characterisation (HSC), are detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**.

Policy description	Relevance to assessment
Draft National Policy Statement for Renewable Energy Infrastructure (EN-3). March 2023 Section 2.32 Offshore wind impacts: marine historic environment	
Section 3.8.182 "*The marine historic environment can be affected by offshore wind farm development in two principal ways:* *• from direct effects arising from of the physical siting of the development itself such as the installation of wind turbine foundations and electricity cables or the siting of plant required during the construction phase of development; and* *• from indirect changes to the physical marine environment (such as scour, coastal erosion or sediment deposition) caused by the proposed infrastructure itself or its construction (see the policy on physical environment at paragraphs 2.8.25 of this NPS)*"	Potential direct and indirect impacts on marine heritage receptors are discussed in **Section 16.7** and **Sections 16.9** to **16.12**. Mitigation to avoid or offset any impacts as a result of the development activities is detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and **Table 16-16**.
Section 3.8.183 "*Applicants should consult with the relevant statutory consultees, such as Historic England or Cadw, on the potential impacts on the marine historic environment at an early stage of development during pre-application, taking into account any applicable guidance (e.g., offshore renewables protocol for archaeological discoveries)*."	Consultations with Historic England and other stakeholders throughout the EIA process are outlined in **Section 16.3**.
Section 3.8.184 "*Assessment of potential impacts upon the historic environment should be considered as part of the Environmental Impact Assessment process undertaken to inform any application for consent.*".	Potential impacts on marine heritage receptors are discussed in **Section 16.7** and **Sections 16.9** to **16.12**. Mitigation to avoid or offset any impacts as a result of development activities is detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and **Table 16-16**.
Section 3.8.185 "*Desk based studies to characterise the features of the historic environment that may be affected by a proposed development and assess any likely significant effects should be undertaken by competent archaeological experts*"	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) presents and details the archaeological desk-based assessments and the archaeological assessment of geophysical data collected

Policy description	Relevance to assessment
	to date. The results are further summarised in **Section 16.6**.
Section 3.8.186 "*These studies should consider any geotechnical or geophysical surveys that have been undertaken to aid the wind farm design*."	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) presents and details the archaeological desk-based assessments and the archaeological assessment of geophysical data collected to date. The results are further summarised in **Section 16.6**. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained.
Section 3.8.187 "*Whilst it might be possible for a development project to avoid designated heritage assets, the knowledge currently available about the historic environment in the inshore and offshore areas is limited*"	Archaeological assessment of the data collected by geophysical and geotechnical surveys conducted throughout the lifetime of the project (as per C-58 and C-59 (**Table 16-16**)) will provide a greater understanding of the archaeological significance and potential of the development area, and to locations of sites and areas that will be avoided. As per C-60, all intrusive activities undertaken during the life of the project will be routed and microsited to avoid any identified marine heritage receptors pre-construction, with AEZs. The embedded environmental measures are further detailed in **Section 16.7** and presented in **Table 16-16**.
Section 3.8.188 "*Applicants are required to determine how any known heritage assets might best be avoided*"	AEZs as per **Table 16-16** have been applied to all known wrecks and anomalies of high and medium archaeological potential identified in the geophysical data, as outlined **Section 16.6**. The embedded mitigations are further detailed in **Table 16-16**.
Section 3.8.189 "*The applicant will be expected to conduct all necessary examination and assessment exercises using a variety of survey*	**Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) presents and details the archaeological desk-based assessments and the archaeological

Policy description	Relevance to assessment
techniques to plan the development so as to optimise opportunities for avoidance"	assessment of geophysical data collected to date. The results are further summarised in **Section 16.6**. Embedded environmental measures C-58 and C-59 (**Table 16-16**) to carry out geophysical and geotechnical investigations will ensure the commitment to continued assessment of heritage potential is maintained.
Section 3.8.190 "*Once a site has been chosen, it may be necessary to undertake further archaeological assessment, including field evaluation, to identify as yet unknown heritage assets when considering the options for detailed site development, which may also include ancillary matters, such as those described in Section 5.9 of EN-1*"	Embedded mitigations relevant to marine heritage receptors are set out in **Table 16-16** and detail how data will be collected and assessed to ensure that as yet undiscovered marine heritage receptors are identified throughout the life of the Project. Future works will be clearly outlined in the relevant Method Statements produced ahead of any archaeological works and following agreement with Historic England as per **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and **Table 16-16**. The embedded mitigations are expected to be reflected in the DCO requirements or DML conditions.
Section 3.8.191 "*Assessment may also include the identification of any beneficial effects on the marine historic environment, for example through improved access or the contribution to new knowledge that arises from investigation*."	Potential beneficial effects on marine heritage receptors as a result of the project activities are discussed in **Sections 16.9** and **16.15**. Further**,** C-58 and C-59 (**Table 16-16**) will ensure data and information collected is assessed for archaeological potential and significance and reported, which will enhance our understanding by gathering, researching and presenting new information and will lead to a publication as defined in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and the COWRIE 2011 guidance.
Section 3.8.192	The onshore and offshore archaeological resources have been cross-referenced and

Policy description	Relevance to assessment
"*Where elements of a proposed project (whether offshore or onshore) may interact with historic environment features that are located onshore, applicants should assess the effects in accordance with Section 5.9 in EN-1*."	technical reports have been shared between archaeological contractors. The offshore and onshore archaeological assessments overlap at the intertidal zone as outlined in the respective technical reports.
Section 3.8.270 "*The avoidance of important heritage assets to ensure their protection in situ, is the most effective form of protection.*	AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance as outlined in **Section 16.6**. The embedded environmental measures are further detailed in **Section 16.7** and **Table 16-16**.
Paragraph 3.8.271 "*This can be achieved through the implementation of exclusion zones around known and potential heritage assets which preclude development activities within their boundaries*"	AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance as outlined in **Section 16.6**. The embedded environmental measures are further detailed in **Section 16.7** and **Table 16-16**.
Paragraph 3.8.272 "*These boundaries can be drawn around either discrete sites or more extensive areas identified in the Environmental Statement produced to support an application for consent*"	AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance as outlined in **Section 16.6**. The embedded environmental measures are further detailed in **Section 16.7** and **Table 16-16**.
Paragraph 3.8.273 "*The ability of the applicants to microsite specific elements of the proposed development during the construction phase should be an important consideration by the Secretary of State when assessing the risk of damage to archaeology*"	All intrusive construction activities will be routed and microsited to avoid any identified marine heritage receptors with AEZs, as per C-60 (**Table 16-16**).
Paragraph 3.8.274 "*Where requested by the applicant, the Secretary of State should consider granting consents which allow for micrositing/microrouting (Draft NPS EN-3 (2023) paragraph 2.8.89) within a specified tolerance*"	All intrusive construction activities will be routed and microsited to avoid any identified marine heritage receptors with AEZs, as per C-60 (**Table 16-16**).
Paragraph 3.8.275	All intrusive construction activities will be routed and microsited to avoid any

Policy description	Relevance to assessment
"*This allows changes to be made to the precise location of infrastructure during the construction phase so that account can be taken of unforeseen circumstances such as the discovery of marine archaeological remains*"	identified marine heritage receptors with AEZs, as per C-60 (**Table 16-16**).
Section 3.8.343 "*The Secretary of State should be satisfied that any proposed offshore wind farm project has appropriately considered and mitigated for any impacts to the historic environment, including both known heritage assets, and discoveries that may be made during the course of development*"	Embedded environmental measures relevant to marine archaeology are set out in **Table 16-16**. C-58 and C-59 detail how data will be collected and assessed to ensure that as yet undiscovered marine heritage receptors are identified. Should unidentified marine heritage receptors be located during project works a Protocol for Archaeological Discoveries will be implemented, as per Embedded environmental measure C-57. AEZs (as per C-60 (**Table 16-16**)) have been applied to all known wrecks and anomalies of high and medium significance. The embedded environmental measures are expected to be reflected in the DCO requirements or dML conditions.

Local planning policy

16.2.6 **Table 16-4** lists the local planning policy relevant to the assessment of the potential effects on marine heritage receptors.

Table 16-4 Local planning policy relevant to marine archaeology

Policy description	Relevance to assessment
South Inshore and South Offshore Marine Plan (July 2018)	
The South Marine Plan provides a strategic approach to planning within the inshore and offshore waters along the South coast. The plan aims to apply national policies in a local context reflecting the marine plan (Marine and Coastal Access Act Section 51).	Rampion 2 is located within the marine plan area. As per S-HER-1 Objective 8 and S-SCP-1, an assessment of heritage assets that are significant to the historic environment and any impact

Policy description	Relevance to assessment
	of the seascape has been undertaken and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Furthermore, relevant environmental measures are outlined **Section 16.7**. Based on the conclusions of a report published in July 2021, the MMO has recommended that the [South Inshore and South Offshore Marine Plan] is retained and not amended at this time (Department for Environment, Food and Rural Affairs, 2021).
Adoption Arun Local Plan 2011-2031 (July 2018)	
The Arun Local Plan sets out the requirements for development and Sites of Archaeological Interest (Policy HER DM6). *"There will be a presumption in favour of the preservation of scheduled and other nationally important monuments and archaeological remains. Where proposed developments will have either a direct impact on sites listed in Table 16.1 (i.e. developments requiring Scheduled monument Consent) or where developments will have an indirect impact on the settings of those sites listed in Table 16.1, or where a site on which development is proposed has the potential to include heritage assets with archaeological interest (having consulted the Historic Environment Record) permission will only be granted where it can be demonstrated that development will not be harmful to the archaeological interest of these sites."* *"In all such instances:* *a. Applicants must arrange for a desk based archaeological assessment of the proposed development site to be undertaken by a suitably qualified person. The archaeological assessment will take the form of a factual review of the known information on historic assets and an appraisal of these assets. This information shall accompany the planning application, and, where not*	The Marine Archaeology proposed DCO Order Limits area reaches up to Mean High Water Spring (MHWS). An assessment of heritage assets that are located within Arun District council significant to the historic environment has been undertaken and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Furthermore, relevant environmental measures are outlined **Section 16.7** which includes the production of the Outline Marine Written Schemes of Investigation (WSI). Listed buildings structures of character, areas of interest

Policy description	Relevance to assessment
supplied, will be required before any planning application is determined. Where the Planning Authority has reason to believe, either from the archaeological assessment as above, or from other evidence sources, that significant archaeological remains may exist, further assessment in the form of a field evaluation will be required to be carried out before the planning application is determined. Any field survey undertaken shall be carried out by a professionally qualified archaeological organisation or consultant only. All stages of archaeological fieldwork shall be subject to a Written Scheme of Investigation approved by the local planning authority. No development shall take place on the proposed development site until the applicant, or their agents or successors in title, is in receipt of a Written Scheme of Investigation that has been approved by the Local Planning Authority;* *or* *b. A field evaluation as above, which shall include a historic environmental record of the archaeological site without the requirement to undertake a separate desk based archaeological assessment.* *c. Preservation in situ of archaeological sites or remnants of such sites, is the preferred option. However, where the assessment, which shall be subject to a Written Scheme of Investigation, shows that the preservation of archaeological remains in situ is not justified, conditions may be attached to any permission granted that development will not take place until provision has been made by the developer for a programme of archaeological investigation and recording. Any such programme shall be carried out prior to the commencement of the development.* *d. Whenever practicable, opportunities should be taken for the enhancement and interpretation of archaeological remains left in situ. Developers shall record any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and possible impact, and to make this evidence (and any archive generated) publicly accessible.* *e. Where development is to be phased the presumption would normally be that the whole site should be recorded as one project in order to maintain the continuity of the archaeological record.* *f. Developments shall also be consistent with all other Local Plan Policies.* ** Those submitting planning applications are strongly advised however to undertake a desk based archaeological assessment in advance of a planning*	and sites outside the marine archaeology study area are outlined in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25)**.**

Policy description	Relevance to assessment
application being lodged as, depending on the outcome of this assessment, further assessment in the form of a field evaluation may be required (as outlined in a. above).”	

Other relevant information and guidance

16.2.7 A summary of other relevant information and guidance relevant to the assessment undertaken for marine archaeology is provided here, in alphabetical order, and further referenced in **Section 16.17**:

- *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects* (The Crown Estate, 2021);
- *Commercial Renewable Energy Development and the Historic Environment* Historic Environment Advisory Note No 15 (Historic England, 2021);
- *Deposit Modelling and Archaeology Guidance for Mapping Buried Deposits* (Historic England, 2020);
- *England’s Historic Seascape: Demonstrating the Method* (SeaZone Solutions Limited, 2009).
- *England's Historic Seascapes: HSC Method* Consolidation (Cornwall Council, 2008); and
- *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation* (Second Edition) (Historic English Heritage and, 2011);
- *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*. (Historic England, 2015);
- *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy*, (COWRIE, 2008);
- *Historic Environment Guidance for the Offshore Renewables Energy Sector* (COWRIE, 2007);
- *JNAPC Code for Practice for Seabed Development* (Joint Nautical Archaeology Policy Committee, 2006);
- *Marine Geophysics Data Acquisition, Processing and Interpretation* Guidance Notes (English Heritage, 2013);
- *National Historic Seascape Characterisation* (NHSC): Technical Advice Document (Land Use Consultants, 2017);
- *Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate*, 2014);
- *Standard and guidance for an archaeological watching brief* (CifA, 2014e).
- *Standard and guidance for archaeological field evaluation* (CifA, 2014c);

- *Standard and guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment* (CifA, 2014b);
- *Standard and guidance for nautical archaeological recording and reconstruction* (CifA, 2014d);
- *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* brief (Chartered Institute for Archaeologists (CIfA), 2014a); and
- *The Role of the Human Osteologist in an Archaeological Fieldwork Project* (Historic England, 2018).

16.3 Consultation and engagement

Overview

16.3.1 This section describes the stakeholder engagement undertaken for the Marine Archaeology topic for Rampion 2. This consists of early engagement, the outcome of, and response to, the Scoping Opinion in relation to the marine archaeology assessment, the Evidence Plan Process (EPP), non-statutory consultation and Rampion 2's statutory consultation. An overview of engagement undertaken for Rampion 2 can be found in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5) and the **Consultation Report** (Application Reference Number 5.1).

16.3.2 Given the social distancing restrictions which have been in place due to the COVID-19 pandemic, all technical consultation relating to marine archaeology has taken place online, primarily in the form of conference calls using Microsoft Teams.

Early engagement

Introduction

16.3.3 Early engagement was undertaken with a number of prescribed and non-prescribed consultation bodies and local authorities including, Historic England, East Sussex County Council (ESCC), West Sussex County Council (WSCC), South Downs National Park Authority (SDNPA) and Marine Management Organisation (MMO), in relation to marine archaeology. This engagement was undertaken to introduce the Proposed Development and the proposed approach to scoping the EIA.

Historic England

16.3.4 Early engagement with Historic England was undertaken in the form of emails followed by a conference call on 27 May 2020. During the conference call the overview of the Proposed Development, baseline sources and approach to mitigation was presented. No formal opinions were discussed during the meeting.

Scoping Opinion

16.3.5 Rampion Extension Development Limited (RED) submitted a Scoping Report (RED, 2020) and request for a Scoping Opinion to the Secretary of State (administered by the Planning Inspectorate (PINS)) on 2 July 2020. A Scoping Opinion was received on 11 August 2020. The Scoping Report sets out the proposed marine archaeology assessment methodologies, outline of the baseline data collected to date and proposed, and the scope of the assessment. **Table 16-5** sets out the comments received in Section 4 of the PINS Scoping Opinion 'Aspect based scoping tables – and how these have been addressed in this ES. A full list of the PINS Scoping Opinion comments and responses is provided in **Appendix 5.2: Responses to the Scoping Opinion, Volume 4** (Document Reference: 6.4.5.2). Regard has also been given to other stakeholder comments that were received in relation to the Scoping Report, see **Table 16-6**.

Table 16-5 PINS Scoping Opinion responses – marine archaeology

PINS ID number	Scoping Opinion comment	How this is addressed in this ES
4.13.1 to 4.13.7	The impacts proposed to be scoped out in Table 5.14.8 are on the basis of "embedded environmental measures to be adopted for the Proposed Development, forming commitments by RWE to avoid all identified archaeological receptors of a medium or high archaeological potential". This will be through the establishment of archaeological exclusion zones (AEZs) of an "appropriate size and extent" and 'tertiary' mitigation in the form of archaeological written schemes of investigation (WSI) and project specific reporting protocol for unexpected discoveries. The embedded measures are listed in table 5.14.7 and summarised as follows: 1) A marine WSI (in accordance with an Outline Marine WSI), including a protocol for archaeological discoveries) 2) Offshore geophysical surveys (including unexploded ordnance (UXO) survey) will be undertaken prior to construction	Following stakeholder feedback during the PEIR stage, RED has decided to scope in all impacts on marine heritage receptors as demonstrated in **Table 16-9**. 1) An Outline Marine WSI (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)), as per embedded environmental measure C-57 (**Table 16-16**) has been produced. 2) All future geophysical and geotechnical surveys conducted throughout the lifetime of the project will be undertaken in line with C-58 and C-59 (**Table 16-16**). The results of the archaeological assessments of geophysical data to date are summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Early archaeological engagement during the geotechnical survey planning process is set out in

PINS ID number	Scoping Opinion comment	How this is addressed in this ES
	covering 100% of the development area. 3) Offshore geotechnical surveys will be undertaken prior to construction, including geoarchaeological assessment and analysis of data (inclusive of publication), 4) Offshore export cable corridor and the array cabling will be routed to avoid any identified archaeological receptors (with buffer zones as to be detailed in the WSI). The Scoping Report does not provide specific detail in respect to these measures, but they are acknowledged to constitute recognised methods of control for the impacts described (with reference to relevant guidance in paragraphs 5.14.11 - 5.14.12). The Inspectorate is content that if the above measures are adequately secured (with reference to implementation) and presented in sufficient detail then they may be relied upon as means to demonstrate an absence of significant effect in the ES. In this regard, the Inspectorate expects that the "outline" WSI would form part of the DCO application documents and that this document and the ES would provide additional detail to what "appropriate size and extent" of AEZs would comprise and where they would be located. The Applicant should make efforts to agree the detail in relation to these measures with relevant consultation bodies, and the Inspectorate welcomes the Applicants intent in this regard, for	embedded environmental measures C-57 and C-59 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and will be detailed in the forthcoming geoarchaeology Method Statement. 4) Embedded environmental measure C-57 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) details the AEZs which have been recommended following desk-based studies combined with the assessment of geophysical data to ensure correct location as well as appropriate size and extent of protective area. This is further discussed in Section 5 of **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Regular Expert Topic Group (ETG) meetings will present progress on these commitments on which Historic England will have the opportunity to comment and inform the further direction. See details further below in this section. The embedded environmental measures are reflected in Condition 11 (2) (d,e) of the dML, Schedules 11 and 12 of the draft DCO.

PINS ID number	Scoping Opinion comment	How this is addressed in this ES
	example through the evidence plan process.	
4.13.8	Based on the baseline information presented in tables 5.14.5 and 5.14.6 and the receptor sensitivity criteria, the Inspectorate understands that unmitigated impacts of the Proposed Development could be of high significance. In setting out the proposed mitigation measures as considered above, the Applicant should acknowledge worst case assumptions in respect receptor sensitivity of potentially unidentified archaeological assets including those identified through geophysical survey.	The maximum design scenario has been updated and is detailed in **Section 16.7**, it includes the assessment of maximum design scenario for each receptor and establishes the maximum potential adverse impact on potential known and unknown receptors (**Table 16-15**). **Table 16-17** outlines the criteria for establishing the level of receptors sensitivity (value). The criteria for establishing the magnitude of impact on marine heritage receptors are outlined in **Table 16-18** and the significant assessment matrix is included as **Table 16-19** Potential impacts on Archaeological receptors are detailed in **Sections 16.9** to **16.14** All embedded environmental measures, mitigating identified impacts are presented in **Table 16-16** and are included in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). Impact on unidentified and unexpected receptors are mitigated through commitment C-57 (**Table 16-16**) which includes a reporting protocol for instances where a site or find may be located during offshore works. Impacts on unknown receptors are also mitigated through C-58 (**Table 16-16**), the assessment of geophysical data and C-59 (**Table 16-16**), the assessment of geotechnical data ensuring that

PINS ID number	Scoping Opinion comment	How this is addressed in this ES
		unknown receptors are identified and assessed for archaeological significance followed by mitigation secured in C-57 (**Table 16-16**), the **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). and C-60 (**Table 16-16**), the avoidance of known receptors. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
4.13.9	The Inspectorate notes an important distinction between geophysical survey and geotechnical survey coverage. Paragraph 5.14.45 states "geophysical survey data covering 100 percent of the seabed within the development area, currently expected to be undertaken June / July 2020". However, paragraph 5.14.46 implies the only a "limited coverage survey" will be undertaken in support of the Application and that 100 percent coverage of the final design plan will be completed and reviewed prior to construction. The "limited coverage" geophysical survey to support the DCO application is not specifically quantified as a percentage of the development area. This should be presented as part of the ES. The basis for, and point at which, the "comprehensive programme of geotechnical survey data" would commence in terms of informing considering archaeological potential (and coverage of geotechnical survey) is not specifically stated. The Inspectorate understands that detailed geotechnical surveys will be undertaken prior to construction and that the outline WSI will set out	The extent of geophysical data coverage and data used to develop the marine archaeology baseline (**Section 16.6**), as well as the marine archaeology study area, is clarified in this ES Chapter and shown on **Figure 16.1, Volume 3** of the ES (Document Reference 6.3.16). Early archaeological engagement during the Rampion 2 geotechnical survey planning process is a requirement of embedded environmental measures C-57 and C-59 (**Table 16-16**) as well as **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and will be detailed in geoarchaeology Method Statements. Close contact with the Historic Environment team is being facilitated through regular meetings. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)). The assessment of sub-bottom data and an outline deposit model based on the results and desk-based studies is summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical**

PINS ID number	Scoping Opinion comment	How this is addressed in this ES
	it's specification so as the reliance placed on it at as mitigation in addressing potentially significant effects can be understood. The marine archaeological assessment chapter of the ES should clearly set out the geoarchaeological considerations in the design and specification of the geotechnical survey.	**report, Volume 4** of the ES (Document Reference: 6.4.16.1). This ES Marine Archaeology chapter has been updated following further studies, as per commitments detailed in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Table 16-6 Stakeholder scoping responses – marine archaeology

Stakeholder	Date	Comment	Response
Historic England	02 July 2020	The proposals have high potential to impact upon both designated and undesignated heritage assets and their settings, in both an onshore and offshore context.	The potential impacts on all known heritage assets and their settings within the marine archaeology study area are assessed in **Sections 16.9** to **16.14** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Historic England	02 July 2020	There are significant number of designated heritage assets and Archaeological Notification Areas (ANA) that fall within the scoping area. It will be essential that in the Environmental Statement (ES) the full range of heritage assets are identified that may be affected by the scheme.	There are currently no ANAs, protected wreck sites or designated heritage sites within the intertidal zone (up to MHWS) or the ES marine archaeology study area as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). ANAs which fall within the onshore study area are covered in

Stakeholder	Date	Comment	Response
			Chapter 25: Historic environment, Volume 2 of the ES (Document Reference 6.2.25).
Historic England	02 July 2020	We would expect an assessment to clearly demonstrate that the extent of the proposed study area is of the appropriate size to ensure that all heritage assets likely to be affected have been included and can be properly assessed. An arbitrary radial search may not accurately reflect the impact of the development on heritage assets in the wider area, and a more tailored approach that takes into account geology and topography would be required.	The marine archaeology study area is based on a 2km buffer around the proposed DCO Order Limits to mitigate for direct and indirect impacts as detailed in **Section 16.4** and **Section 2.2 Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The buffer designated for the onshore study area is detailed **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).
Historic England	02 July 2020	In line with the advice in the National Planning Policy Framework (NPPF) and Marine Policy Statement (MPS), we would expect a Scoping Report and subsequent ES, to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets. These effects might originate from construction, operation and decommissioning of the proposed scheme.	The likely effects of Rampion 2 on marine heritage receptors, their setting and elements that contribute to their significance throughout all stages of the Proposed Development, have been assessed, the results are summarised in **Sections 16.9** to **16.15**. Known marine heritage receptors, and their significance are detailed within **Appendix 16.1: Marine archaeological technical report,**

Stakeholder	Date	Comment	Response
			Volume 4 of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6** of this Chapter.
Historic England	02 July 2020	The assessment should also therefore take account of the potential impacts which associated development activities (such as construction, servicing, maintenance, and associated traffic) might have upon perceptions, understanding, and appreciation of heritage assets.	All impacts on settings of marine archaeology heritage assets have been assessed through the Application of HSC as summarised in **Section 16.6** as well as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Historic England	02 July 2020	On such a large project, an integrated approach to assessment is required that demonstrates an understanding of how all the individual elements of the historic environment come to together to form a 'special place', and which fully analyses how the development proposals may impact upon the uniqueness of the area, and the heritage assets within it.	Setting and sense of place have been considered in relation to the marine aspects of the Application through the use of the HSC guidance (referenced in **Section 16.2**) which has been interpreted in relation to the project and is summarised **Section 16.6** as well as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Onshore archaeology and Seascape, landscape and visual (SLVIA) impacts are covered within **Chapter 25: Historic environment** and **Chapter 15: Seascape, landscape and visual, Volume 2** of

Stakeholder	Date	Comment	Response
			the ES (Document Reference: 6.2.25 and 6.2.15 respectively).
Historic England	02 July 2020	We think it essential therefore that an integrated landscape approach to assessment of heritage assets (both designated and undesignated) is undertaken and translated into the report.	HSC principles have been applied to complement onshore Historical Landscape Characterisation (HLC) approaches in relation to the Proposed Development to integrate and interpret the large study areas. The results are summarised in **Section 16.6** as well as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1), Onshore archaeology and seascape, landscape and visual impacts are covered within **Chapter 25: Historic environment** and **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.25 and 6.2.15 respectively).
Historic England	02 July 2020	Geoarchaeology will be a key issue for this project, both onshore and offshore. Landscape characterisation would help predict previous land use, combining geology and archaeology to identify where people might have lived and their contemporary environment, and providing evidence to feed into an overarching deposit model.	A full geoarchaeological programme will be developed and will be coordinated across both the offshore and onshore zones. Geotechnical works undertaken post-consent will be incorporated within the geoarchaeological assessment as per

Stakeholder	Date	Comment	Response
			embedded environmental measures C-59 (**Table 16-16**), which sets out the requirement for a staged geoarchaeological approach, and C-57 (**Table 16-16**) which ensures that the geoarchaeological assessment requirements are clearly stated. The environmental measures are presented in full in the **Commitments Register** (Document Reference: 7.22) and are reflected in the Development Consent Order (DCO) (Requirement 13) The archaeological assessment of sub-bottom data and the preliminary deposit model are summarised in **Section 16.6,** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) which considers geoarchaeological potential prior to the commencement of a full geotechnical programme. The geoarchaeological potential in the onshore and overlapping area is further detailed in **Chapter 25: Historic environment, Volume 2**

Stakeholder	Date	Comment	Response
			of the ES (Document Reference: 6.2.25).
Historic England	02 July 2020	We recommend close collaboration of cultural heritage and landscape/visual impact assessment, in order to adequately address issues in relation to setting of designated heritage assets.	HSC in the offshore zone is summarised in **Section 16.6** as well as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and has been coordinated with the SLVIA team where topic overlap occurs. The assessment of potential impacts on seascape, landscape and visual aspects are detailed in **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15).
Historic England	02 July 2020	Setting may also form a part of the wider conceptual significance of a heritage asset and how it is experienced, and the report must therefore additionally reflect these more nuanced aspects of setting in order to fully take account of impact.	HSC principles have been applied to complement onshore HLC approaches in relation to the Proposed Development to integrate and interpret the large study areas. The results are summarised in **Section 3.5 of Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The assessment of potential changes to the historic seascape and summary of residual effects are

Stakeholder	Date	Comment	Response
			detailed in **Sections 16.9** to **16.14**.
Historic England	02 July 2020	There will be a requirement through planning policy to avoid harm to designated heritage assets, but by following planning policy and guidance we would also expect the project to be creative in how it might offer opportunities for their enhancement and public (heritage) benefit.	There are currently no protected wreck sites or other designated heritage assets within the marine archaeology study area. However, the same principles will be applied to non-designated heritage assets when encountered. Impact on all identified heritage receptors is being mitigated through environmental measures C-57 which secures the Outline Marine WSI and C-60 which secures the avoidance of all identified marine heritage receptors by utilising AEZs, as shown in **Table 16-16**. Discussions are ongoing regarding public engagement and dissemination.
Historic England	02 July 2020	We would expect the ES to consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest.	All potential impacts on marine heritage receptors within the marine archaeology study area are considered in **Sections 16.9** to **16.15**. All non-listed features located onshore are included in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).
Historic England	02 July 2020	They [West Sussex Council] are well placed to advise on: local historic environment issues and priorities; the nature and design	Historic England and other relevant stakeholders, including West Sussex County

Stakeholder	Date	Comment	Response
		of any required mitigation measures; and opportunities for securing wider benefits for the future conservation and management of heritage assets. They will also be able discuss how a proposed scheme could further enhance the historic environment.	Council, have been consulted for advice on all elements of the Proposed Development that may have an effect on heritage receptors, as per the Evidence Plan Process Steering Groups meetings detailed in **Section 16.3**.
Historic England	02 July 2020	The County Archaeological Officer will be a key consultee regarding impacts to undesignated heritage assets. It would be advantageous if Historic England could be consulted in parallel for onshore and intertidal zone matters, as that would minimise any conflicting advice and allow us to consider designated and non-designated heritage issues together.	The County Archaeological Officer at West Sussex County Council, the Inspector of Ancient Monuments at Historic England and the Historic England Marine Planning Unit have been consulted in parallel.
Historic England	02 July 2020	Glossary: The Historic Seascape Characterisation (HSC) and the Marine Policy Statement should be included here.	The Historic Seascape Characterisation and Marine Policy Statement terms have been added to the glossary of this Chapter (**Section 16.16**).
Historic England	02 July 2020	Chapter 2: Reference is made to the utilisation of seabed preparation techniques for the installation of the Wind Turbine Generator (WTG) foundations and inter-array cables, but not in relation to the substation foundations or export cables. It should be clarified whether seabed preparation may be required for these elements of the project.	The latest version of the Rampion 2 Project Design has been utilised for this ES Chapter, which includes seabed preparation methods for the installation of the Wind Turbine Generator (WTG) foundations and inter-array cables as well as substation foundations and export cables. Design parameters potentially effecting marine heritage receptors are detailed in

Stakeholder	Date	Comment	Response
			Table 16-15. The design parameters are further detailed in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).
Historic England	02 July 2020	It would be useful to also include data from: The British Marine Aggregate Producers Association (BMAPA) finds protocol, The Offshore Renewables Protocol for Archaeological Discoveries; Portable Antiquity Scheme data/Maritime Antiquity Scheme.	The BMAPA data is included in the NMRHE dataset while the Portable Antiquity Scheme data have been included as further detailed in **Table 16-11** and **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Historic England	02 July 2020	Aircraft crash sites that would be designated under the Protection of Military Remains Act 1986, should also be included in the High/Very High category.	Aircraft crash sites are included in the definition of Marine Heritage Receptor and military aircraft are designated under the Protected Wrecks Act 1986; the significance of aviation remains is summarised in **Section 16.6**. Aviation remains have also been added to **Table 16-17** (criteria for establishing the level of receptor sensitivity (value))**.**
Historic England	02 July 2020	Geophysical survey: We note that a 100% coverage geophysical survey is planned for June/July 2020 to help inform the archaeological assessment with the EIA. In the absence of a WSI, it would be advisable to produce a method statement for the assessment of this data.	The geophysical survey was completed in Q3 2020. A Method Statement for the archaeological assessment of the geophysical data was submitted for approval to Historic England.

Stakeholder	Date	Comment	Response
			The results of the archaeological assessments of geophysical data are summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). An Outline Marine WSI was produced as part of the PEIR process and updated following stakeholder comments **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)).
Historic England	02 July 2020	Paragraph 5.14.11: The list of guidance documents presented could be usefully expanded to make reference to the South Marine Plan heritage policy S-HER-1, and to include: Historic England Deposit Modelling and Archaeology Guidance for Mapping Buried Deposits (2020); Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition; 2011); and Geoarchaeology: Using earth sciences to understand the archaeological record (2015).	The South Marine Plan policy and its relevance to Rampion 2 has been summarised in **Table 16-4**. The guidance documents have been referred to in **Section 16.2** and considered as part of the assessment.
Historic England	02 July 2020	Table 5.14.7: We acknowledge the list of Commitments presented (Relevant marine archaeology embedded environmental measures) and are content that the overall direction of the commitments are appropriate. Subject to further	Regular Expert Topic Group (ETG) meetings will present progress on these commitments on which Historic England will have the opportunity to comment and inform the further direction. See

Stakeholder	Date	Comment	Response
		information being present with the ES, Preliminary Environmental Information Report (PEIR) and EIA, we may wish to suggest amendments and additions over the course of the preapplication consultation and examination process, to ensure that the commitments reflect the most up-to-date information and best practice.	details further below in this section.
Historic England	02 July 2020	Table 5.14.7 does not make it clear that geoarchaeology/archaeology requirements should help steer the geotechnical interventions and will influence the locations and sampling requirements. The geotechnical survey should be designed to address geoarchaeological and geotechnical requirements. The geoarchaeologist should not only review the data but examine samples and sub-samples for palaeoenvironmental remains and dating (see 'Geoarchaeological Advice' below).	A Method Statement for the geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per requirement in the Outline Marine WSI (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)) and shown in the embedded environmental measure C-57 (**Table 16-16**). The forthcoming Method Statement will present an overarching geoarchaeological strategy. The strategy will be based on a staged geoarchaeological approach, as per embedded environmental measure C-59 (**Table 16-16**). The Project's commitment to undertake geoarchaeological works throughout the life of the project is captured in the embedded environmental measure C-57 which secures **Outline Marine**

Stakeholder	Date	Comment	Response
			Written Scheme of Investigation (Document Reference: 7.13). The embedded environmental measure C-59 secures early archaeological and Curatorial engagement ahead of targeted geoarchaeological programmes and ensures it is followed by a staged geoarchaeological assessment (**Table 16-16**). Close contact with the onshore Historic Environment team is being facilitated through regular ETG meetings as per the Evidence Plan Process detailed below. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	It is our understanding that this [*scoping out the majority of the impacts, with the exception of those relating to scour and draw-down impacts*] scoping out is hinged on the 'Commitments'; the assessment of data to determine the known and unknown potential for archaeological receptors will be undertaken, and known receptors avoided. Whilst we wish to raise no objection to this approach at this stage, we caveat that this is subject to the appropriate wording of the Commitments, and securing these within the	Following stakeholder feedback during the PEIR stage, RED has decided to scope in all impacts on marine heritage receptors as demonstrated in **Table 16-9**. The embedded environmental measures are presented in **Table 16-16** and are included in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Stakeholder	Date	Comment	Response
		Development Consent Order, Deemed Marine Licences, and the Outline Offshore Written Scheme of Investigation (WSI).	The embedded environmental measure C-57 secures the Marine Written Schemes of Investigation document (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)), as per **Table 16-16**. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	Paragraph 5.14.44: Additionally, it would be useful if this paragraph was modified to reflect the geoarchaeological input to the design of the geotechnical survey, and the need for sample examination (rather than simply reviewing the results), as outlined in the comments above on Table 5.14.7.	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach. The Method Statement will also include presentation of the overarching geoarchaeological strategy and research questions, with commitments secured as described in response to Scoping Opinion comment number 40 (above).

Stakeholder	Date	Comment	Response
Historic England	02 July 2020	This is a large project located in an area of archaeologically sensitive buried palaeochannels and therefore has the potential to cause a high level of harm.	Impacts on marine heritage receptors and areas of archaeological potential has been assessed and are presented in **Sections 16.9** to **16.14**. Details on the presence of palaeochannels and their significance is detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The presence of paleochannels is also shown in **Chapter 6: Coastal processes, Volume 2** of the ES (Document Reference: 6.2.6).
Historic England	02 July 2020	It will be important therefore that appropriate information is collected to understand the archaeological resource so that harm may be avoided. This means that mechanisms must be put in place to make sure geoarchaeological input to any geophysical and geotechnical surveys is proactive and does not simply react to datasets, samples and information passed on from other workstreams.	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach. Agreement of the Method Statement and presentation of the overarching strategy will ensure that appropriate archaeological input to the pre-construction geotechnical and

Stakeholder	Date	Comment	Response
			geophysical surveys is proactively provided for, with commitments secured as described in response to Scoping Opinion comment number 40 (above).
Historic England	02 July 2020	Constructing an overarching framework will be vital to the research outcome of the project. This should have objectives that will be addressed (and refined) by a staged geoarchaeological approach, with each component building on the last.	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach. The Method Statement will include an overarching geoarchaeological strategy and research questions and will follow a staged geoarchaeological approach. Agreement of the Method Statement and presentation of the overarching strategy will ensure that appropriate archaeological input to the pre-construction geotechnical and geophysical surveys is proactively provided for, with commitments secured as described in response to Scoping

Stakeholder	Date	Comment	Response
			Opinion comment number 40 (above).
Historic England	02 July 2020	Geoarchaeology will be a major component of the project, with a continuous thread through both on-and off-shore work. Appointing a geoarchaeologist to have oversight of the project and synthesise both elements would therefore be extremely beneficial.	The onshore and offshore archaeological contractors have cooperated on the geoarchaeological assessment undertaken ahead of this ES chapter see **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25)**.** A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach. The Method Statement will demonstrate early input to this process, sample locations and research questions and outline details of the geoarchaeologists involved and their competence. The Method Statement will also present an overarching geoarchaeological strategy, based on a

Stakeholder	Date	Comment	Response
			staged geoarchaeological approach. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	Geoarchaeological review of the geophysical surveys proposed for this summer, together with review of the previous (Rampion 1 and Gupta's Arun Valley work and other available information) should give some idea of the pattern or likely extent of buried palaeofeatures within the Rampion 2 study area.	All available desk-based sources, including geophysical data collected in 2020, Rampion 1 data and Arun Valley sources, have been reviewed to inform the potential for archaeology within the Rampion 2 area, the results of the assessment are summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Historic England	02 July 2020	Based on this, we would expect to see in the PEIR/ES/EIA/WSI documents a clear set of overarching research objectives and supporting strategies for addressing them.	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach.

Stakeholder	Date	Comment	Response
			The Method Statement will demonstrate early input to this process, sample locations and research questions. The Method Statement will also present an overarching geoarchaeological strategy, based on a staged geoarchaeological approach. Submitting future Method Statements ahead of any archaeological works is a requirement set out in embedded environmental measure C-59 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	The project archaeologist/geoarchaeologist should work with the contractors planning the geophysical and geotechnical investigation. This would ensure some boreholes and transect lines are located with the aim of building up a better understanding of the character, date and archaeological significance of the channel system (or/and other features identified).	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach.

Stakeholder	Date	Comment	Response
			The documents will demonstrate early input to this process, sample locations and research questions. The Method Statement will also present an overarching geoarchaeological strategy, based on a staged geoarchaeological approach. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	The geoarchaeologist should ensure the collection of information from specific locations to form datasets that will build-up an understanding of the archaeological resource. The intention for this approach must be made clear from the earliest documentation, irrespective of what survey work has yet been possible. This will enable appropriate mechanisms to be put in place and methodologies agreed as the project moves forward.	Early archaeological engagement during the geotechnical survey planning process is set out in embedded environmental measures C-57 and C-59 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and will be detailed in the forthcoming geoarchaeology Method Statement. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)). As per **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13), Method Statements will be submitted to Historic

Stakeholder	Date	Comment	Response
			England at least 20 working days before the commencement of planned works and is the responsibility of RED.
Historic England	02 July 2020	We also highlight the importance of submitting method statements to Historic England for geophysical and geotechnical surveys. This will enable us to have a greater degree of input into the design of surveys and the assessment of data and allow for clear expectations to be formalised between all parties. This is especially important for the geoarchaeological side of the project and should be inclusive of collection, retention, access and storage for geotechnical core samples, as well as the staged analysis.	A Method Statement for geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review as per embedded environmental measures C-57 and C-59 (**Table 16-16**). The embedded environmental measures set out the requirement for an Outline Marine WSI and a staged geoarchaeological approach. A Method Statement for the archaeological assessment of geophysical work was submitted ahead of the PEIR to Historic England. Submitting future Method Statements ahead of any archaeological works is a requirement set out in embedded environmental measure C-57 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).
Historic England	02 July 2020	It is also important that geoarchaeological access is afforded to the core samples extracted, for logging, detailed description, and sampling; and the standard staged approach to	Early archaeological engagement during the geotechnical survey planning process is a requirement set out in embedded environmental

Stakeholder	Date	Comment	Response
		scientific dating, palaeoenvironmental assessment, deposit modelling and subsequent analysis is undertaken.	measures C-57 and C-59 (**Table 16-16**) **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	On Rampion 1, gas blanking (potentially because of peat deposits) was a problem for construction and led to requested boreholes for geoarchaeological purposes not being taken as part of mitigation (as these areas were avoided for construction). Hopefully with adequate geoarchaeological input from the outset, similar issues will not occur on Rampion 2, as suitable samples will be taken during earlier rounds of geotechnical survey and their location and potential for further analysis clearly recorded and understood.	The archaeological assessment of the sub-bottom data has been summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The sub-bottom data covers the whole offshore part of the Rampion 2 proposed DCO Order Limits (**Figure 16.1, Volume 3** of the ES (Document Reference 6.3.16)**)** and no major blanking of data was noted. The Rampion 1 geotechnical investigations did collect one core within the channel deposits (VC3) and recovered a thin layer of peat which is discussed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Stakeholder	Date	Comment	Response
			Benthic surveys undertaken in 2021 noted further areas of peat on the seabed. The archaeological assessment of the benthic report result is detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and summarised in **Section 16.6**. Early archaeological engagement during the Rampion 2 geotechnical survey planning process is a requirement set out in embedded environmental measures C-57 and C-59 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13). The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	02 July 2020	We would expect to see mechanisms in place to ensure all samples and sub-samples taken for geoarchaeological purposes are clearly identified in an ongoing register, to include their location; and that appropriate storage facilities are available for the duration of the project.	Retention of samples is set out in the Outline Marine WSI document which is a requirement within the embedded environmental measure C-57 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Stakeholder	Date	Comment	Response
			Geoarchaeological analysis will utilise a geodatabase within an industry standard GIS platform. The Stage 1 geoarchaeology report will outline the IDs of all cores collected, their position and preliminary logs of the Units retained as per forthcoming Method Statements.
Historic England	02 July 2020	It would also be very useful if each report produced, clearly set out in a grid its genesis and hierarchy, so it was absolutely clear how each piece of work fitted into the overarching scheme of archaeological/geoarchaeological investigation. Lack of communication and uncertainty about what had been done, by whom and when, as well as what material was still available, were issues that led to a very muddled Rampion 1 paper trail.	The Outline Marine WSI (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)) and the final Agreed Marine WSI, as per embedded environmental measure C-57 (**Table 16-16**), contains a table outlining all archaeological works completed. Reporting is a requirement of embedded environmental measure C-57 (**Table 16-16**) and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13), all forthcoming geoarchaeological reports will follow the Offshore Geotechnical Investigations and Historical Environment Analysis: Guidance for the Renewable Energy Sector (COWRIE, 2011).

Evidence Plan Process (EPP)

16.3.6 The Evidence Plan Process (EPP) has been set up to provide a formal, non-legally binding, independently chaired forum to agree the scope of the EIA, and the evidence required to support the DCO Application. The EPP commenced in January 2020 and has continued throughout the EIA helping to inform the ES.

16.3.7 For marine archaeology, engagement has been undertaken via the EPP ETG *SLVIA, LVIA, Archaeology & Cultural Heritage and Marine Archaeology ETG Meeting*.

16.3.8 Further information is provided in the **Evidence Plan** (Document Reference: 7.21).

16.3.9 Historic England agreed to take part in the EPP Steering Group as per email dated 9 March 2020. The Steering Group aims to monitor and oversee the Evidence Plan process.

16.3.10 Under the EPP, ETGs have been established to as discuss and agree the evidence and assessment requirements for each topic. Engagement with Historic England has been ongoing since 5 August 2020 in the form of conference calls and emails.

16.3.11 On 15 September 2020, the first seascape, landscape, historic environment, and marine archaeology ETG meeting was held where the scope of the assessment relating to the Scoping Opinion was discussed. The proposed methodology was presented and there was a brief discussion of key datasets.

16.3.12 On 18 March 2021 the second seascape, landscape, historic environment, and marine archaeology ETG meeting was held where the scope of the assessment relating to the PEIR submission was discussed. The updated baseline data and methodology was presented and clarifications on the embedded environmental measures was discussed.

16.3.13 On 4 November 2021, the third seascape, landscape, historic environment, and marine archaeology ETG meeting was held where the progress from PEIR was discussed. Comments received from the S42 Consultation and topic specific replies were also presented (see **Appendix 5.2: Responses to the Scoping Opinion, Volume 2** (Document Reference: 6.4.5.2) for details).

16.3.14 On 16 June 2022, a final ETG for seascape, landscape, historic environment and marine archaeology was held where S42 comments in relation to the Outline Marine WSI were discussed and topic specific updates were presented.

Non-statutory consultation

Overview

16.3.15 Non-statutory consultation captures all consultation outside of statutory consultation and has been ongoing with a number of consultation bodies and local authorities in relation to marine archaeology. A summary of the non-statutory consultation undertaken since completion of the Scoping Report is outlined in this section.

Non-statutory Consultation Exercise – January / February 2021

16.3.16 RED carried out a non-statutory Consultation Exercise for a period of four weeks from 14 January 2021 to 11 February 2021. This Consultation Exercise aimed to engage with a range of stakeholders including the prescribed and non-prescribed consultation bodies, local authorities, Parish Councils and the general public with a view to introducing the Proposed Development and seeking early feedback on the emerging designs.

16.3.17 Further detail about the results of the non-statutory Consultation Exercise can be found in the **Consultation Report** (Document Reference: 5.1).

Statutory consultation

16.3.18 Rampion 2's first statutory consultation exercise ran from 14 July to 16 September 2021, a period of nine weeks. The PEIR (RED, 2021) was published as part of Rampion 2's first statutory consultation exercise which provided preliminary information on shipping and navigation within Chapter 17: Marine archaeology (RED, 2021).

16.3.19 Following feedback to the Statutory Consultation exercise in 2021 it was identified that some coastal residents did not receive consultation leaflets as intended. Therefore, the first Statutory Consultation exercise was reopened between 7 February 2022 to 11 April 2022 for a further nine weeks. The original PEIR published as part of the first Statutory Consultation exercise in 2021 was unchanged and re-provided alongside the reopened Statutory Consultation exercise in early 2022.

16.3.20 The following statutory consultation exercises focussed on changes made to the onshore cable route, onshore substation, and National Grid interface point and did not consider offshore aspects of the Proposed Development.

16.3.21 The second Statutory Consultation exercise was undertaken from 18 October 2022 to 29 November 2022. This was a targeted consultation which focused on updates to the onshore cable route proposals which were being considered following feedback from consultation and further engineering and environmental works. As part of this second Statutory Consultation exercise, RED sought feedback on the potential changes to the onshore cable route proposals to inform the onshore design taken forward to DCO application.

16.3.22 The third Statutory Consultation exercise was undertaken from 24 February 2023 to 27 March 2023. This was a targeted consultation which focused on a further single onshore cable route alternative being considered following feedback from consultation and further engineering and environmental works. As part of this third Statutory Consultation exercise, RED sought feedback on the potential changes to the onshore cable route proposals to inform the onshore design taken forward to DCO Application.

16.3.23 The fourth Statutory Consultation exercise was undertaken from 28 April 2023 to 30 May 2023. This was a targeted consultation which focused on the proposed extension works to the existing National Grid Bolney substation to facilitate the connection of the Rampion 2 onshore cable route into the national grid electricity infrastructure. As part of this fourth Statutory Consultation exercise, RED sought

feedback on the proposed substation extension works to inform the onshore design taken forward to the DCO Application.

16.3.24 **Table 16-7** provides a summary of the key themes of the feedback received in relation to marine archaeology and outlines how the feedback has been considered in this ES chapter. A list of comments received during the statutory consultation period and the response to comments is provided in the **Consultation Report** (Document Reference: 5.1).

Table 16-7 Statutory consultation feedback

Stakeholder	Theme	How this is addressed in this ES
Historic England	The worst-case scenario (design envelope) for impacts to known or presently unknown elements of the marine historic environment should be based on the use of foundations utilising suction buckets.	The maximum design scenario has been updated since the PEIR submission and is detailed in **Section 16.7**.
Historic England	We do not concur with the approach adopted for assessment of change in respect to perceptions of Historic Seascape Character. A revaluation of HSC is to be delivered within any ES subsequently produced.	A detailed HSC assessment using guidance recommended (see **Section 16.2**), has been included in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The results are summarised in **Section 16.6**.
Historic England	The draft Marine Outline Written Scheme of Archaeological Investigation requires amendment.	**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) has been updated.
Historic England	It is our advice, and our position, that impacts to marine archaeology should be scoped into construction activities phase of this proposed project. /···/ until it is demonstrated these embedded mitigation measures can be adequately secured through the DCO and DMLs, full consideration should be given to all potential impacts.	All potential impacts on marine heritage receptors have been scoped in as summarised in **Section 16.4** and detailed in **Sections 16.9** to **16.15**.
Historic England	Impacts from interconnector cables, omega joints and cable protection should be considered	The maximum design scenario has been updated since PEIR submission and is detailed in **Section 16.7**. All considered impacts are further detailed in **Sections 16.9** to **16.15**.

Stakeholder	Theme	How this is addressed in this ES
Historic England	Data quality (geophysical data) should be clarified and a figure showing the spatial coverage should be included.	Data quality is summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). Spatial cover of geophysical data has been included on **Figure 16.1, Volume 3** of the ES, (Document Reference: 6.3.16).
Historic England	Further consideration of the size and shape of AEZs for all medium and high potential receptors is required in any ES subsequently produced to ensure they are robust mitigation on a case-by-case basis the placement of anchor lines and other activities in the water column must also avoid these AEZs.	All AEZs have been produced on a case-by-case basis, as illustrated in Annex E of **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). As per commitment C-60 (**Table 16-16**), all intrusive activities will be routed and microsited to avoid any identified marine heritage receptors unless other mitigation approaches are agreed with Historic England.
Historic England	The date and character of the deposits preserved within the palaeochannels is established in order to determine their archaeological and palaeoenvironmental potential and significance and test the geophysical results. We therefore look forward to discussing with you how this information should be most effectively obtained, for example, by securing dedicated geotechnical core material from agreed locations expressly for geoarchaeological analysis.	No geotechnical campaign is planned until after consent is granted. A way forward has been discussed during a targeted ETG meeting with Historic England, the MMO and RED. **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) outlines commitments and future plans for geoarchaeological campaigns.
Historic England	We recommend that any further survey works planned are presented within the Outline Marine WSI as a table to ensure clear and consistent logging of survey works and to set an indicative programme of further works.	Preliminary survey campaigns and investigations are outlined within **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Stakeholder	Theme	How this is addressed in this ES
Historic England	Cumulative assessment, HE cannot, at this stage, concur with the conclusion of "not significant". Until we have sufficient baseline characterisation we cannot comment further as to the cumulative impact which may arise.	**Section 16.12**, Assessment of cumulative effects, has been updated.
Historic England	We cannot, at this stage, concur with the statement made in paragraph 17.15.5 regarding potential for direct spatial impact on marine heritage receptors during construction and/or decommissioning of the proposed development. It remains the case that assigning a significance of "negligible" is predicated on delivery of what appear to be general "commitments".	**Section 16.14**, Assessment of Inter-related effects, has been updated.
Historic England	Further consideration is required with regards to securing commitments C-58, C-59, C60 and C-97. In particular, C-59 which should be reworded to reflect more proactive measures.	The embedded environmental measures, as detailed in **Table 16-16**, have been updated to address the stakeholder comments. The embedded environmental measures are reflected in the DCO (Requirement 13 (1), (2)).
Historic England	A total number of AEZs across the project area should be included in **Section 5**, the main marine archaeology chapter and the WSI in any ES subsequently produced.	The total number of AEZs within the Assessment Boundary has been included in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1), **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and **Section 16.6**.
Historic England	We wish to highlight that if it is the intention of the Applicant to include permission within the DCO for O&M activities, that provisions for mitigation measures for such activities is included within the Outline Marine WSI.	**Section 1.1 in Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) has been updated.

Stakeholder	Theme	How this is addressed in this ES
Historic England	Further detail should be included within **Section 8** with regards to the production of method statement before and reports after works (including further survey works) and their submission to the archaeological curators for review. Timeframes and further detail regarding the submission of reports and archives to both OASIS and potentially a museum for material remains should also be included. Further detail with regards to method for recording is required in **Section 9.6**, and reference to the required training needs to be included within the PAD (Annex A).	**Sections 8 and 9 in Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) have been updated.
Historic England	We understand within Part 2, Condition 13 (pre-construction plans and documentation) of both Schedule 11 and 12, there are provisions for a WSI (Condition 13 (2)) and provisions for information relating to archaeological mitigation to be included within other appropriate pre-commencement documents. In principle, Condition 13(2) of both schedules seems to include appropriate provision and timeframes for delivery. However, Condition 13(2)(g) and Condition 13(2)(h) within Schedule 11 and Condition 13(2)(h) and Condition 13(2)(i) within Schedule 12 appear to have duplicate purposes. It is recommended that Condition 13(2)(g) and Condition 13(2)(h) of Schedules 11 and 12 respectively should be retained to cover matters relating to a PAD.	Condition 13 will be updated to avoid duplication.
MMO	The MMO understands that there are ongoing discussions between RED and Historic England in terms of the commitments register and how mitigation is captured within the draft DCO. The MMO would like	MMO has been informed when commitments have been re-worded and have been invited to all discussions on the subject. The commitment register has been updated and is now referred to as

Stakeholder	Theme	How this is addressed in this ES
	to be included in these discussions. The MMO notes the commitments register is likely to be a certified document and believes that this should be referenced within the DMLs as part of a condition to ensure there is enforceability to follow the commitments within this document. The MMO welcomes further discussions with RED and Historic England to agree the condition wording. The MMO requests the MMO is included in any discussions that could impact the DML wording.	the **Commitments Register** (Document Reference: 7.22).

16.4 Scope of the assessment

Overview

16.4.1 This section sets out the scope of the ES assessment for marine archaeology. This scope has been developed as Rampion 2 design has evolved and responds to feedback received as set out in **Section 16.3**.

Spatial scope and study area

16.4.2 The spatial scope of the marine archaeology assessment is defined as the proposed DCO Order Limits up to MHWS surrounded by a 2km buffer seaward of MHWS that has formed the basis of the marine archaeology study area described in this section (**Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)).

16.4.3 The 2km buffer on the proposed DCO Order Limits allows for the consideration of direct and indirect effects on marine heritage receptors and is to accommodate the potential imprecision of historic marine positioning. This is in line with the existing Rampion 1 offshore wind farm marine archaeology study area and has been agreed under the EPP with Historic England.

16.4.4 Since PEIR submission, the proposed DCO Order Limits and marine archaeology study area have been reviewed and amended in response to refinement of the offshore components, the identification of additional impact pathways and in response to feedback from consultation. The extent of the array area has been reduced; however, no changes were made to the export cable route corridor (as described in **Chapter 3: Alternatives, Volume 2** of the ES (Document Reference: 6.2.3).

Temporal scope

16.4.5 The temporal scope of the assessment of marine archaeology is consistent with the lifetime of the Proposed Development and therefore covers the construction, operation and maintenance and decommissioning periods.

Potential receptors

16.4.6 The spatial and temporal scope of the assessment enables the identification of receptors which may experience a change as a result of Rampion 2. The receptors identified that could potentially experience likely significant effects for marine archaeology are outlined in **Table 16-8**.

Table 16-8 Receptors requiring assessment for marine archaeology

Receptor group	Receptors included within group
Marine heritage receptors	Physical resources such as shipwrecks, aviation remains, archaeological sites, archaeological finds and material including pre-historic deposits; archival documents and oral accounts recognised as of historical/archaeological or cultural significance; and historic seascape character and the changes perceived through historic use of this seascape.

Potential effects

16.4.7 Potential effects on marine heritage receptors that have been scoped in for assessment are summarised in **Table 16-9**.

16.4.8 Note that following stakeholder feedback following the PEIR process, potential effects previously scoped out have been scoped in and are fully assessed in this chapter, as detailed in **Table 16-9** and **Sections 16.9** to **16.15**.

16.4.9 Impacts on marine heritage receptors have been divided into direct or indirect impact as per EN1 and EN3 (**Table 16-2** and **Table 16-3**) and defined below.

- Direct impacts - physical impact to marine heritage receptors located on within the marine archaeology study area.
- Indirect impacts - physical impacts on marine heritage receptors as a result of changes to sedimentary or hydrodynamic processes. Also includes non-physical, indirect impacts on the setting of marine heritage receptors which could be visual or by noise, vibration and light or changes to the perceived historic use of the seascape.

Table 16-9 Potential effects on marine heritage receptors scoped in for further assessment

Receptor	Activity or impact	Potential effect
Construction		
Marine heritage receptors	**Direct impact**: Removal of sediment containing undisturbed archaeological contexts during seabed preparation ahead of construction activities.	The seabed preparation activity has the potential to impact marine heritage receptors.
Marine heritage receptors	**Direct Impact:** Penetration, compression, and disturbance effects of piling foundations.	The piling activity has the potential to impact marine heritage receptors.
Marine heritage receptors	**Direct Impact:** Penetration, compression, and disturbance of cable laying operations.	The cable laying activity has the potential to impact marine heritage receptors.
Marine heritage receptors	**Direct Impact** Penetration, compression and disturbance effects of jack-up barges and anchoring of construction vessels during construction activities.	The jack-up barge and vessel anchoring activities have the potential to impact marine heritage receptors.
Marine heritage receptors	**Indirect Impact:** Disturbance of sediment containing potential marine heritage receptors (material and contexts) during construction activities.	Effects may include exposing marine heritage receptors to natural, chemical, or biological processes and causing or accelerating loss of the same.
Marine heritage receptors	**Indirect impact:** Changes to the HSC as a result of construction and survey vessel activities and the addition of cables, foundations and turbines.	Changes to the perceived historic use of the seascape during construction activities.
Operation and maintenance		

Receptor	Activity or impact	Potential effect
Marine heritage receptors	**Direct Impact:** Penetration compression and disturbance effects of maintenance activities at WTG substation foundations and along, inter-array and export cables.	The maintenance activities has the potential to impact marine heritage receptors.
Marine heritage receptors	**Indirect Impact:** Disturbance of sediment containing potential marine heritage receptors during maintenance activities.	Effects may include exposing marine heritage receptors to natural, chemical, or biological processes and causing or accelerating loss of the same.
Marine heritage receptors	**Direct impact:** Penetration, compression and disturbance effects of jack-up barges and anchoring of operation and maintenance vessels during the operation and maintenance phase.	The jack-up barge and vessel anchoring activities have the potential to impact marine heritage receptors.
Marine heritage receptors	**Indirect impact:** Scour effects caused by the presence of WTG substation foundations and the exposure of inter-array and export cables or the use of cable protection measures.	Effects may include exposing marine heritage receptors to natural, chemical, or biological processes and causing or accelerating loss of the same.
Marine heritage receptors	**Indirect impact:** Changes to the HSC as a result of operation and maintenance vessel activities and the presence of the completed wind farm.	Changes to the perceived historic use of the seascape during the operation phase.
Decommissioning		
Marine heritage receptors	**Direct impact:** Penetration, compression and	The jack-up barge and vessel anchoring activities

Receptor	Activity or impact	Potential effect
	disturbance effects of jack-up barges and anchoring of decommissioning vessels.	have the potential to impact marine heritage receptors.
Marine heritage receptors	**Indirect impact:** Draw-down of sediment into voids left by removed WTG foundations leading to loss of sediment or destabilisation of archaeological sites and contexts.	Effects may include exposing marine heritage receptors to natural, chemical, or biological processes and causing or accelerating loss of the same.
Marine heritage receptors	**Indirect impact:** Changes to the HSC as a result of decommissioning activities and the removal of wind farm components.	Changes to the perceived historic use of the seascape during the decommissioning phase.

Activities or impacts scoped out of assessment

16.4.10 No impacts on marine archaeology have been scoped out of the assessment.

Table 16-10 Activities or impacts scoped out of assessment

Activity or impact	Rationale for scoping out
No activities have been scoped out of the assessment.	Following stakeholder consultation, all impacts scoped out at PEIR have been scoped in, as detailed in **Table 16-9**.

16.5 Methodology for baseline data gathering

Overview

16.5.1 Baseline data collection has been undertaken to obtain information over the study areas described in **Section 16.4: Scope of the assessment**. The current baseline conditions presented in **Section 16.6: Baseline conditions** sets out currently available information from the marine archaeology study area.

Desk study

16.5.2 The data sources that have been collected and used to inform this marine archaeology assessment are summarised in **Table 16-11**.

Table 16-11 Data sources used to inform the marine archaeology ES assessment

Source	Date	Summary	Coverage of study area
United Kingdom Hydrographic Office (UKHO) via Emapsite	22/04/2020	Database of known wrecks and obstructions held and maintained by the UKHO.	Full coverage of the marine archaeology study area.
National Record of the Historic Environment (NRHE) (Historic England)	28/09/2020	Site based information on intertidal sites and known wrecks and reported losses offshore including designated and non-designated archaeological sites.	Full coverage of the marine archaeology study area.
West Sussex County Council (WSCC) Historic Environment Record (HER)	23/04/2020	County maintained database of all known archaeological monuments and events, including designated and non-designated archaeological sites, designated and non-designated buildings and standing structures, conservation areas, sites with known palaeoenvironmental significance and HLC studies.	Partial coverage of the marine archaeology study area (approximately 2/3^{rds} falls within WSCC jurisdiction).
East Sussex County Council (ESCC) HER	06/05/2020	County maintained database of all known archaeological monuments and events, including designated and non-designated archaeological sites, designated and non-designated buildings and standing structures, conservation areas, sites with known palaeoenvironmental significance and HLC studies.	Partial coverage of the marine archaeology study area. (approximately 1/3 falls within ESCC jurisdiction).

Source	Date	Summary	Coverage of study area
***Submerged Palaeo-Arun River Project* (Gupta *et al*., 2004; 2008)**	2004, 2008	A reconstruction of the prehistoric landscapes connected to the River Arun with an evaluation of the archaeological resource potential.	Partial coverage of the marine archaeology study area.
***The South Coast Regional Environmental Characterisation* (James *et al*., 2010)**	2010	A regional marine assessment, focusing on evaluating the geological, biological and archaeological resource.	Broadscale data with regional coverage.
***HSC: Hastings to Purbeck and Adjacent Waters* (Maritime Archaeology and SeaZone Solutions, 2011)**	2011	A regional marine assessment presenting the archaeological understanding of the historic cultural dimension of our coasts and seas, identifying and mapping areas whose present character has been shaped by similar dominant cultural processes.	Broadscale data with regional coverage.
***South East Rapid Coastal Zone Assessment* (Wessex Archaeology, 2011; 2013)**	2011, 2013	A regional assessment undertaken to enhance the knowledge of the coastal historic environment in order to inform Shoreline Management Plans.	Broadscale data with regional coverage.
***Rampion Offshore Wind Farm ES* (RSK Environment Ltd, 2012)**	2012	The ES for Rampion 1. Chapter 13 - Marine Archaeology provides a review of the archaeological potential of the area directly adjacent to Rampion 2.	Partial coverage of the marine archaeology study area.
BMAPA Finds Protocol (Wessex Archaeology, 2017)	28/09/2020	Database of unexpected archaeological discoveries found and reported in material from offshore aggregate	Full coverage of the marine archaeology study area.

Source	Date	Summary	Coverage of study area
		areas. Data received as part of the NRHE dataset.	
Offshore Renewables Protocol for Archaeological Discoveries (Wessex Archaeology, 2014)	28/09/2020	Database of unexpected archaeological discoveries found and reported during offshore development activities. Received as part of the NRHE dataset.	Full coverage of the marine archaeology study area
Portable Antiquities Scheme	07/09/2020	Database containing records of terrestrial or intertidal archaeology found and reported by the public.	Partial coverage of the marine archaeology study area.
Marine Antiquities Scheme	Accessed September 2020	Database containing records of marine archaeology found and reported by the public.	No data within study area
Receiver of Wreck	30/09/2020	Database containing records of shipwrecks or archaeological sites of significance.	Full coverage of the marine archaeology study area.
National Historic Seascape Characterisation database (LUC, 2017)	24/11/2021	Database containing records of historic seascape character types and uses on a national and regional scale.	Full coverage of the marine archaeology study area and surrounding area.

Site surveys

16.5.3 Additional site-specific survey data sources that have been collected and used to inform the marine archaeology assessment are summarised in **Table 16-12**.

Table 16-12 Site surveys undertaken

Survey type	Scope of survey	Coverage of study area
Geophysical survey of the offshore part of the proposed DCO Order Limits undertaken in 2020	Full suite of geophysical data including side scan sonar, multibeam, magnetometer and sub-bottom profiler.	Between 100 percent and 300 percent coverage of the study area (**Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)). Data quality and survey cover is further summarised in **Section 16.6** and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).
Rampion 2 Offshore Wind Farm Characterisation Surveys Subtidal Habitats Survey	Seabed imagery, sediment composition and chemistry, macrobenthic analysis and predictive habitat mapping setting out the environmental baseline conditions as well as representative sampling of all main sediment types.	Comprising 39 camera transects, 23 drop-down Video (DDV), and 39 grab locations across the ECC and Array.

Data limitations

16.5.4 There are no data limitations relating to marine archaeology that affect the robustness of the assessment of this ES.

16.6 Baseline conditions

Current baseline

Overview

- The marine archaeological resource can be characterised within the following five main categories of sites and features:
- Landscape: submerged prehistoric landscapes related to fluctuations in past sea-level. Such landscapes may contain significant evidence of prehistoric human occupation and/or environmental change.
- Vessel: Archaeological remains of vessels deposited after a wrecking event at sea or abandoned in an intertidal context.

- Aircraft: Remains of aircraft crash sites, either coherent assemblages or scattered material, typically the result of Second World War military conflict, but also numerous passenger casualties. This category includes aircraft, airships and other dirigibles dating to the First World War.
- Structures: Structural remains including defensive structures, lighthouses, jetties, harbours, fish traps 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: The historic cultural influences which shape present perception of seascape, its use and its ability to accommodate change.

Environmental context and maritime activity

16.6.1 The area of seabed that the marine archaeology study area covers has undergone a dynamic process of evolution through the Pleistocene and early Holocene (Mesolithic), from large swathes of dryland to submerged seabed, as a result of fluctuations in temperature and sea-level.

16.6.2 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. The archaeological and palaeoenvironmental potential of the offshore Palaeolithic deposits from the English Channel and Solent region is high and can be demonstrated by artefacts, faunal remains and peat evidence identified to date. However, *in situ* offshore finds are rare, with most artefacts within the marine zone being found on the seabed in a secondary context.

16.6.3 By the Neolithic, sea level had risen to levels similar to the present-day coastline and therefore the potential for submerged landscape deposits is significantly reduced. 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.

16.6.4 The potential for substantial submerged landscape deposits is further reduced in the Bronze Age. However, growing sedentary populations, both on the coast and inland, inevitably gave rise to increased communications along the coast and waterways of the region, and therefore elevates the potential for *in situ* archaeological remains and secondary context material from eroded deposits in the inshore and intertidal zone. There is evidence of maritime activity including the development of more complex plank-built hull forms replacing skin/hide vessels and logboats.

16.6.5 By the Iron Age, sea-level change no longer has a significant effect on the geomorphology of the coastline and is replaced by coastal erosion as the key factor in these changes. Maritime trade networks were further developed, with evidence of cross-channel, as well as coastal and inland, trade.

16.6.6 By the Romano-British period there is clear evidence for seaborne and coastal activity, with several important sites established in Sussex following the Roman

invasion of AD 43. A range of vessels fit for the wide variety of marine and inland waterways activities were used at this time.

16.6.7 There was a decline in maritime activity in the Early Medieval period, after the fall of the Roman Empire, until the late 6th century when there was a resurgence of trade with continental Europe which continued into the 9th century. As with the Roman period, the variety of maritime activities meant an extensive range of vessels were used. These vessels continued to increase in size and complexity; however, smaller craft were still commonly used, especially for coastal and inshore activities.

16.6.8 In the post-medieval period, there was a marked increase in detailed historical records, which meant that known maritime losses began to be recorded. There was also a continued increase in trade and maritime activity, and with this expansion of shipping activity and traffic came an ever-greater number of wrecking events within the marine archaeology study area.

16.6.9 The rapid pace of technological development in the beginning of the twentieth century had a great impact on the broad pattern of maritime activity. Wartime innovations led to the increase in use of new types of vessels and technologies, and a transformation of a growing global shipping trade. Globalisation also expanded into the leisure industry, with a decrease in the use of ocean liners in favour of cruise ships and newly developed passenger aircraft in the mid-1900s, and planes becoming the primary method of intercontinental travel.

Known wrecks and obstructions

16.6.10 Wrecks and obstructions are classified by the UKHO as:

- LIVE: Wreck considered to exist as a result of detection through survey;
- DEAD: Not detected over repeated surveys, therefore not considered to exist in that location;
- LIFT: Wreck has been salvaged;
- UNKNOWN: The state of the wreck is unknown or unconfirmed; and
- ABEY: Existence of wreck in doubt and therefore not shown on charts.

16.6.11 The record of England's archaeological and architectural sites held by the National Record of the Historic Environment (NRHE), is being developed into the National Marine Heritage Record (2022) the data utilised for the assessment of known archaeological receptors contains data classified as

- Wreck: Remains of vessels;
- Fishermen’s fasteners: Unidentified obstructions reported by fishermen;
- Named locations: Locations where a wrecking event has been reported but not confirmed; and
- Site/find and event: Find spots and locations for historical events such as battles.

16.6.12 The archaeological assessment of geophysical data combined with the baseline conditions has identified 41 LIVE wrecks, 25 DEAD wrecks, four UNKNOWN or unconfirmed, and two LIFTED wrecks within the marine archaeology study area (**Figure 16.2, Volume 3** of the ES (Document Reference: 6.3.16).

16.6.13 Of the wrecks recorded in the UKHO and NRHE baseline data assessment, 28 were identified within the geophysical data.

16.6.14 There are also an additional 28 recorded vessel losses within the study area whose location within the dataset is recorded as a general area (602.17km²). 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 archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Aviation remains

16.6.15 Remains of aircraft crash sites, either coherent assemblages or scattered material are usually the result of Second World War military conflict. The numerous passenger casualties, particularly during the peak of seaplane activity during the inter-war period are the other most likely potential source. Aviation remains include aircraft, airships and other dirigibles dating to the First World War, although these rarely survive in the archaeological record.

16.6.16 There are 17 reported losses of aircrafts within the study area. All but one, which is unidentified, date to the Second World War. Where *in-situ* remains associated with any military aviation losses are found, they will be archaeologically significant and protected under the Protection of Military Remains Act 1986.

Fishermen's fasteners

16.6.17 There are 20 records classed as fishermen's fasteners recorded by the NRHE. Fishermen's fasteners are unidentified obstructions reported by fishermen with often very little information on accurate positioning or archaeological potential. The recorded positions might be indicative of a wreck or submerged feature but they remain unidentified and are not associated with any known vessels or structural remains (including records classified as DEAD by the UKHO). All records of fishermen's fasteners were cross referenced with data deriving from the archaeological assessment of geophysical data and the results are presented in **Annex A of Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Unlocated marine heritage receptors

16.6.18 There is always a possibility that not yet identified marine heritage receptors are located within the marine archaeology study area and proposed DCO Order Limits. 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. 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 completing pre-

construction surveys. Mitigation for unlocated marine heritage receptors is further discussed in **Sections 16.7** and **16.9** to **16.15** and **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Archaeological assessment of geophysical data

16.6.19 The archaeological assessment of geophysical data is presented below, and the results are summarised in **Table 16-13**. All geophysical anomalies have been cross-referenced with records of marine heritage receptors identified during the baseline assessment (see above).

16.6.20 Gardline Limited was contracted by RED to acquire shallow geophysical and Ultra-High Resolution Seismic (UHRS) data across areas being considered for development at Rampion 2 and associated export cable route corridor (**Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)). The data quality was assessed as Good, meaning suitable, clear data in which anomalies can be clearly identified and interpreted and provides the highest probability for marine heritage receptors to be identified. The definition of survey data quality for archaeological interpretation is further detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Table 16-13 Summary of archaeological anomalies

Archaeological potential	No. anomalies
High	30
Medium	21
Low	210
Magnetic anomalies of low potential	1,993
Known wrecks identified in the geophysical data	28

16.6.21 Thirty anomalies as seen in the geophysical data have been assessed as high archaeological potential as summarised below and detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and **Annex E**.

16.6.22 Details on known wrecks and obstructions that correlate with anomalies identified in the geophysical data are included below (see **Figure 16.2, Volume 3** of the ES (Document Reference: 6.3.16)).

- **MA0004** The semi-coherent bow of a vessel, partially buried, measuring 31m in length and 6.5m in width. This is potentially the wreck of the motor vessel *Gerlen*, sunk on the 19th of July 1972 (UKHO ID 20005).
- **MA0005** The semi-coherent, partially buried outline of a hull measuring approximately 22m in length and 9m in width. Not associated with a baseline assessment record.

- **MA0007** The coherent outline of the bow of a vessel and associated debris to the SW, covering an area of approximately 60m by 40m. This correlates with the remains of an unidentified vessel (UKHO ID 19961).
- **MA0008** The coherent remains of a vessel and its super-structure, measuring approximately 93m in length and 19m.The shadow suggests a height of 8m above the seabed, with some scour. This is potentially the wreck of the Northern Irish steam cargo vessel *Glenarm Head*, sunk on the 4th of January 1918 (UKHO ID 19926/20012).
- **MA0009** The coherent remains of a wreck and associated debris over an area of 90m by 45m. This correlates with the wreck of the English cargo steam vessel *Pagenturm*, sunk on 16 May 1917 (UKHO ID 20001).
- **MA0010** The cylindrical, partially buried remains of a wreck, measuring approximately 77m in length and 7m width. This record correlates with the British destroyer *HMS Minion*, sunk on 1 January 1921 (UKHO ID 20014).
- **MA0011** The semi-coherent outline of a vessel measuring 60m in length and 17m width with an extended shadow suggesting it sits approximately 7m above the seabed. This is the other possible site for the remains of the Northern Irish cargo vessel *Glenarm Head* (UKHO ID 20169).
- **MA0012** The semi-coherent remains of a partially buried cylindrical anomaly, potentially a wreck, measuring approximately 61m in length and 14m width, associated with two hard reflectors c. 100m to the north north-east. This is potentially the site of the wreck of the cargo steam ship *London Trader*, sunk on 26 July 1940 (UKHO ID 19972).
- **MA0013** The coherent remains of a vessel measuring approximately 73m in length and 11m in width, with an extended shadow which suggests the wreck sits approximately 7m above the seabed and much of the super-structure remains. This correlates with the record of the cargo steam ship *Quail*, sunk on 27 August 1886 (UKHO ID 20000).
- **MA0014** The semi-coherent remains of a cylindrical anomaly, measuring approximately 60m in length and 7m width, partially buried with an extended shadow which suggest a height of 8m above the seabed. This correlates with the remains of an unidentified vessel (UKHO ID 19970).
- **MA0015** The semi-coherent outline of a vessel, measuring approximately 76m in length and 7m width, with associated scour. This correlates with the remains of an unidentified cargo vessel (UKHO ID 19991).
- **MA0016** A spread of debris over an area of 105m by 30m with an extended shadow which suggests a height of 7.3m above the seabed. This correlates with the remains of an unidentified freighter (UKHO ID 19996).
- **MA0017** A long, ovate feature, measuring approximately 23m in length and 6m wide, partially buried, with an elongated shadow that suggest a height of 2m above the seabed. This correlates with the fishing vessel *Ny-Eeasteyr*, sunk on 8 December 1980 (UKHO ID 20186).
- **MA0018** The semi-coherent partially buried remains of a vessel with associated debris measuring approximately 77m in length and 16m width.

- **MA0019** An ovate feature with an extended shadow suggesting a height of approximately 3m above the seabed and some scour. Corresponds to site of a possible unidentified fishing vessel (UKHO ID 82762).
- **MA0020** The coherent remains of a partially buried vessel measuring approximately 70m in length and 14m wide, with extended shadows suggesting the presence of super-structure. This correlates with the steam cargo ship *Ariel*, sunk on 10 June 1892 (UKHO ID 20023).
- **MA0021** A buried linear anomaly measuring approximately 28m in length with a shadow suggesting a height of 2m above the seabed.
- **MA0022** The semi-coherent buried remains of a vessel measuring approximately 102m in length and 32m width, with extended shadows from the centre of the vessel suggesting the remains of super-structure, potentially the boilers, and other associated debris. This correlates with the wreck of the English cargo steam ship *Cairndhu*, sunk on 15 April 1917 (UKHO ID 19987).
- **MA0024** The broken remains of a vessel over an area approximately 60m by 8m, with extended shadow suggesting a height of approximately 4m above the seabed. These remains are possibly associated with the wreck of the drifter or trawler *Klondyke*, sunk on the 4th of June 1916 or *Evadne*, sunk on 27 February 1917 (UKHO ID 19997).
- **MA0025** The semi-coherent remains of a partially buried vessel measuring approximately 74m in length and 20m wide, with an extended shadow suggesting debris and super-structure with a height of 5m above the seabed.
- **MA0026** The semi-coherent remains of a partially buried vessel measuring approximately 55m in length and 10m wide, with an extended shadow suggesting debris and super-structure with a height of 3m above the seabed. This correlates with the remains of an unidentified tank landing craft (UKHO ID 20020).
- **MA0027** Three sets of parallel linear hard reflectors with associated shadows suggesting a height of approximately 2.5m above the seabed, and a partially buried ladder-like anomaly, contained within an area of approximately 55m by 50m. This correlates with a wreck believed to comprise British Mulberry Harbour bridge sections, together with the dumb barges on which they were towed (UKHO ID 19988).
- **MA0029** The scattered debris of a wreck over an area of approximately 90m by 20m. This correlates with the English armed cargo steam ship *War Helmet*, sunk on 19 April 1918 (UKHO ID 19984).
- **MA0030** A cluster of features concentrated within an area measuring 60m by 15m. This correlates with the wreck of the Welsh steam cargo ship *Afon Dulais*, sunk on 20 June 1918 (UKHO ID 19947).
- **MA0032** The scattered debris of a wreck over an area of approximately 91m by 14m. It is located outside of the PIER Assessment Boundary, but within the marine archaeology study area. This is the potential wreck of the British cargo steam ship *Lightfoot*, sunk on 16 March 1918 (UKHO ID 19948).

- **MA0033** The semi-coherent partially buried remains of a wreck measuring approximately 83m in length and 15m width, with extended shadow suggesting the remains of super-structure including two boilers. This correlates with the Scottish steam cargo vessel *Gartland*, sunk on 3 January 1918 (UKHO ID 19971).
- **MA0034** Ovate anomaly with extended shadow, measuring approximately 14.5m in length and 7m width, sitting 3m above the seabed. This is potentially the wreck of an unidentified vessel carrying a cargo of metal bars (UKHO ID 20075).
- **MA0036** Coherent remains of a steel plated cargo ship approximately 120m in length and 30m width. Super-structure, including three boilers, remains. This is the potential wreck of the English cargo vessel *Glenlee*, torpedoed and sunk in 1918 (UKHO ID 20055).
- **MA0037** Pair of 'L' shaped anomalies with extended shadows suggesting a height of approximately 4m above the seabed. This is potentially boilers (UKHO ID 20068) from the wreck of the Scottish steam cargo vessel *Shirala*, sunk on 2 July 1918 (UKHO ID 20069).
- **MA0062** Buried hard reflector measuring approximately 47m in length. This is potentially the wreck of the British steam cargo vessel *Broadhurst*, sunk on 26 July 1940 (UKHO ID 19959).

16.6.23 Twenty-two anomalies of medium archaeological potential have been identified, as summarised below and detailed in **Section 4.2, Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1) and **Annex F**. All medium potential anomalies have been assigned 50m AEZs as shown in **Figure 16.3, Volume 3** of the ES (Document Reference: 6.3.16).

- **MA0028** A cluster of features concentrated within an area measuring 70m by 15m.
- **MA0031** A linear anomaly measuring approximately 24m in length with an extended triangular shadow suggesting a height of 1m above the seabed.
- **MA0035** Two parallel buried reflectors approximately 15m in length and 1m apart.
- **MA0038** A prominent mound which may represent anthropogenic material. The mound measures 10.6m by 3.7m, with a maximum height of 0.9m.
- **MA0040**A cluster of features concentrated within an area measuring 48m by 16m, with shadow suggesting a height of 1.6m above the seabed.
- **MA0041** A cluster of features concentrated within an area measuring 38m by 29m.
- **MA0042** A cluster of features concentrated within an area measuring 57m by 24m.
- **MA0045** Two anomalies identified from the magnetometer data (MAG) MA5501 104 Nanotesla (nT) and MAG MA5503 (105nT).

- **MA0047** Isolated magnetic anomaly (111nT) (MAG MA6298).
- **MA0048** Isolated magnetic anomaly (112nT) (MAG MA6485).
- **MA0049** Pair of linear hard reflectors; potential anthropogenic debris or boulders, associated with magnetic anomaly (115nT) (SSS MA2085, MAG ID MA6224).
- **MA0050** Isolated magnetic anomaly (116nT) (MAG MA6529).
- **MA0052** Isolated magnetic anomaly (125nT) (MAG MA5600).
- **MA0053** Isolated magnetic anomaly (145nT) (MAG MA5202).
- **MA0054** Isolated magnetic anomaly (156nT) (MAG MA5537).
- **MA0055** Isolated magnetic anomaly (165nT) (MAG MA5380).
- **MA0056** Isolated magnetic anomaly associated with seabed reflector (4nT) (MAG MA5032).
- **MA0057** Isolated magnetic anomaly associated with seabed reflector (209nT).
- **MA0058** Three magnetic anomalies MA5504 (245nT) MA5505 (47nT) MA5506 (38nT) (MAG MA5504).
- **MA0059** Isolated magnetic anomaly (147nT) (MAG MA6556).
- **MA0060** Isolated magnetic anomaly (300nT) (MAG MA5823).
- **MA0061** Isolated magnetic anomaly (716nT) (MAG MA5529).

16.6.24 Low potential anomalies have been characterised as a mixture of small features, often boulder-like, or isolated linear features and modern debris such as rope, chain, fishing gear or lost equipment.

16.6.25 The 1,993 magnetic anomalies over 4nT but with no corresponding data in any of the assessed geophysical datasets or research resources have also been assigned low archaeological potential.

Geoarchaeological assessment of geophysical data

16.6.26 This section presents a preliminary deposit model which is to be refined following a geoarchaeological assessment of forthcoming geotechnical data.

16.6.27 Prior to any works, a Method Statement for the geoarchaeological review of geotechnical samples will be produced and submitted to Historic England for review in accordance with embedded environmental measures C-59 (**Table 16-16**), which sets out the requirement for a staged geoarchaeological approach, and C-57 (**Table 16-16**) which ensures that the geoarchaeological assessment requirements are clearly stated in the Outline Marine WSI document (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)).

16.6.28 The embedded environmental measure C-59 is reflected in the DCO (Requirement 13 (2)).

16.6.29 This section summarises the interpretation of the archaeological assessment of the offshore sub-bottom data and places the current understanding of the complex

prehistoric landscapes and the correlation between marine and terrestrial sediment phases in the context. For further detail refer to **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). This section has been produced in co-operation with the onshore archaeological team and should be read in the context of **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) and **Appendix 25.1: Gazetteer of onshore heritage records, Volume 4** of the ES (Document Reference: 6.4.25.1).

16.6.30 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. Early to Middle Pleistocene deposits of the West Sussex Coastal Plain and wider Solent Basin were shaped by successive interglacial sea-level highstands during the last 500,000 years (Bates *et al*., 2010).

16.6.31 Previous studies in the area have revealed details of the submerged topography including terraces and details of the submerged floodplain, features of the Palaeo-Arun Valley landform which runs the terrestrial zone into the marine zone (Gupta *et al*., 2008).

16.6.32 The Solent and the south coast of England have yielded early Palaeolithic archaeology in high concentrations, for example at Boxgrove, West Sussex (Roberts *et al*., 1994; Roberts and Parfitt, 1999). Here, the earliest hominid fossils from the British Isles were recovered from a Pleistocene raised beach and finds of interest are commonly reported by the aggregate dredging industry (Bates *et al*., 2004).

16.6.33 Supporting the development of this ES chapter, an archaeological assessment of sub-bottom profiler data was undertaken which has resulted in a number of features being identified as of geoarchaeological interest (**Figure 16.4, Volume 3** of the ES (Document Reference: 6.3.16)).

16.6.34 Together, the features reveal a complex system of inundated valleys and channels interlinked and associated with The Northern Palaeovalley, a large system that flowed from the east and joined the Median Palaeovalley offshore from Cherbourg, France possibly dating to the Elsterian/Anglian stage (MIS 12) age or the initially Saalian/Wolstonian stage (MIS 10–6) (Gupta *et al*., 2007).

16.6.35 The palaeo-Arun valley (MA3000), as mapped by (Gupta *et al*, 2008), is clearly visible. It follows the route as previously mapped and continues further south turning east.

16.6.36 The extent of a channel feature (MA3001) identified during the development of the Rampion 1 ES has also been confirmed as it extends into the Rampion 2 survey area.

16.6.37 The channel and valley features have been mapped, as detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). They represent an extensive deltaic river system containing a combination of shallow braided channels system with many tributaries, numerous wider, deeper channels and simple cut and fill features. The channel features are, in the majority, 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.

16.6.38 The outline deposit model presented in **Table 16-14** 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).

16.6.39 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 Unit 4.

16.6.40 The onshore Desk-based Geoarchaeological & Paleoenvironmental Assessment Report (**Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25)) considers the geoarchaeological and paleoenvironmental potential and heritage significance of the Assessment Boundary. 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. These have potential to be associated with the offshore units identified which have been included in **Table 16-14**.

16.6.41 Data was collected in 2021 as part of seabed imagery, sediment composition and chemistry, macrobenthic analysis and predictive habitat mapping. These surveys established areas of peat on the seafloor. The locations where peat was seen have been included **Figure 16.4, Volume 3** of the ES (Document Reference: 6.3.16) (Rampion 2 Offshore Wind Farm Characterisation Surveys Subtidal Habitats Survey 2021).

16.6.42 The outline deposit model will be further refined following a staged geoarchaeological assessment, as outlined in **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13).

Table 16-14 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

Unit	Sediment	Description	Epoch	Geoarchaeological potential	Onshore geological context
1	Cretaceous Upper Chalk Group.	CHALK and gravel	Cretaceous	No	Bedrock

Historic Seascape Characterisation

16.6.43 HSC has been used as a measure in this assessment to provide a contextual and regional approach to the marine archaeology study area. Historic seascapes cannot be physically destroyed or damaged but impacts on them can change their historical character.

16.6.44 Impacts on the current seascape are detailed in **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15).

16.6.45 Changes to the character of the sea surface and the perception of the historic seascape as a direct result of the construction, operation, maintenance and decommissioning of Rampion 2 will result from the addition of new infrastructure such as foundations and turbines as well as ongoing activity from installation and maintenance vessels.

16.6.46 The seascape is dynamic and a product of change, both historic and continual, as is the perception of its character, this HSC assessment draws on the;

- *National Historic Seascape Characterisation Consolidation* (LUC, 2018);
- *England's Historic Seascapes: HSC Method* Consolidation (Cornwall Council, 2008); and
- *England's Historic Seascape: Demonstrating the Method* (SeaZone Solutions Limited, 2009).

16.6.47 The historic character of the seascape can be defined by its dynamic nature and its ability to accommodate change. Perceptions of seascapes are also dynamic and subjective to the public's relationship with the area. The intertidal and marine zones are ever-changing due to physical processes such as currents, tidal range and sediment mobility. Considering this dynamism and the multi-dimensions defined by the HSC, people create complex spatial relationships within and across all marine levels, which is reflected within sites of cultural activity and their material imprints.

16.6.48 HSC regards the historic dimension of the present day seascape and considers the added effect of Rampion 2 within the multiple dimensions of the marine environment (sub-sea floor, sea floor, water column, sea surface, coastal land and previous historic character) in combination with the existing activity within the Broad Historic Character Types (Navigation, Industry, Fishing, Ports and Docks, Coastal Infrastructure, Communications, Military, Settlements, Recreations, Cultural Topography, and Woodland), as further detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1), and summarised below.

16.6.49 Potential changes to the HSC are expressed as a narrative description of the seascape character, how it is perceived by the public, and how these perceptions could be affected by the proposed Rampion 2 wind farm, which may or may not be considered important from a historic perspective.

16.6.50 Within the sub-sea floor and sea floor, character types include navigation, industry, fishing, communications, military, recreation and cultural topography. Historic activities on the sea floor and sub-sea floor have been dominated by communications, fishing and cultural topography. The sub-sea floor and sea floor are less likely to enter the perceptions of the public due to their remoteness compared with other dimensions. The perception of use within these levels is often peripheral rather than from participation. The perception of cultural topography and recreation may be positively improved with the increase in understanding and awareness of palaeolandscapes, peat deposits as well as artefacts and wrecks identified in the geophysical and geotechnical surveys undertaken for Rampion 2. The impact on marine heritage receptors is further discussed in **Sections 16.9** to **16.15**.

16.6.51 Within the water column and sea surface, character types include navigation, industry, fishing, communications, military and recreation. Historic activities on the sea surface and within the water column have been dominated by historic shipping routes which sometimes continue as modern and current navigational routes. The present sea surface also comprises offshore infrastructure such as renewables, gas, oil, navigational markers, and ocean survey equipment which represent a continued use of the region for the industry character type. The perception of the water column and sea surface regarding navigation and industry is likely to be impacted by Rampion 2 following construction due to the increased presence of navigational aids and the visual impact of the turbines.

16.6.52 Within the coastal and conflated level, character types include navigation, industry, fishing, ports and docks, coastal infrastructure, communications, military, settlement, recreation and woodland. Historic activities on the coast have been varied and the most easily perceived. The perception of character types within the coastal and conflated level is not assessed to change following the development of Rampion 2. This is discussed further in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).

16.6.53 The value and perception of the Broad Historic Character Types include the increased attention of the wider general public given to modern aquaculture and the benefits and disadvantages of renewable energy, sub-sea communication cables and marine global trading contributing to the perception of the continuation of historic characteristics within this region.

Future baseline

16.6.54 Marine heritage receptors within the offshore environment are identified by a combination of baseline assessment of the relevant marine study area and analysis of geophysical and/or geotechnical data for archaeological potential. On the assumption that Rampion 2 will not be constructed, the current baseline as described in **Section 16.6** is assumed to remain the same.

16.6.55 No further data capture is proposed for the impact of Rampion 2 on the characterisation or perception of the historic seascape.

16.7 Basis for ES assessment

Maximum design scenario

16.7.1 Assessing impact using a parameter-based design envelope approach means that a maximum design scenario is utilised whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the DCO Application. The assessment of the maximum design scenario for each potential receptor establishes the maximum potential impact from any of the development scenarios (as described in **Chapter 4: The Project Development, Volume 2** of the ES (Document Reference: 6.2.4)). During the development phase the potential perceived impact will not exceed the assessed impacts presented in the ES.

16.7.2 The maximum parameters and assessment assumptions that have been identified as relevant to marine archaeology are outlined in **Table 16-15** and are in line with the Project Design Envelope (**Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)).

Table 16-15 Maximum design scenario for impacts on marine archaeology

Project phase and activity/impact	Maximum assessment assumptions	Justification
Construction	**Landfall** Up to four Horizontal Directional Drilling (HDD) drills ducts (diameter of duct 630mm) up to 1.5km long. Up to four exit pits 180m^3 (area 30m x 4m x.1.5m) per pit. HDD burial minimum depth 5m maximum depth 15m. HDD exit pit total excavated material volume four exit pits 720m^3.	The maximum assessment assumptions represent the maximum seabed disturbance by the landfall installation process including HDD drilling at four exit pits that could potentially affect marine heritage receptors located within the proposed DCO Order Limits.
Construction	**WTG foundations** Number of WTG foundations: 65 of the 325m turbine type. Multileg foundations with suction buckets, up to 4 legs per turbine. Suction bucket diameter up to 15m. Suction bucket penetration, up to 25m. Rock filter and armour layer or stone filled geotextile bags scour protection. Area of seabed take incl. scour protection 6,772m^2 (Seabed take of multileg foundation footprint 45m x 45m = 2,025m^2. Suction buckets and scour protection 3 * PI * (7.5+15)^2 = 4,772m^2).	The maximum assessment assumptions represent the maximum seabed disturbance by the WTG foundation installation process using multileg foundations with suction buckets. The maximum assumed impact includes seabed take, scour protection and jack-up leg impact that could potentially affect marine heritage receptors located in the Array area.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Scour protection volume 18,000 m^3 (3m scour thickness). Jack-up vessel total area of disturbance foundation installation 4,500m^2 per foundation (250m^2 per leg, 6 legs, 3 max number of vessels). Total impact jack-up vessel installation per vessel; 52,500m^2 (250m^2 per leg, six legs, 35 trips). Total impact for 3 vessels; 157,500m^2.	
Construction	**WTG installation** Jack-up vessel total area of disturbance 3,000m^2 (250m^2 per leg, six legs, 2 max number of vessels) per trip. Total impact jack-up per vessel installation 37,500m^2 (250m^2 per leg, six legs, 25 trips). Total impact for 2 vessels; 75,000m^2.	The maximum assessment assumptions represent the maximum seabed disturbance by the WTG installation process using jack-up legs that could potentially affect marine heritage receptors located in the Array area.
Construction	**Offshore substations** Up to three substations assuming multileg with pin piles foundations. Up to six legs per multileg, leg diameter up to 5m Number of pin piles per foundation, up to 12. Pin pile diameter, up to 4.5m	The maximum assessment assumptions represent the maximum seabed disturbance by the offshore substation installation process using multileg with pin piles foundation. The maximum assumed potential impact includes seabed take, scour protection and jack-up leg impact that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Seabed take of per foundation alone 50m x 80m =4,000m^2, 4 x PI x ((5 x 4.5))/2)^2 = 1,590m^2 for additional footprint from the piles Total = 5,590m^2 Total seabed take for 3 x offshore substations = 16,770 m^2 Rock filter layer with armour layer or rock filled geotextile bags as scour protection, total seabed take scour only (3 substations x 6 legs x (3.5 x 5), assumed pile diameter) Total area = 60m x 60m). Area of seabed take per foundation incl. scour protection 7,300 m^2 (84m x 54m. Scour protection 5 x pin diameter (3.5 x 5). Total seabed take for three substations, 21,900m^2. Spoil volume 12,000 m^3 (Dredging thickness up to 1m over full area + 15 m beyond multileg footprint; pile drilling 6 piles x 4 m diameter x 60 m embedment). Jack-up spud can gravel bed volume 4,000 m^3. Scour protection, 21,900 m^3 (3m depth). Jack-up vessel total area of disturbance 4,500m^2 per substation (250m^2 per leg, six legs, three vessels). Total impact jack-up vessel installation 18,000m^2 (250m^2 per leg, six legs,12 trips).	
Construction	**Array cables**	The maximum assessment assumptions represent the maximum seabed disturbance

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Total Array cable length 250km. Array Cable depth 1m, width 2m. Installation methodology, Plough or trencher/jetter, 1m. Width of seabed affected by installation, 25m. Total seabed disturbance 6,250,000m^2. (250km x 25m). Burial spoil 500,000m^3. (Assuming 2m/3m of array cable (trench assumption 2m wide, 1m deep)). Rock berm protection on 20 percent of route, total area 300,000m^2 (assuming height 1m, width 6m on 50km). Rock berm protection on 20 percent of route volume 175,000m^3 (assuming height 1m, width 3.5m on 50km). Cable rock protection: maximum rock size 0.3m (Based on D5 = 0.146m, D50=0.217m, D85 = 0.292m - 5kg to 40kg). Cable/pipe crossings: total impacted area 10,000m^2 (assume 4 x 50m x 50m).	by the Array cable installation process. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors located in the Array area.
Construction	**Offshore inter-connector cables** Two cables, total length of cables 80km (2 x 40km). Plough or trencher/jetter 2m wide by 1m burial depth.	The maximum assessment assumptions represent the maximum seabed disturbance by the offshore inter-connector cable installation process. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Total seabed disturbance per cable 1,000,000m^2. (inter-connector 40km x pre-lay plough/ pre lay grapnel 25m). Burial spoil jetting per cable 80,000m^3 (40km x 2m^3). Burial spoil: ploughing/mass flow excavation/ trenching per cable 80,000m^3. (40km x 2m^3). Rock protection area (assuming 20% of cables require additional protection (8km x 4m wide berm) 122,000m^2 (40km x 20% x 15.2m)). Rock protection volume 110,500m^3 ((40km x 20%) x 13.8m^2).	protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.
Construction	**Export cable** Up to 4 cables Trenches depth: 1.0 to 1.5m, width: 2m. Length of offshore cable corridor, link to shore; 19km. Total length of export cables; 170km (Export cables in corridor + export cables in array areas to three OSPs). Seabed disturbance from ploughing/jetting – outside designated sites: 4,250,000m^2 (170km x 25m). Rock protection area: 517,000m^2 ((170km x 20%) x 15.2). Rock protection volume: 470,000m^3 ((170km x 20%) x 13.8).	The maximum assessment assumptions represent the maximum seabed disturbance by the Export cable installation process. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors located along the Export cable corridor.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Burial spoil: jetting 340,000m^3 (170km x 2m^3). Burial spoil: ploughing/mass flow excavation/ trenching 340,000m^3 (170km x 2m^3).	
Construction	**Site preparations** <u>Boulder clearance (Array):</u> Array cable corridor width - pre-lay plough/ pre lay grapnel (25m). Export interconnector cable clearance corridor width - pre-lay plough/ pre-lay grapnel (25m). Clearance corridor width - subsea grab (15m). Clearance for foundations, radius (15m). Clearance for jack up legs, radius (15m). Total impact area, pre-lay plough/ pre-lay grapnel: 8,800,000m^2, based on array cables, interconnector cables and export cables in the array areas ((Array 250km + 102km) x 25m). Total clearance impact area, subsea grab 5,280,000m^2 based on array cables, interconnector cables and export cables in the array areas ((Array 250km + 102km) x 15m). Jack-up area per leg (6 legs) 250m^2 jack-ups per exit pit (2) total area 3,000m^2 ((250 x 6) x 2).	The maximum assessment assumptions represent the maximum seabed disturbance by the site preparations process. The maximum assumed potential impact includes pre-lay plough/ pre lay grapnel, sub-sea grab, boulder clearance, sand wave clearance and jack-up legs that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Total impact foundations and jack-up legs 1,313,000m^2. (90 Monopiles and 540 JUP legs (15m buffers). <u>Boulder clearance (ECC):</u> Clearance corridor width - pre-lay plough/ pre lay grapnel (25m). Clearance corridor width - subsea grab (15m). 4 export cables Total clearance impact area - pre-lay plough/ pre lay grapnel 1,700,000m^2. Total clearance impact area - subsea grab 1,020,000m^2. <u>Sand-wave clearance (array):</u> Sand-wave clearance impact width (array and interconnector cables): 10m. Length of array cables affected by sand-waves: 60km. Sand-wave clearance: Array cables 900,000m^3 (average sand-wave height of 1.5m (60km x 10m x 1.5m). Sand-wave clearance: Foundations 471,239m^3 (10 No WTG - clear circular area 100m radius x 1.5m average height - for foundation, jack-ups and array cable space). Total in array area (export cables, array cables, interconnector cables, foundations): 1,375,000m$^{3.}$	

Project phase and activity/impact	Maximum assessment assumptions	Justification
Construction	**Construction vessel anchorage footprint** Assuming a worse case that anchored vessels will be used for installation of the foundations, turbines, OSPs and export cables within the Export Cable Corridor. It is expected that vessels without anchors will be used for installation of the array cables, interconnector cables and the sections of export cables within the array areas. It is recognised that many small vessels, such as multicats and CTVs will be used during construction, which use very small anchors or clump weights. However, the effect on the seabed from these is considered to be very small and similar to that caused by any regular day-to-day seagoing vessels. Total area affected, export cable installation: 73,772m^2. Total area affected foundation installation (WTG and OSP): 173,203m^2. Total area affected by topside installation: 86,602m^2. Total area assumed to be affected by all anchoring activities: 334,000m^2.	The maximum assessment assumptions represent the maximum seabed disturbance by construction vessel anchorage footprint. The maximum assumed potential impact includes all anchor activities that could potentially affect marine heritage receptors located within the proposed DCO Order Limits.
Operation and Maintenance	**Site visits and major repairs Wind Turbines** Jack-up total trips: 19 per year.	The maximum assessment assumptions represent the maximum seabed disturbance by site visits. The maximum assumed potential impact includes seabed

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Footprint of seabed disturbance via jacking-up activities at wind turbines per exchange event: 1,100m^2 (assumes 1,000m^2 plus 10%). Total footprint of seabed disturbance for major wind turbine component per replacement: 1,100m^2 (assumes 1,000m^2 plus 10%). Total footprint of seabed disturbance for wind turbine access per ladder replacement: 1,100m^2 (assumes 1,000m^2 plus 10%). Total footprint of seabed disturbance for wind turbine anode per replacement: 1,100m^2 (assumes 1,000m^2 plus 10%). Total footprint of seabed disturbance for wind turbine per J-tube replacement or modification: 1,100m^2 (assumed 1,000m^2 plus 10%).	disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.
Operation and Maintenance	**Array cable repairs** <u>Maintenance</u> Maximum number of remedial burial events, lifetime quantity 14 Maximum length of cable subject to jetting remediation re-burial, per remedial burial event: 2,000m. Maximum width of disturbed seabed per individual jetting event: 10m.	The maximum assessment assumptions represent the maximum seabed disturbance by Array cable repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Maximum footprint of (temporary) seabed disturbance per individual jetting exercise (for cable remediation): 200,000m^2. Repairs Maximum number of cable repairs – lifetime quantity: 6. Maximum cable trench width: 10m. Maximum length of cable repair, per event: 600m. Maximum footprint of seabed disturbance, per event: 6,000m. Footprint of seabed disturbance via jacking-up activities for single cable repair event: 1,100m^2.	
Operation and Maintenance	**Offshore sub-station maintenance** Jack-up platform visits: 6 per year. Total footprint of seabed disturbance for offshore platform per maintenance event: 1,100m^2 (assumes 1,000m^2 plus 10%). Footprint of seabed disturbance via jacking-up activities for substation platform major component replacement per event: 1,100m^2 (assumes 1,000m^2 plus 10%). Footprint of seabed disturbance via jacking-up activities per anode replacement event: 1,100m^2 (assumes 1,000m^2 plus 10%). Up to 60 replacements (1,100x 60 =66,000m^2).	The maximum assessment assumptions represent the maximum seabed disturbance by offshore sub-station repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Footprint of seabed disturbance via jacking-up activities per access ladder replacement event: 1,100m^2 (assumes 1,000m^2 plus 10%). Up to 30 replacements (1,100x 30 =33,000m^2).	
Operation and Maintenance	**Export cable maintenance and repair** Percentage of original cable protection requiring replacement, 25% <u>Remedial burial</u> Maximum number of remedial burial events – lifetime quantity: 3 events per cable (3x 4 cables =12 events). Maximum length of cable subject to jetting remediation re-burial), per remedial burial event: 2,000m. Maximum width of disturbed seabed per individual jetting event: 10m. Maximum footprint of (temporary) seabed disturbance per individual jetting exercise (for cable remediation): 20,000m^2. <u>Repairs</u> Maximum number of cable repairs – lifetime quantity: 4. Maximum cable trench width: 10m. Maximum length of cable repair per event: 600m. Maximum footprint of seabed disturbance per event: 6,000m^2.	The maximum assessment assumptions represent the maximum seabed disturbance by Export cable repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Footprint of seabed disturbance via jacking-up activities for single cable repair event: 1,100m^2 (assumes 1,000m^2 plus 10%).	
Operation and Maintenance	Array cable repairs <u>Maintenance</u> Maximum number of remedial burial events, lifetime quantity 14. Maximum length of cable subject to jetting remediation re-burial, per remedial burial event: 2,000m. Maximum width of disturbed seabed per individual jetting event: 10 m. Maximum footprint of (temporary) seabed disturbance per individual jetting exercise (for cable remediation): 200,000m^2. <u>Repairs</u> Maximum number of cable repairs – lifetime quantity: 6. Maximum cable trench width: 10m. Maximum length of cable repair, per event: 600m. Maximum footprint of seabed disturbance, per event: 6,000m. Footprint of seabed disturbance via jacking-up activities for single cable repair event: 1,100m^2.	The maximum assessment assumptions represent the maximum seabed disturbance by Array cable repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
Operation and Maintenance	**Offshore sub-station repairs** Jack-up platform visits: 6 per year. Total footprint of seabed disturbance for offshore platform maintenance: 1,100m^2 (assumes 1,000m^2 plus 10%). Footprint of seabed disturbance via jacking-up activities for substation platform major component replacement event: 1,100m^2 (assumes 1,000m^2 plus 10%). Footprint of seabed disturbance via jacking-up activities for access ladder replacement event: 1,100m^2 (assumes 1,000m^2 plus 10%).	The maximum assessment assumptions represent the maximum seabed disturbance by offshore sub-station repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.
Operation and Maintenance	**Export cable repairs** <u>Remedial burial</u> Maximum number of remedial burial events – lifetime quantity: 3 events per cable. Maximum length of cable subject to jetting remediation re-burial), per remedial burial event: 2,000m. Maximum width of disturbed seabed per individual jetting event: 10m. Maximum footprint of (temporary) seabed disturbance per individual jetting exercise (for cable remediation): 20,000m^2.	The maximum assessment assumptions represent the maximum seabed disturbance by Export cable repairs. The maximum assumed potential impact includes seabed disturbance, burial spoil and scour protection that could potentially affect marine heritage receptors within the proposed DCO Order Limits.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Repairs Maximum number of cable repairs – lifetime quantity: 4. Maximum cable trench width: 10m. Maximum length of cable repair per event: 600m. Maximum footprint of seabed disturbance per event: 6,000m^2. Footprint of seabed disturbance via jacking-up activities for single cable repair event: 1,100m^{2,} (assumes 1,000m^2 plus 10%).	
Decommissioning	At the end of the operational lifetime of the Proposed Development, it is anticipated that all structures above the seabed or ground level will be completely removed. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment.	As per the construction phase the maximum assumed potential impact includes intrusive activities that could potentially affect marine heritage receptors located within the proposed DCO Order Limits. A decommissioning plan, detailing archaeological considerations, will be produced ahead of any works (C-111, **Table 16-16**).

Page intentionally blank

Embedded environmental measures

16.7.3 As part of the Rampion 2 design process, a number of embedded environmental measures have been adopted to reduce the potential for impacts on marine archaeology. These embedded environmental measures have evolved over the development process as the EIA has progressed and in response to consultation.

16.7.4 These measures also include those that have been identified as best or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implement these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of Rampion 2 and are set out in this ES as well as in the **Commitments Register** (Document Reference: 7.22).

16.7.5 **Table 16-16** sets out the relevant embedded environmental measures within the design and how these affect the marine archaeology assessment.

Page intentionally blank

Table 16-16 Relevant marine archaeology embedded environmental measures

ID	Environmental measure	When environmental measure was introduced	How the environmental measures will be secured
C-57	Marine Written Schemes of Investigation (WSI) will be developed in accordance with the Outline Marine Written Schemes of Investigation (WSI) (Application Document Reference 7.13). 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.	Scoping – updated at PEIR	DCO requirements or dML conditions.
C-58	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.	Scoping – updated at PEIR	DCO requirements or dML conditions.
C-59	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 area.	Scoping – updated at PEIR and ES	DCO requirements or dML conditions.

ID	Environmental measure	When environmental measure was introduced	How the environmental measures will be secured
C-60	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) (Application Document Reference 7.13) 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.	Scoping – updated at PEIR and ES	DCO requirements or dML conditions.
C-111	A decommissioning plan will be prepared for the project in line with the latest relevant available guidance.	PEIR	DCO requirement
C-277	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 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.	ES	DCO requirements or dML conditions.
C-298	Where appropriate, the results of post-consent monitoring, data and reports will be made publicly available and provided to the relevant data repositories.	Examination	DCO requirements or dML conditions.

16.7.6 Further detail on the environmental measures in **Table 16-16** is provided in the **Commitments Register** (Document Reference: 7.22) which sets out how, when and where particular environmental measures will be implemented and secured.

Archaeological Exclusion Zones

16.1.1 As per embedded environmental measure C-60 (**Table 16-16**), AEZs have been recommended for all known and identified maritime heritage receptors.

16.1.2 Anomalies assigned medium and high archaeological potential are probably of anthropogenic origin and of archaeological significance. They have been assigned AEZs based on their archaeological potential, their archaeological significance and their size as understood from the geophysical data assessments.

16.1.3 Thirty high potential and 22 medium potential anomalies have been assigned AEZs; these 52 locations include the 28 locations where the baseline assessment has identified known wrecks and obstructions (see below). Full details of locations are provided in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

16.1.4 Within the marine archaeology study area there are 179 known marine heritage receptors made up of 100 wrecks, 17 aircraft losses, 20 fishermen's fasteners, 14 fouls and seabed obstructions and 28 monuments, sites and find spots. The known wrecks and obstructions which were identified within the geophysical data sets were assigned site-specific 100m AEZs. The wrecks, aircraft, obstructions and fishermen's fasteners not seen in the geophysical data are recommended precautionary AEZs of 50m radius, as illustrated in **Figure 16.5, Volume 3** of the ES (Document Reference: 6.3.16). Full details of locations are provided in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

16.1.5 Anomalies of low archaeological potential and magnetic anomalies <100nT without correlating seabed features, due to a lack of demonstrative archaeological potential, have not been assigned AEZs at the present time.

16.1.6 Commitments C-57, C-58 and C-59 (**Table 16-17**) ensure further investigations of the seabed to locate and identify sites and objects of archaeological potential so that any potential impact on as yet unlocated marine archaeological receptors will be mitigated and avoided.

16.1.7 As per environmental measure C-57 (**Table 16-16**), if any works during the construction, operational and decommissioning phases of the project are taking place within the proposed DCO Order Limits, the project specific protocol for archaeological discoveries (**Outline Marine Written Scheme of Investigation** (Document Reference: 7.13)) must be observed and any objects of archaeological potential must be reported.

16.8 Methodology for ES assessment

Introduction

16.8.1 The project-wide generic approach to assessment is set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5). The assessment methodology for marine archaeology for the ES is consistent with that provided in the Scoping Report (RED, 2020) and no changes have been made since the scoping phase and PEIR provided alongside Statutory Consultation.

Desk-based assessment

16.8.2 A full desk-based assessment has been undertaken and presented in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1). The baseline study establishes the marine archaeological potential of the Rampion 2 proposed DCO Order Limits and the wider marine archaeology study area.

16.8.3 Within this, an assessment of the significance of marine heritage receptors, both known and currently unknown, as well as not yet found but may be encountered within the Rampion 2 marine archaeology study area, is detailed in **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

16.8.4 It should be noted that that while the term 'likely significant effects' in EIA terms is used across the Rampion 2 ES application it is the impact on the significance of heritage assets that is assessed and presented in **Sections 16.9** to **16.14**. The assessment considers all aspects of the maximum design scenario to determine the impact on the significance of heritage assets on all marine heritage receptors as well as impacts for EIA purposes. Further it includes the consideration of potential significant cumulative, transboundary, inter-related and residual effects, as described in **Sections 16.9** to **16.15**.

Assessing effect and determining significance

16.8.5 The following tables outline the method that was used to assess impact on the significance on marine heritage receptors up to MHWS. The criteria for determining this significance is based on both the sensitivity (value) level of those receptors and the magnitude of change as a result of potential impacts, as well as professional judgement based on the guidance in Scheduled Monuments & nationally important but non-scheduled monuments set out by the Department for Culture, Media and Sport (2013).

16.8.6 The criteria for establishing the level of marine heritage receptor sensitivity (value) are outlined in **Table 16-17**.

Table 16-17 Criteria for establishing the level of receptor sensitivity (value).

Sensitivity (value)	Criteria	Receptor type
Very high/ high	Very high/high importance and rarity of an international/national scale. Unique with regards to period, rarity, level of documentation, group value, condition, vulnerability, diversity, and/or archaeological potential.	Designated heritage assets, protected wreck sites, aviation remains palaeoenvironmental features or deposits with evidence of finds.
Medium	High or medium importance and rarity of a regional scale with limited potential for substitution. Regionally rare with regards to period, rarity, level of documentation, group value, condition, vulnerability, diversity, and/or archaeological potential.	Non-designated live wreck sites, geophysical anomalies of high potential, recorded wrecks not confirmed by survey, palaeoenvironmental features or deposits.
Low	Low importance and rarity, local scale. Low or no recognised value with regards to period, rarity, level of documentation, group value, condition, vulnerability, diversity, and/or archaeological potential.	Fouls and obstructions, geophysical anomalies of low potential.
Negligible	Very low to no archaeological importance and rarity, local scale. The nature of the receptor is in very poor condition and survival and is therefore not considered a receptor.	Dead wrecks, dead fouls or obstructions, geophysical anomalies of negligible potential such as cables.

16.8.7 The criteria for establishing the magnitude of impact on marine heritage receptors are outlined **Table 16-18**.

Table 16-18 Criteria for magnitude of impact.

Magnitude of impact	Criteria (Adverse)	Criteria (Beneficial)
Major	Substantial or irreversible change of archaeological sites, materials or context of archaeological materials or features resulting in significant alteration of archaeological site, feature, or materials, inhibiting interpretation of characteristics, sub-features, or components.	Large-scale enhanced understanding of the archaeological resource inversely proportional to the scale of adverse effect, for example benefit through large area geophysical/geotechnical survey data released to public domain.
Moderate	Moderate changes to archaeological sites, materials or context of archaeological materials or features resulting in clear alteration, inhibiting interpretation of several key characteristics, sub-features, or components.	Benefit to, or addition of, key characteristics, features or elements for example site-specific survey and investigation leading to an enhancement of disseminated knowledge; for example, diver/ROV ground-truthing of anomalies, published results.
Minor	Minor changes to archaeological sites, material or contexts of archaeological materials or features resulting in clear alteration, inhibiting interpretation of several key characteristics, sub-features or components.	Minor benefit to, or addition of, one or more key characteristics, features or elements through enhanced knowledge and understanding of receptors not disseminated or made publicly available.
Negligible	Changes that are indistinguishable from natural variation, do not change archaeological sites or materials, and do not affect key characteristics, sub-features, or components or their environment or context.	N/A

16.8.8 The significance of the effect on marine heritage receptors is determined by correlating the sensitivity (value) of the receptor and the magnitude of the potential impact, as outlined in **Table 16-19**, as well as professional judgement based on the guidance in Scheduled Monuments & nationally important but non-scheduled monuments set out by the Department for Culture, Media and Sport (2013).

Table 16-19 Significance assessment matrix

		Magnitude of Change			
		Major	**Moderate**	**Minor**	**Negligible**
Sensitivity of Receptor	**Very High/ High**	Significant	Significant	Potentially Significant	Not Significant
	Medium	Significant	Potentially Significant	Not Significant	Not Significant
	Low	Potentially Significant	Not Significant	Not Significant	Not Significant
	Negligible	Not Significant	Not Significant	Not Significant	Not Significant

16.9 Assessment of effects: Construction phase

Removal of sediment containing undisturbed archaeological contexts during seabed preparation ahead of construction activities

Magnitude of impact

16.9.1 Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The impact of sediment removal, outlined in the assumed maximum parameters table (**Table 16-15**), demonstrates that potential impact of sediment removal is possible within the proposed DCO Order Limits.

16.9.2 Impacts of sediment removal potentially preserving marine heritage receptors may lead to direct impact and total or partial loss of marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.9.3 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the removal works, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.9.4 However, the magnitude of impact of construction activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures (as detailed in **Table 16-16**) have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.9.5 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-20 Marine heritage receptor sensitivity (value) to sediment removal (Construction).

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/ medium
3	Low significance (archaeological term) known wrecks	Very high/high/ medium
134	Reported losses/fishermen's fasteners/obstructions/ dead wrecks	Low/ Negligible

Significance of residual effect

16.9.6 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct** and **permanent impact** of sediment removal operations on marine heritage receptors.

16.9.7 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be located as a result of planned survey work as highlighted in embedded environmental measures (C-58 and C-59).

16.9.8 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of sediment removal during the construction phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.9.9 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of**

Investigation (Document Reference: 7.13) and associated documents as per embedded environmental measure C-57.

16.9.10 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms (**Table 16-19**).

Penetration, compression, and disturbance effects of piling foundations

Magnitude of impact

16.9.11 Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The impact of penetration, compression, and disturbance effects of piling operations outlined in the assumed maximum parameters for impacts table (**Table 16-15**) demonstrates that potential impact of piling operations is possible mainly within the array area but also along the cable corridor when sub-stations are placed.

16.9.12 Impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors may lead to direct impact and total or partial loss of marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.9.13 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the pling works, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.9.14 However, the magnitude of potential impacts of piling activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures, as detailed in **Table 16-16**, have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.9.15 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high,** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-21 Marine heritage receptor sensitivity (value) to piling foundation works (Construction)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Very high/high/ medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.9.16 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **direct** and **permanent impact** of piling operations on marine heritage receptors.

16.9.17 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.9.18 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of piling operations during the construction phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.9.19 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents as per embedded environmental measure C-57.

16.9.20 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms (**Table 16-19**).

Penetration, compression and disturbance of cable laying operations

Magnitude of impact

16.9.21 Magnitude of impact on marine heritage receptors has been assessed according to the criteria outlined in **Table 16-18**. The impact of penetration, compression, and disturbance effects outlined in **Table 16-15** demonstrates that potential impact of cable laying operations is possible within the proposed DCO Order Limits.

16.9.22 Impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors may lead to direct impact and total or partial loss of

marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.9.23 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the cable laying operations, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.9.24 However, the magnitude of impact of cable laying activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.9.25 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-22 Marine heritage receptor sensitivity (value) to cable laying operations (Construction)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Very high/high/ medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/ medium
3	Low significance (archaeological term) known wrecks	Very high/high/ medium
134	Reported losses/fishermen's fasteners/obstructions/ dead wrecks	Low/negligible

Significance of residual effect

16.9.26 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct** and **permanent impact** of cable laying operations on marine heritage receptors.

16.9.27 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.9.28 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of cable laying operations during the construction phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.9.29 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57.

16.9.30 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms.

Penetration, compression and disturbance effects of jack-up barges and anchoring of construction vessels during construction activities

Magnitude of impact

16.9.31 Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The impact of penetration, compression, and disturbance effects outlined in the assumed maximum impact table (**Table 16-15**) demonstrate that potential impact of vessel operations is possible within the proposed DCO Order Limits.

16.9.32 Impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.9.33 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the vessel operations, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.9.34 However, the magnitude of impact of vessel operation activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.9.35 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high**, as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-23 Marine heritage receptor sensitivity (value) to vessel activities (Construction)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Very high/high/ medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/ fishermen's fasteners/ obstructions/dead wrecks	Low/Negligible

Significance of residual effect

16.9.36 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **direct** and **permanent impact** of vessel operations on marine heritage receptors.

16.9.37 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.9.38 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of vessel operations during the construction phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.9.39 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Written Scheme of Investigation (offshore)** and associated documents, in accordance with embedded environmental measure C-57.

16.9.40 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms **Table 16-19**.

Disturbance of sediment containing potential marine heritage receptors (material and contexts) during construction activities

Magnitude of impact

16.9.41 Magnitude of impact on marine heritage receptors has been assessed according to the criteria outlined in **Table 16-18**.

16.9.42 The maximum impact table (**Table 16-15**) outlines activities during the construction phase which may cause indirect impact on sediments containing marine heritage receptors (material and contexts).

16.9.43 Indirect impact of construction activities may therefore lead to total or partial loss of marine heritage receptors located within the proposed DCO Order Limits. If an indirect impact occurs, it will generally be **minor** to **moderate** but could be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.9.44 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the sediments disturbance, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.9.45 However, the magnitude of impact of sediment disturbance relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.9.46 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high**, as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-24 Marine heritage receptor sensitivity (value) to disturbance of sediment disturbance (Construction)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Very high/high/ medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.9.47 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **indirect** and **temporary** or **permanent impact** of sediment disturbance on marine heritage receptors.

16.9.48 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.9.49 Embedded environmental measure C-60 will ensure that **indirect impacts** as a result of sediment disturbance during the construction phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.9.50 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57.

16.9.51 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms, as per **Table 16-19**.

Changes to the Historic Seascape Characterisation (HSC) as a result of construction and survey vessel activities and the addition of cables, foundations and turbines

Magnitude of impact

16.9.52 Magnitude of impacts on change to the HSC during the construction phase have been assessed according to the criteria outlined in **Table 16-18**.

16.9.53 HSC has been used in this assessment as a measure to provide a contextual and regional approach to the marine archaeology study area. Historic seascapes cannot be physically destroyed or damaged but impacts on them can change their historical character and the perception surrounding them.

16.9.54 The historic character of a seascape can be defined by its dynamic nature and ability to accommodate change. Perceptions of the seascape are also dynamic and subjective to public, time place. The intertidal and marine zones are ever

changing due to physical processes such as currents, tidal range and sediment mobility. Considering this dynamism and the multiple dimensions defined by HSC, people create complex spatial relationships within and across all marine levels, reflected within the sites of cultural activity and their material imprints.

16.9.55 The presence of construction vessels is considered to be comparatively inconsequential considering the current marine activity (see **Chapter 13: Shipping and navigation, Volume 2** of the ES (Document Reference: 6.2.13) for details) within the marine proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)). The inshore activities at landfall will be short term and small scale with transitional use of larger construction vessels, as outlined in the assumed maximum impact table (**Table 16-15**).

16.9.56 The addition of cables on the sub-seafloor and seafloor is unlikely to enter the perception of the public, and therefore are unlikely to change the public perception of seascape. Foundations within the water column and sea surface will likely contribute to a change in people's perception of the HSC. This can be a positive, negative, or neutral change which is dependent on personal experience of the area and will continue to be a subjective perception over time.

16.9.57 The magnitude of impact on marine heritage receptors on HSC, specifically the installation of cables on the sub-seafloor and seafloor, foundations within the water column and sea surface and turbines above the sea surface during the construction phase is therefore assessed as a narrative using the Broad Historic Character Types, as summarised in **Section 16.6**

16.9.58 It should be noted that changes to the visible elements of the shore and the sea surface have been assessed further in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) and therefore this chapter only considers the historic aspects of Seascape Characterisation.

Sensitivity (value) of marine heritage receptor

16.9.59 The sensitivity (value) of the Broad Historic Character Types identified within the proposed DCO Order Limits is assessed in terms of their ability to adapt to change, as outlined in **Section 16.6**

16.9.60 The existing seascape of the Rampion 2 marine archaeology study area is known for its marine and intertidal historic character utilised mainly for navigation, industry, fishing, ports and docks, coastal infrastructure, communications, military, settlements, recreation, cultural topography and woodland.

16.9.61 HSC relates to the historic dimension of the present-day seascape and considers the added effect of Rampion 2 within the multiple dimensions of the marine environment (sub-sea floor, sea floor, water column, sea surface, coastal land and previous historic character) in combination with the existing activity within the Broad Historic Character Types, as detailed in **Section 16.6** and **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Table 16-25 Changes to the Historic Seascape Characterisation (HSC) (Construction)

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
Navigation (activities and hazards)	This area along the south coast and out towards the English Channel has historically been an area of much of England's navigation activities and as such has demonstrated its capacity to accommodate change and growth over time.	**Positive perceived change**: the added addition of temporary vessel activities in a busy navigational area is not expected to contribute with change. However, the addition of safety infrastructure as part of the offshore wind farm has the potential to lead to safer navigation, (see **Chapter 13: Shipping and navigation, Volume 2** of the ES (Document Reference: 6.2.13) for detail).
Industry (energy, processing, shipbuilding, shipping)	Industry has been and continues to be the one of the dominant influences on the character across coastal, intertidal and marine areas at all levels around the south coast of the UK.	**Positive perceived change**: the addition of Rampion 2 infrastructure as a source of renewable energy could contribute to the HSC as sense of a modern and sustainable industry. Also see **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15).
Fishing (potting, netting, shellfish dredging)	The thriving fishing industry of the Southern England region has been documented from the seventh century onwards.	**No perceived change**: while some areas may be temporarily unavailable for fishing during the construction phase, in the long term no change to HSE as a result of Rampion 2 is expected on either local or offshore fishing industries. Also see **Chapter 10: Commercial Fisheries, Volume 2** of the

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
		ES (Document Reference: 6.2.10).
Ports and docks	The Southern England region contains numerous examples of small hards, quays and landing places and major ports including docks, ferry terminals and car terminals.	**No change perceived**: the HSC of the ports and docks is not expected to be altered during the construction phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of historic assessment of quays; **Chapter 15: Seascape, landscape and visual Volume 2** of the ES (Document Reference: 6.2.15) includes baseline views of ports and quays.
Coastal Infrastructure (flood and erosion defences)	Sea and flood defences in the region are characteristic for protecting agricultural land and coastal settlements where the coastline has been receding for hundreds of years.	**No perceived change**: the HSC of the coastal infrastructure is not expected to be altered during the construction phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** (Document Reference: 6.2.25) includes an assessment of HLC of coastal infrastructure. **Chapter 15: Seascape landscape and visual, Volume 2** (Document Reference: 6.2.15) includes baseline views of coastal infrastructure.
Communications (transport, telecommunications)	Coastal transport systems enabled people to settle in and visit coastal regions	**No perceived change**: while canals are an integral part of the present social

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
	more easily and were an important part of industrial development. There is one canal in the study area, the Chichester Ship Canal. It opened in 1823 and was totally abandoned in 1928. It is currently undergoing some restoration work. The presence of submarine telecommunications cables is likely to be known only to those who were involved in laying them, and to people involved in communications infrastructure. In spite of the importance of transport and telecommunications in the daily lives of the public their perception of the communications type is limited and based on the results of communications rather than their presence.	and cultural landscape, and parts of the Chichester Ship Canal are being restored, modern society is dependent on submarine telecommunication cables. However, the current public perception of such infrastructure is understood to be minimal, and this is unlikely to change following the construction of Rampion 2.
Military (military defence and fortification)	Military coastal defences and military bases in the Southern England region can be found all along the coast.	**Positive perceived change**: active bases and abandoned military heritage bear witness to the UK's important military history. However, the impacts on HSC during the construction phase of Rampion 2 can be positive, ensuring increased protection and mitigation of impact on heritage receptors. Effects arising through change to HLC to military remains are outlined in **Chapter 25: Historic environment, Volume 2** of

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
		the ES (Document Reference: 6.2.25). Potential indirect and direct impacts on marine heritage receptors in the intertidal zone, and wrecks of military importance within the marine archaeology study area, are assessed in **Sections 16.9 - 16.15**.
Settlements (urban)	The coastal area of the Southern England region is densely populated. It includes a variety of coastal settlement types including urban settlements, major cities, tourist resorts and smaller fishing towns and villages.	**Positive perceived change**: the construction phase is not anticipated to alter public perception of the HSC but has the potential to contribute to the perception of how the seascape connects to our past and change with our future.
Recreation (water sports, boating, recreational diving, swimming, wildlife watching)	Recreational enjoyment of the coast has a long history in the United Kingdom and tourism is an important source of income.	**Positive perceived change**: while some areas may be temporarily unavailable for recreational activities during the construction, operation and maintenance and decommissioning phases, these areas will be accessible once more in the long term. Additionally, there is potential for improved public awareness of historic and recreational dive areas following the identification of wreck locations during archaeological surveys, leading to a greater understanding, respect and enjoyment of the seascape.

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
		Potential indirect and direct impacts on marine heritage receptors, such as wrecks, within the marine archaeology study area are assessed in **Sections 16.9 - 16.12**.
Cultural Topography (palaeolandscape component**,** peat deposits)	The relevance of these to HSC is as areas of former human habitat with evidence for past topographical and ecological regimes, the contexts shaping much earlier human cultural activity and landscape perceptions.	**Positive perceived change**: the planned and undertaken geoarchaeological campaigns both in the offshore zone and on land will contribute to a greater understanding and appreciation of past topographical and ecological regimes. The potential for survival of palaeolandscape components and submerged archaeology in the marine environment and deposits in the study area is further discussed in **Section 16.6**. The cultural topography landward is discussed in detail in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).
Woodland	Coastal woodlands have been important in providing timber and other materials for boat building and other coastally focused activities. Patterns of woodland also form distinctive elements of the coastal landscape visible from the sea, aiding position-finding and natural navigation.	**No perceived change**: the HSC of the woodlands is not expected to be altered during the construction phase. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes

Broad Historic Character Types	Perception of the Historical Seascape Character	Changes to Perception
		an assessment of HLC of woodland. **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) include baseline views of woodland.

Significance of residual effect

16.9.62 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57. This includes ensuring that HSC assessments are a part of archaeological assessments throughout the life of the project, where relevant.

16.9.63 It is therefore predicted that the ability to accommodate change is mainly a positive perceived change equalling a **negligible** magnitude. The significance of effect is therefore assessed as **not significant**, in EIA terms, as per **Table 16-19**.

16.10 Assessment of effects: Operation and Maintenance phase

Penetration compression and disturbance effects of maintenance activities at WTG substation foundations and along inter-array and export cables

Magnitude of impact

16.10.1 Magnitude of impacts on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The potential impact of penetration, compression, and disturbance effects outlined in the assumed maximum parameters table (**Table 16-15**) demonstrates that potential impact of maintenance activities is possible within the proposed DCO Order Limits.

16.10.2 Potential impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors may lead to direct impact and total or partial loss of marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.10.3 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result

of the maintenance activities, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.10.4 However, the magnitude of impact of maintenance activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.10.5 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible** to **very high**, as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-26 Marine heritage receptor sensitivity (value) to maintenance activities (Operation and Maintenance)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.10.6 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **direct** and **permanent impact** of maintenance activities on marine heritage receptors.

16.10.7 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.10.8 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of maintenance activities during the operation and maintenance phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.10.9 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57.

16.10.10 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms **Table 16-19**.

Disturbance of sediment containing potential marine heritage receptors during maintenance activities

Magnitude of impact

16.10.11 Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**.

16.10.12 The maximum impact table (**Table 16-15**) outlines activities during the operation and maintenance phase which may cause indirect impact on sediments containing marine heritage receptors (material and contexts).

16.10.13 Indirect impact of operation and maintenance activities may therefore lead to total or partial loss of marine heritage receptors located within the proposed DCO Order Limits. If an indirect impact occurs, it will generally be **minor** to **moderate** but could be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.10.14 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of sediment disturbance the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.10.15 However, the magnitude of impact of sediment disturbance relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.10.16 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-27 Marine heritage receptor sensitivity (value) to sediment disturbance (Operation and Maintenance phase).

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.10.17 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **indirect** and **temporary** or **permanent impact** of sediment disturbance on marine heritage receptors.

16.10.18 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.10.19 Embedded environmental measure C-60 will ensure that **indirect impacts** as a result of sediment disturbance during the operation and maintenance phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.10.20 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Written Scheme of Investigation (offshore)** and associated documents, in accordance with embedded environmental measure C-57.

16.10.21 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant** in EIA terms, as per **Table 16-19**.

Penetration, compression and disturbance effects of jack-up barges and anchoring of operation and maintenance vessels during the operation and maintenance phase

Magnitude of impact

16.10.22 Magnitude of impacts on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The impact of penetration, compression, and disturbance effects outlined in the assumed maximum impact table (**Table 16-15**) demonstrates that potential impact of vessel operations is possible within the proposed DCO Order Limits.

16.10.23 Impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors may lead to direct impact and total or partial loss of marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.10.24 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the vessel operations, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.10.25 However, the magnitude of impact of maintenance activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.10.26 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high**, as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-28 Marine heritage receptor sensitivity (value) to vessel activities (Operation and Maintenance)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium

3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.10.27 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct** and **permanent impact** of vessel operations activities on marine heritage receptors.

16.10.28 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.10.29 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of maintenance activities during the operation and maintenance phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.10.30 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57.

16.10.31 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant** in EIA terms **Table 16-19**.

Scour effects caused by the presence of WTG substation foundations and the exposure of inter-array and export cables or the use of cable protection measures

Magnitude of impact

16.10.32 Magnitude of impact on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**.

16.10.33 The maximum impact table (**Table 16-15**) outlines the parameters for the WTG substation foundations, inter-array and export cables and the use of cable protection measures which may cause scour and therefore indirect impacts on sediments containing marine heritage receptors (material and contexts).

16.10.34 Indirect impact of operation and maintenance activities may therefore lead to total or partial loss of marine heritage receptors located within the proposed DCO Order Limits. If an indirect impact occurs, it will generally be **minor** to **moderate** but could be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.10.35 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of scour effects, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.10.36 However, the magnitude of impact of scour effects relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.10.37 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high,** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-29 Marine heritage receptor sensitivity (value) to scour effects (Operation and Maintenance phase)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.10.38 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **indirect** and **temporary** or **permanent impact** of scour effects on marine heritage receptors.

16.10.39 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.10.40 Embedded environmental measure C-60 will ensure that **indirect impacts** as a result of sediment disturbance during the operation and maintenance phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.10.41 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Written Scheme of Investigation (offshore)** and associated documents, in accordance with embedded environmental measure C-57.

16.10.42 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant** in EIA terms, as per **Table 16-19**.

Changes to the Historic Seascape Characterisation (HSC) as a result of operation and maintenance vessel activities and the presence of the completed wind farm

Magnitude of impact

16.10.43 Magnitude of impact on change to the HSC during the operation and maintenance phase have been assessed according to the criteria outlined in **Table 16-18**.

16.10.44 HSC has been used as a measure in this assessment to provide a contextual and regional approach to the marine archaeology study area. Historic seascapes cannot be physically destroyed or damaged but impacts on them can change their historical character and the perception surrounding them.

16.10.45 The historic character of a seascape can be defined by its dynamic nature and ability to accommodate change. Perceptions of the seascape are also dynamic and subjective to the public and time. The intertidal and marine zones are ever changing due to physical processes such as currents, tidal range and sediment mobility. Considering this dynamism and the multiple dimensions defined by HSC, people create complex spatial relationships within and across all marine levels, reflected within the sites of cultural activity and their material imprints.

16.10.46 The presence of operation and maintenance vessels is considered to be comparatively inconsequential considering the current marine activity within the marine proposed DCO Order Limits. The inshore activities at landfall will be short term and small scale with the use of larger operation and maintenance vessels transitional, as outlined in the assumed maximum impact table (**Table 16-15**).

16.10.47 The presence of cables on the sub-seafloor and seafloor are unlikely to enter public perception, and therefore are unlikely to change the perception of seascape. Foundations within the water column and sea surface will likely contribute to a change in people's perception of the HSC. This can be a positive, negative or neutral change which is dependent on personal experience of the area and will continue to be subjective.

16.10.48 The magnitude of impact on marine heritage receptors specifically on HSC, specifically the installation of cables on the sub-seafloor and seafloor, foundations within the water column and sea surface and turbines above the sea surface during the operation and maintenance phase is therefore assessed as a narrative using the Broad Historic Character Types, as summarised in **Section 16.6**.

16.10.49 It should be noted that changes to the visible elements of the shore and the sea surface have been assessed further in **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) and therefore this chapter only considers the historic aspects of Seascape Characterisation.

Sensitivity (value) of marine heritage receptor

16.10.50 The sensitivity (value) of the Broad Historic Character Types identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is assessed in terms of their ability to adapt to change, as outlined in **Section 16.8**.

16.10.51 The existing seascape of the Rampion 2 marine archaeology study area is known for its marine and intertidal historic character utilised mainly for navigation, industry, fishing, ports and docks, coastal infrastructure, communications, military, settlements, recreation, cultural topography and woodland.

16.10.52 HSC relates to the historic dimension of the present-day seascape and considers the added effect of Rampion 2 within the multiple dimensions of the marine environment (sub-sea floor, sea floor, water column, sea surface, coastal land and previous historic character) in combination with the existing activity within the Broad Historic Character Types, as detailed in **Section 16.6** and **Appendix 16.1: Marine archaeological technical report, Volume 4** of the ES (Document Reference: 6.4.16.1).

Table 16-30 Marine heritage receptor changes to the Historic Seascape Characterisation (HSC) (Operation and Maintenance).

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
Navigation (activities and hazards)	This area along the south coast and out towards the English Channel has historically been an area of much of England's navigation activities and as such has demonstrated its capacity to accommodate change and growth over time.	**Positive perceived change**: the presence of substations and turbines will alter the navigational routes slightly, but all infrastructure will be fitted with navigational aids such as warning lights, facilitation easier navigation. Further the added addition of temporary vessel activities during the operation and maintenance phase in a busy navigational area is not expected to contribute with change to the HSC see **Chapter 13: Shipping and navigation, Volume 2** of the ES (Document Reference: 6.2.13) for details).
Industry (energy, processing, shipbuilding, shipping, aggregate)	Industry has been and continues to be the one of the dominant influences on the character across coastal, intertidal and marine areas at all levels around the south coast of the UK.	**Positive perceived change**: the addition of Rampion 2 infrastructure as a source of renewable energy could contribute to the HSC as sense of a modern and sustainable industry. Also see **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15).
Fishing (potting, netting, shellfish dredging)	The thriving fishing industry of the Southern England region has been	**No perceived change**: while some areas may be temporarily unavailable for fishing during the operation and maintenance phase,

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
	documented from the seventh century onwards	in the long term no change to HSE as a result of Rampion 2 is expected on either local or offshore fishing industries. Also see **Chapter 10: Commercial fisheries, Volume 2** of the ES (Document Reference: 6.2.10).
Ports and docks	The Southern England region contains numerous examples of small hards, quays and landing places and major ports including docks, ferry terminals and car terminals.	**No change perceived**: the HSC of the ports and docks is not expected to be altered during the operation and maintenance phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of historic assessment of quays **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) includes baseline views of ports and quays.
Coastal Infrastructure (flood and erosion defences)	Sea and flood defences in the region are characteristic for protecting agricultural land and coastal settlements where the coastline has been receding for hundreds of years.	**No perceived change**: the HSC of the coastal infrastructure is not expected to be altered during the operation and maintenance phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of HLC of coastal infrastructure. **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) includes baseline views of coastal infrastructure.
Communications (Transport, telecommunications)	Coastal transport systems enabled people to settle in and visit coastal regions more easily and were an	**No perceived change**: while canals are an integral part of the present social and cultural landscape, and parts of the Chichester Ship Canal are being restored, modern society

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
	important part of industrial development. There is one canal in the study area, the Chichester Ship Canal. It opened in 1823 and was totally abandoned in 1928. It is currently undergoing some restoration works. The presence of submarine telecommunications cables is likely to be known only to those who were involved in laying them, and to people involved in communications infrastructure. In spite of the importance of transport and telecommunications in the daily lives of the public their perception of the communications type is limited and based on the results of communications rather than their presence.	is dependent on submarine telecommunication cables. However, as the current public perception of such infrastructure is understood to be minimal and unlikely to change following the operation and maintenance phase of Rampion 2.
Military (military defence and fortification)	Military coastal defences and military bases in the Southern England region can be found all along the coast.	**Positive perceived change**: active bases and abandoned military heritage bear witness to the UK's important military history. However, the impacts on HSC during the operation and maintenance phase of Rampion 2 can be positive, ensuring increased protection and mitigation of impact on heritage receptors. Effects arising through change to HLC to military remains are outlined in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
		Potential indirect and direct impacts on marine heritage receptor in the intertidal zone, and wrecks of military importance within the marine archaeology study area, are assessed in **Sections 16.9 -16.12**.
Settlements (urban)	The coastal area of the Southern England region is densely populated. It includes a variety of coastal settlement types including urban settlements, major cities, tourist resorts and smaller fishing towns and villages.	**Positive perceived change**: the operation and maintenance phase is not expected to alter public perception of the HSC but will contribute to the perception of how the seascape connects to our past and change with our future.
Recreation (water sports, boating, recreational diving, swimming, wildlife watching)	Recreational enjoyment of the coast has a long history in England and tourism is an important source of income.	**Positive perceived change**: while some areas may be temporarily unavailable for recreational activities during the construction phase, these areas will be accessible in the long term. Additionally, there is potential for improved public awareness of historic and recreational dive areas following the identification of wreck locations during archaeological surveys, leading to a greater understanding, respect and enjoyment of the seascape. Potential indirect and direct impacts on marine heritage receptor such as wrecks within the marine archaeology study area are assessed in **Sections 16.9 -16.12**.
Cultural Topography (palaeolandscape component**,** peat deposits)	The relevance of these to HSC is as areas of former human habitat with evidence for past topographical and ecological regimes, the contexts shaping much earlier human cultural	**Positive perceived change**: there will be an increased understanding of the cultural topography within the study area and adjacent areas following the amalgamation of information collected during the geoarchaeological surveys

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
	activity and landscape perceptions.	undertaken during the lifetime of the project. These will help inform public knowledge and interest. No further changes to the HSC are expected during the operation and maintenance phase. The potential for survival of palaeolandscape components and submerged archaeology in the marine topography and deposits in the study area is further discussed in **Section 16.6.** The cultural topography landward is discussed in detail in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).
Woodland	Coastal woodlands have been important in providing timber and other materials for boat building and other coastally focused activities. Patterns of woodland also form distinctive elements of the coastal landscape visible from the sea, aiding position-finding and natural navigation.	**No perceived change**: the HSC of the woodlands is not expected to be altered during the operation and maintenance phase. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of HLC of woodland. **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) include baseline views of woodland.

Significance of residual effect

16.10.53 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57. This includes ensuring that HSC assessments are a part of archaeological assessments throughout the life of the project where relevant.

16.10.54 It is therefore predicted that the ability to accommodate change is mainly a positive perceived change equalling a **negligible** magnitude. The significance of effect is therefore assessed as **not significant** in EIA terms, as per **Table 16-19**.

16.11 Assessment of effects: Decommissioning phase

Penetration, compression and disturbance effects of jack-up barges and anchoring of decommissioning vessels.

Magnitude of impact

16.11.1 Magnitude of impacts on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**. The impact of penetration, compression, and disturbance effects outlined in the assumed maximum impact table (**Table 16-15**) demonstrates that potential impact of decommissioning activities is possible within the proposed DCO Order Limits.

16.11.2 Impacts of penetration, compression, and disturbance effects potentially affecting marine heritage receptors may lead to direct impact and total or partial loss of marine heritage receptors. If a direct impact occurs, it will generally be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.11.3 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of the decommissioning activities, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.11.4 However, the magnitude of impact of maintenance activities relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in **Table 16-16** have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.11.5 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16).

16.11.6) is considered to be **negligible to very high** as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-31 Marine heritage receptor sensitivity (value) to vessel activities (Decommissioning)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.11.7 The embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **direct** and **permanent impact** of decommissioning activities on marine heritage receptors.

16.11.8 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.11.9 Embedded environmental measure C-60 will ensure that **direct impacts** as a result of maintenance activities during the decommissioning phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.11.10 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents as per embedded environmental measure C-57 and a decommissioning plan, including archaeological input will be prepared for the project in line with the latest relevant available guidance ahead of the project phase, in accordance with C-111 (**Table 16-16**).

16.11.11 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms **Table 16-19**.

Draw-down of sediment into voids left by removed WTG foundations leading to loss of sediment or destabilisation of archaeological sites and contexts

Magnitude of impact

16.11.12 Magnitude of impacts on marine heritage receptors have been assessed according to the criteria outlined in **Table 16-18**.

16.11.13 The maximum impact table (**Table 16-15**) outlines the parameters for expected draw-down during the decommissioning phase which may cause indirect impacts on sediments containing marine heritage receptors (material and contexts).

16.11.14 Indirect impact of decommissioning activities may therefore lead to total or partial loss of marine heritage receptors located within the proposed DCO Order Limits. If an indirect impact occurs, it will generally be **minor** to **moderate** but could be **major** and substantial or irreversible and result in a permanent change to the receptor.

16.11.15 If any marine heritage receptors are subject to increased sedimentation coverage, and this results in additional protection of the marine heritage receptor, as a result of draw-down effects, the marine heritage receptor could potentially benefit from the conditions by way of a higher level of preservation *in situ*.

16.11.16 However, the magnitude of impact of draw-down effects relating to Rampion 2 on marine heritage receptors after the embedded environmental measures as detailed in Table 16-16 have been applied is considered to be **negligible**.

Sensitivity (value) of marine heritage receptor

16.11.17 The sensitivity (value) of the marine heritage receptors identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is considered to be **negligible to very high**, as defined in **Table 16-17** and outlined in **Section 16.8**.

Table 16-32 Marine heritage receptor sensitivity (value) to draw-down effects (Decommissioning)

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
30	High potential anomalies	Medium
22	Medium potential anomalies	Medium
210	Low potential anomalies	Low
1,993	Low potential magnetic anomalies	Low
3	High significance (archaeological term) known wrecks/aircrafts	Very high/high

No. of anomalies	Marine archaeological receptor	Receptor sensitivity (value)
34	Medium significance (archaeological term) known wrecks	Very high/high/medium
3	Low significance (archaeological term) known wrecks	Very high/high/medium
134	Reported losses/fishermen's fasteners/obstructions/dead wrecks	Low/negligible

Significance of residual effect

16.11.18 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **indirect** and **temporary** or **permanent impact** of draw-down effects on marine heritage receptors.

16.11.19 Confirmed locations of identified marine heritage receptors are informed by archaeological assessments of geophysical and geotechnical data, as per embedded environmental measures C-58 and C-59. As yet unidentified marine heritage receptors have the potential to be discovered as a result of planned survey work as highlighted in the embedded environmental measures (C-58 and C-59).

16.11.20 Embedded environmental measure C-60 will ensure that **indirect impacts** as a result of draw-down effects of sediments during the decommissioning phase of Rampion 2 on all known and located marine heritage receptors are avoided.

16.11.21 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Written Scheme of Investigation (offshore)** and associated documents, in accordance with embedded environmental measure C-57. A decommissioning plan, including early archaeological input, will be prepared for the project in line with the latest relevant available guidance ahead of the project phase, as per C-111 (**Table 16-16**).

16.11.22 It is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant** in EIA terms, as per **Table 16-19**.

Changes to the Historic Seascape Characterisation (HSC) as a result of decommissioning activities and the removal of wind farm components

Magnitude of impact

16.11.23 Magnitude of impact on change to the HSC during the decommissioning phase have been assessed according to the criteria outlined in **Table 16-18**.

16.11.24 HSC has been used as a measure in this assessment to provide a contextual and regional approach to the marine archaeology study area. Historic seascapes

cannot be physically destroyed or damaged but impacts on them can change their historical character and the perception surrounding them.

16.11.25 The historic character of a seascape can be defined by its dynamic nature and ability to accommodate change. Perceptions of the seascape are also dynamic and subjective to the public and time. The intertidal and marine zones are ever changing due to physical processes such as currents, tidal range and sediment mobility. Considering this dynamism and the multiple dimensions defined by HSC, people create complex spatial relationships within and across all marine levels, reflected within the sites of cultural activity and their material imprints.

16.11.26 The presence of decommissioning vessels is considered to be comparatively inconsequential considering the current marine activity within the marine proposed DCO Order Limits. The inshore activities at landfall will be short term and small scale with the use of larger decommissioning vessels transitional as outlined in the assumed maximum impact table (**Table 16-15**).

16.11.27 The presence of cables on the sub-seafloor and seafloor are unlikely to enter public perception, and therefore are unlikely to change the perception of seascape. Foundations within the water column and sea surface will likely contribute to a change in people's perception of the Historical Seascape Character. This can be a positive, negative or neutral change which is dependent on personal experience of the area and will continue to be subjective.

16.11.28 The magnitude of impact on marine heritage receptors specifically on HSC, specifically the presence of cables on the sub-seafloor and seafloor, foundations within the water column and sea surface and turbines above the sea surface during the decommissioning phase is therefore assessed as a narrative using the Broad Historic Character Types, as summarised in **Section 16.6**.

16.11.29 It should be noted that changes to the visible elements of the shore and the sea surface have been assessed further in **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) and therefore this chapter only considers the historic aspects of Seascape Characterisation.

Sensitivity (value) of marine heritage receptor

16.11.30 The sensitivity (value) of the Broad Historic Character Types identified within the proposed DCO Order Limits (shown in **Figure 16.1, Volume 3** of the ES (Document Reference: 6.3.16)) is assessed in terms of their ability to adapt to change, as outlined in **Section 16.8**.

16.11.31 The existing seascape of the Rampion 2 marine archaeology study area is known for its marine and intertidal historic character utilised mainly for navigation, industry, fishing, ports and docks, coastal infrastructure, communications, military, settlements, recreation, cultural topography and woodland.

16.11.32 HSC relates to the historic dimension of the present-day seascape and considers the added effect of Rampion 2 within the multiple dimensions of the marine environment (sub-sea floor, sea floor, water column, sea surface, coastal land and previous historic character) in combination with the existing activity within the Broad Historic Character Types, as detailed in **Section 16.8** and **Appendix 16.1:**

Marine archaeological technical report, Volume 4 of the ES (Document Reference: 6.4.16.1).

Table 16-33 Changes to the Historic Seascape Characterisation (HSC) (Decommissioning)

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
Navigation (activities and hazards)	This area along the south coast and out towards the English Channel has historically been an area of much of England's navigation activities and as such has demonstrated its capacity to accommodate change and growth over time.	**No change perceived**: the added addition of temporary vessel activities in a busy navigational area is not expected to contribute with change, see **Chapter 13: Shipping and navigation, Volume 2** of the ES (Document Reference: 6.2.13) for details).
Industry (energy, processing, shipbuilding, shipping)	Industry has been and continues to be the one of the dominant influences on the character across coastal, intertidal and marine areas at all levels around the south coast of the UK.	**Positive perceived change**: the addition of Rampion 2 infrastructure as a source of renewable energy could contribute to the HSC as sense of a modern and sustainable industry. Also see **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15).
Fishing (potting, netting, shellfish dredging)	The thriving fishing industry of the Southern England region has been documented from the seventh century onwards	**No perceived change**: while some areas may be temporarily unavailable for fishing during the decommissioning phase, no long-term change to HSE as a result of Rampion 2 is expected on either local or offshore fishing industries. Also see **Chapter 10: Commercial fisheries, Volume 2** of the ES (Document Reference: 6.2.10).
Ports and docks	The Southern England region contains numerous	**No change perceived**: the HSC of the ports and docks

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
	examples of small hards, quays and landing places and major ports including docks, ferry terminals and car terminals.	is not expected to be altered during the decommissioning phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of historic assessment of quays. **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) includes baseline views of ports and quays.
Coastal Infrastructure (flood and erosion defences)	Sea and flood defences in the region are characteristic for protecting agricultural land and coastal settlements where the coastline has been receding for hundreds of years.	**No perceived change**: the HSC of the coastal infrastructure is not expected to be altered during the decommissioning phase of Rampion 2. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of HLC of coastal infrastructure. **Chapter 15: Seascape, landscape and visual, Volume 2** of the ES (Document Reference: 6.2.15) includes baseline views of coastal infrastructure.
Communications (transport, telecommunications)	Coastal transport systems enabled people to settle in and visit coastal regions more easily and were an important part of industrial development. There is one canal in the study area, the Chichester Ship Canal. It	**No perceived change**: while canals are an integral part of the present social and cultural landscape, and parts of the Chichester Ship Canal are being restored, modern society is dependent on submarine

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
	opened in 1823 and was totally abandoned in 1928. It is currently undergoing some restoration works. The presence of submarine telecommunications cables is likely to be known only to those who were involved in laying them, and to people involved in communications infrastructure. In spite of the importance of transport and telecommunications in the daily lives of the public their perception of the communications type is limited and based on the results of communications rather than their presence.	telecommunication cables. However, as the current public perception of such infrastructure is assumed to be minimal and unlikely to change following the decommissioning phase of Rampion 2.
Military (military defence and fortification)	Military coastal defences and military bases in the Southern England region can be found all along the coast.	**Positive perceived change**: active bases and abandoned military heritage bear witness to the UK's important military history. However, the impacts on HSC during the decommissioning of Rampion 2 can be positive, ensuring increased protection and mitigation of impact on heritage receptors, as per the forthcoming decommissioning plan (C-111). Effects arising through change to HLC to military remains are outlined in **Chapter 25: Historic environment, Volume 2** (Document Reference: 6.2). Potential indirect and direct impacts on marine heritage receptor in the intertidal

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
		zone, and wrecks of military importance within the marine archaeology study area are assessed in **Sections 16.9 - 16.12**.
Settlements (urban)	The coastal area of the Southern England region is densely populated. It includes a variety of coastal settlement types including urban settlements, major cities, tourist resorts and smaller fishing towns and villages.	**No perceived change**: the decommissioning phase will not alter public perception of the HSC, but will contribute to the perception of how the seascape connects to our past and change with our future.
Recreation (water sports, boating, recreational diving, swimming, wildlife watching)	Recreational enjoyment of the coast has a long history in England and tourism is an important source of income.	**No perceived change**: while some temporary areas may be temporarily unavailable for recreational activities during the decommissioning phase, no long-term change to HSC is expected. Potential indirect and direct impacts on Marine heritage receptor such as wrecks within the marine archaeology study area are assessed in **Sections 16.9 - 16.12**.
Cultural Topography (palaeolandscape component**,** peat deposits)	The relevance of these to HSC is as areas of former human habitat with evidence for past topographical and ecological regimes, the contexts shaping much earlier human cultural activity and landscape perceptions.	**Positive perceived change**: there will be an increased understanding of the cultural topography within the study area and adjacent areas following the amalgamation of information collected during the geoarchaeological surveys undertaken during the lifetime of the project. These will help inform public knowledge and interest.

Broad Historic Character Types	Setting of the Historical Seascape Character	Changes to Perception
		No further changes to the HSC are expected during the decommissioning phase. The potential for survival of palaeolandscape components and submerged archaeology in the marine topography and deposits in the study area is further discussed in **Section 16.6**. The cultural topography landward is discussed in detail in **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25).
Woodland	Coastal woodlands have been important in providing timber and other materials for boat building and other coastally focused activities. Patterns of woodland also form distinctive elements of the coastal landscape visible from the sea, aiding position-finding and natura navigation.	**No perceived change**: the HSC of the woodlands is not expected to be altered during the decommissioning phase. **Chapter 25: Historic environment, Volume 2** of the ES (Document Reference: 6.2.25) includes an assessment of HLC of woodland. **Chapter 15: Seascape, landscape and visual Volume 2** of the ES (Document Reference: 6.2.25) include baseline views of woodland.

Significance of residual effect

16.11.33 The commitment to undertake further archaeological works throughout the life of the project will be a requirement under **Outline Marine Written Scheme of Investigation** (Document Reference: 7.13) and associated documents, in accordance with embedded environmental measure C-57. This includes ensuring

that HSC assessments are a part of archaeological assessments throughout the life of the project where relevant.

16.11.34 It is therefore predicted that the ability to accommodate change is mainly a positive perceived change equalling a **negligible** magnitude. The significance of effect is therefore assessed as **not significant** in EIA terms, as per **Table 16-19**.

16.12 Assessment of cumulative effects

Approach

16.12.1 A cumulative effects assessment (CEA) examines the combined impacts of Rampion 2 in combination with other developments on the same single receptor or resource and the contribution of Rampion 2 to those impacts. The overall method followed in identifying and assessing potential cumulative effects in relation to the offshore environment is set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5).

Cumulative effects assessment

16.12.2 For marine archaeology, a Zone of Influence (ZOI) of 50km from the marine archaeology study area has been applied for the CEA to ensure direct and indirect cumulative effects can be appropriately identified and assessed. This area is determined to avoid any impact from potential cumulative effects of sediment movement and disturbance.

16.12.3 A short list of 'other developments' that may interact with the Rampion 2 ZOIs during their construction, operation or decommissioning is presented in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** Document Reference: 6.4.5.4) and on **Figure 5.4.1, Volume 3** of the ES (Document Reference: 6.4.5.4). This list has been generated by applying criteria set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5) and has been collated up to the finalisation of the ES through desk study and consultation.

16.12.4 Only those 'other developments' in the short list that fall within the marine archaeology ZOI have the potential to result in cumulative effects with the Proposed Development on marine archaeology. All 'other developments' falling outside the marine archaeology ZOI are excluded from this assessment. The following types of 'other development' have the potential to result in cumulative effects on marine archaeology.

- Installation and maintenance works on sub-sea cables and pipelines (telecommunication and power cables) could result in loss or change (permanent and/or temporary) of marine heritage receptors, which could potentially also be affected by Rampion 2.
- Extraction of aggregate within active aggregate production areas could result in loss or change (permanent and/or temporary) of marine heritage receptors, which could potentially also be affected by Rampion 2.

- Other offshore wind farm projects could result in loss or change (permanent and/ or temporary) of marine heritage receptors, which could also be potentially affected by Rampion 2.

16.12.5 On the basis of the above, the 'other developments' that are scoped into the marine archaeology CEA are outlined in **Table 16-34**.

Page intentionally blank

Table 16-34 Developments considered as part of the marine archaeology CEA.

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
A407	Aggregates	407 St Catherine's Area – CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	28.4
A340	Aggregates	340 South East IOW Area – Volker Dredging Ltd / CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	23.7
A351	Aggregates	351 South East IOW Area – Tarmac Marine Ltd / Volker Dredging Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	15.8
A395/1	Aggregates	395/1 Off Selsey Bill – Aggregates	Active	High; marine archaeology impact assessments have been undertaken.	1	15

[1] **Chapter 5: Approach to the EIA,** Volume 2 of the ES (Document Reference: 6.2.5) sets out the full definitions of the tiers. Tier 1: high level of certainty or information availability (including under construction or where a planning application has been approved or is awaiting decision). Tier 2: medium level of certainty or information (such as developments on PINS Programme of Projects where a Scoping Report has been submitted). Tier 3: low level of certainty or information available (no planning applications submitted or identified for potential future development only).

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
		Industries UK Ltd / Kendall Bros (Portsmouth) Ltd / Tarmac Marine Ltd				
A395/2	Aggregates	395/2 Off Selsey Bill Area – Kendall Bros (Portsmouth) Ltd / Tarmac Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	16.9
A451	Aggregates	451 St Catherine's Area – Westminster Gravels Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	16.5
A453	Aggregates	453 Owers Extension – CEMEX UK Marine Ltd.	Active (end date 31/03/2032)	High; marine archaeology impact assessments have been undertaken.	1	0.4
A488	Aggregates	488 Inner Owers North – Tarmac Marine Ltd.	Active (end date 07/07/2030)	High; marine archaeology impact assessments have been undertaken.	1	0.5

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
A396/1	Aggregates	Tarmac Marine Ltd Inner Owers Area 396/1	Active (end date 07/07/2030)	High; marine archaeology impact assessments have been undertaken.	1	0
A396/2	Aggregates	396/2 Inner Owers – Tarmac Marine Ltd	Active (end date 07/07/2030)	High; marine archaeology impact assessments have been undertaken.	1	2
A435/1	Aggregates	435/1 Inner Owers – Hanson Aggregates Marine Ltd	Active (end date 07/07/2030)	High; marine archaeology impact assessments have been undertaken.	1	0.7
A458	Aggregates	458 West Bassurelle Area – Tarmac Marine Ltd / CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	36.4
A460	Aggregates	460 South Hastings Area – CEMEX UK Marine Ltd / Tarmac Marne Ltd / Hastings Aggregates Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	34.8

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
A461	Aggregates	461 Median Deep Area – Volker Dredging Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	36.8
A464	Aggregates	464 West Bassurelle Area – Tarmac Marine Ltd / CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	33.6
A473/1	Aggregates	473/1 Greenwich Light East Area - CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	25.7
A473/2	Aggregates	473/2 North Area - Hanson Aggregates Marine Ltd / CEMEX UK Marine Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	28.5
A478	Aggregates	478 Area 1 South Area - DEME Building Materials Ltd	Active	High; marine archaeology impact assessments have been undertaken.	1	29.5

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
W48	Offshore wind farm	Rampion 1	Active	High; marine archaeology impact assessments have been undertaken as part of an ES.	1	0
T1	Tidal Energy	Perpetuus Tidal Energy Centre (PTEC)	Proposed (Offshore plans approved 2016, plan to be operational 2025. Onshore planning application to be submitted 2021.)	High; marine archaeology impact assessments have been undertaken as part of an ES.	1	47.7
TC1	Telecommunication	ATLANTIC CROSSING 1 Century Link	Active	Low; ES not available or does not contain marine archaeology impact assessment.	1	14.6
TC2	Telecommunication	COWES-FAWLEY 2 BT	Active	Low; ES not available or does not contain marine archaeology impact assessment.	1	<50
TC3	Telecommunication	PORTSMOUTH RYDE BT	Active	Low; ES not available or does not contain marine archaeology impact assessment.	1	31.5
TC5	Telecommunication	RIOJA 2 BT	Disused	High; not used.	1	28

ID (Figure 5.4.1)	Development type	Application reference	Status	Confidence in assessment	Tier[1]	Distance to Rampion 2 (km)
TC6	Telecommunication	CIRCLE SOUTH ZAYO	Active	Low; ES not available or does not contain marine archaeology impact assessment.	1	16
C1	Power cable	AQUIND (UK to France)	Proposed.	High, marine archaeology impacts assessment undertaken as part of ES.	1	0
C2	Power cable	Interconnexion France-Angleterre 2 – IFA-2 HVDC	Operational	Low; ES not available or does not contain marine archaeology impact assessment.	1	0.9
C3	Cable	CrossChannel Fibre	Operational	Low, ES not available or does not contain marine archaeology impact assessment	1	8.8

16.12.6 The cumulative Project Design Envelope is described in **Table 16-35**.

Table 16-35 Cumulative Project Design Envelope for marine archaeology.

Project phase and activity/impact	Scenario	Justification
Construction		
Direct impact: Removal of sediments, penetration, compression, disturbance to marine heritage receptors **Indirect impact:** Sediment disturbance, change to perception of the historic seascape character	Tier 1: All other developments within Tier 1 (**Table 16-34**) Tier 2: No other developments to consider Tier 3: No other developments to consider	Potential impacts of Rampion 2 alone are assessed in **Section 16.9** where it is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant,** in EIA terms (**Table 16-19**). Intrusive seabed activities as well as vessel operations during the construction phase of Rampion 2 cumulatively with activities undertaken by the other projects as listed in **Table 16-34** have the potential to contribute to direct or indirect impacts on marine heritage receptors. However, the embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. While not under the remit of Rampion 2, it is assumed that all developments in

Project phase and activity/impact	Scenario	Justification
		Table 16-34 and described below that include, or will include, a marine archaeology impact assessment in their ES documents, outline and confirm mitigation strategies ensuring that marine heritage receptors will either be avoided or further investigated. It is therefore assessed that the cumulative significance of effect during the construction phase is **not significant**, in EIA terms.
Operation and Maintenance		
Direct impact: Removal of sediments, penetration, compression, disturbance to marine heritage receptors **Indirect impact:** Sediment disturbance, scour, change to perception of the historic seascape character	Tier 1: All other developments within Tier 1 (**Table 16-34**) Tier 2: No other developments to consider Tier 3: No other developments to consider	Potential impacts of Rampion 2 alone are assessed in **Section 16.9** where it is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms (**Table 16-19**). Intrusive seabed activities as well as vessel operations during the construction phase of Rampion 2 cumulatively with activities undertaken by the other projects, as listed in **Table 16-35**, have the potential to contribute to direct or indirect impacts on marine heritage receptors. However, the embedded environmental measures, as outlined in **Table 16-16**,

Project phase and activity/impact	Scenario	Justification
		aim to avoid and mitigate **direct** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. While not under the remit of Rampion 2, it is assumed that all developments in **Table 16-34** and described below that include or will include a marine archaeology impact assessment in their ES documents, also outline and confirm mitigation strategies ensuring that marine heritage receptors will either be avoided or further investigated. It is therefore assessed that the cumulative significance of effect during the operation and maintenance phase is **not significant**, in EIA terms.
Decommissioning		
Direct impact: Removal of sediments, penetration, compression, disturbance and draw down effects on marine heritage receptors **Indirect impact:** Sediment disturbance, change to perception of the historic seascape character	Tier 1: All other developments within Tier 1 (**Table 16-34**) Tier 2: No other developments to consider Tier 3: No other developments to consider	Potential impacts of Rampion 2 alone are assessed in **Section 16.9** where it is predicted that the sensitivity (value) of the receptor is **negligible** to **very high** and the magnitude is **negligible**. The significance of effect is therefore **not significant**, in EIA terms (**Table 16-19**).

Project phase and activity/impact	Scenario	Justification
		Intrusive seabed activities as well as vessel operations during the construction phase of Rampion 2 cumulatively with activities undertaken by the other projects, as listed in **Table 16-35**, have the potential to contribute to direct or indirect impacts on marine heritage receptors. However, the embedded environmental measures as outlined in **Table 16-16** aim to avoid and mitigate **indirect** and **direct** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. While not under the remit of Rampion 2, it is assumed that all developments in **Table 16-34** and described below that include or will include a marine archaeology impact assessment in their ES documents, outline and confirm mitigation strategies ensuring that marine heritage receptors will either be avoided or further investigated. It is therefore assessed that the cumulative significance of effect during the decommissioning phase is **not significant**, in EIA terms.

16.12.7 The CEA has been based on information available in respective ESs (if and where available) and it is noted that the project parameters quoted within the various ES documents are often refined during the determination period and in the post-consent phase.

Sub-sea cables and pipelines (telecommunication and power cables)

16.12.8 Indirect impacts from cumulative sediment changes during all Rampion 2 project phases and the presence of sub-sea cables and pipelines (TC1, TC, 2T, C3, TC5, C6, C1, C2 and C3 in **Table 16-34**) may over time result in the loss or accumulation of sediment. Together with maintenance operations of sub-sea cables and pipelines if undertaken they may alter or destabilise unknown marine heritage receptors, archaeological sites and contexts, including paleoenvironmental information and exposing such material to natural, chemical, or biological processes, and causing or accelerating loss of the same.

16.12.9 No direct cumulative impacts on marine heritage receptors within the Rampion 2 Assessment Boundary are expected as no sub-sea cables or pipelines are located within the Assessment Boundary.

16.12.10 There is currently limited detail on archaeological data and assessments within the impact assessments undertaken ahead of the subsea cables and pipelines detailed in **Table 16-34** and therefore it is not possible to make a comprehensive assessment of the significance of effect. However, given that construction activities do not overlap and disturbance from operational and maintenance of Rampion 2 is expected to be short term and localised to the offshore part of proposed DCO Order Limits, it is not anticipated that any effects will result in a significant impact.

16.12.11 Potential cumulative effects during all Rampion 2 project phases and the described presence of subsea cables and pipelines (**Table 16-34**) are therefore predicted to be of local spatial extent, long term duration, continuous and limited reversibility.

16.12.12 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct, indirect,** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. The magnitude of impact of cumulative effects as a result of Rampion 2 and presence of subsea cables and pipelines is therefore expected to be avoided or indistinguishable from natural variation (**negligible**), meaning **not significant** in EIA terms.

Aggregate production areas

16.12.13 Indirect impacts from cumulative sediment changes during all Rampion 2 project phases and the presence of active aggregate production areas in the locality, as set out in **Table 16-34** (A407, A340, A351, A395/1, A395/2, A451, A453, A488, A396/1, A396/2. A435/1, A458, A460, A461, A464, A473/1, A473/2, A478), may result in loss or accumulation of sediment, thereby altering or destabilising archaeological sites and contexts, including paleoenvironmental material, and exposing such material to natural, chemical or biological processes, causing or accelerating loss of the same.

16.12.14 Despite the intrusive nature of dredging operation on the seafloor, no direct cumulative impacts on marine heritage receptors within the Rampion 2 Assessment Boundary are expected as there is no spatial overlap with aggregate production areas and the Rampion 2 Assessment Boundary.

16.12.15 The cumulative effects during all Rampion 2 project phases and the described active aggregate production areas are therefore predicted to be of local spatial extent, long term duration, continuous and limited reversibility.

16.12.16 The British Marine Aggregate Producers Association (BMAPA) ensures that proportionate planning is undertaken which provides a framework to enable delivery of a 'licence to operate' for all dredging activities and operation. A Guidance Note is produced and agreed which considers the sensitivity (value) of heritage assets within proposed and active dredging areas (Crown Estate, 2017). The Guidance Note also ensures that known and unlocated marine heritage receptors are addressed at every stage of marine aggregate development and production.

16.12.17 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct, indirect,** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. The magnitude of impact of cumulative effects as a result of Rampion 2 and nearby active dredging areas is therefore expected to be avoided or indistinguishable from natural variation (**negligible**), meaning **not significant** in EIA terms.

Offshore wind farms

16.12.18 The only UK operational offshore wind farm within the ZOI, as outlined in **Table 16-34**, is Rampion 1, which consist of sub-sea cables and permanent structures on the seabed. Rampion 1 cables and foundation structures require regular planned and unplanned maintenance with the potential to cause seabed disturbance, and therefore cumulative sediment changes during all Rampion 2 project phases could result in the loss or accumulation of sediment. This disturbance could alter or destabilise archaeological sites and contexts, including paleoenvironmental material and expose such material to natural, chemical or biological processes, causing or accelerating loss of the same.

16.12.19 No direct cumulative impacts on marine heritage receptors within the Rampion 2 Assessment Boundary are expected; the two wind farms (Rampion 1 and Rampion 2) are in close proximity but do not have spatially overlapping Assessment Boundaries.

16.12.20 Rampion 1 wind farm was the first wind farm to be constructed on the south coast of England. The development consent application was submitted in 2013 and awarded in 2014. As part of the application process, a marine archaeology impact assessment was undertaken which concluded that measures will be taken, as, to ensure, as far as reasonably possible, that there will be no residual effects on any unanticipated marine heritage assets that are disturbed during the construction, operation or decommissioning of the wind farm; cumulative impacts are also expected to be **negligible** (ES Section 13- Marine Archaeology, E.ON, 2012).

16.12.21 Potential cumulative impacts are, therefore, predicted to be of local spatial extent, long term duration, continuous and limited reversibility.

16.12.22 The embedded environmental measures, as outlined in **Table 16-16,** aim to avoid and mitigate **direct, indirect,** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. The magnitude of impact of cumulative effects as a result of Rampion 1 and Rampion 2 is therefore expected to be avoided or indistinguishable from natural variation (**negligible**), meaning **not significant** in EIA terms.

Tidal energy

16.12.23 There is one tidal energy development included in the CEA, the Perpetuus Tidal Energy Centre (PTEC), located off the Isle of Wight. The development consenting process included an assessment of potential environmental and community impacts (including marine heritage receptors), and final consent was awarded in April 2016. The development has been paused on several occasions over recent years but was restarted in October 2020 with the onshore planning permission awarded in December 2021.

16.12.24 However, there is currently limited detail available on the marine heritage receptors likely to be affected and the results of impact assessments undertaken ahead of the ES submission for the tidal project. Therefore, it is not possible to make a detailed assessment of the significance of cumulative effect as project parameters are currently unknown. However, given that there is no spatial overlap during construction, and disturbance from operational and maintenance of Rampion 2 is expected to be short term and localised, it is not anticipated that any significant cumulative effects will arise.

16.12.25 The embedded environmental measures, as outlined in **Table 16-16**, aim to avoid and mitigate **direct, indirect,** and **permanent impact** on marine heritage receptors (known, unlocated and HSC) and ensure that archaeological input is of paramount importance throughout the life of the project. The magnitude of impact of cumulative effects (as a result of Perpetuus Tidal Energy Centre activities and Rampion 2) is therefore expected to be avoided or indistinguishable from natural variation (**negligible**), meaning **not significant** in EIA terms.

16.12.26 To summarise, the cumulative effects during all phases of Rampion 2 and the outlined other developments are predicted to be of **negligible** magnitude. The significance of cumulative effect is therefore **not significant**, in EIA terms.

16.12.27 The CEA for marine archaeology is set out in **Table 16-36**.

Table 16-36 Cumulative effects assessment for marine archaeology

ID (Figure 5.4.1 / 5.4.2)	Development type	Application reference	Assessment discussion	Environmental measures
A407	Aggregates	407 St Catherine's Area – CEMEX UK Marine Ltd	No spatial overlap or direct impact expected. Indirect impact as a result of loss or accumulation of sediment (should it occur) is assumed to be minor or indistinguishable from natural variation.	Relevant embedded environmental measures, as outlined in **Table 16-16**, focus on ensuring that archaeological input is part of the whole project process (C-57), as well as ensuring that unlocated and unknown receptors are identified (C-58, C-59) and avoided (C-60).
A340	Aggregates	340 South East IOW Area – Volker Dredging Ltd / CEMEX UK Marine Ltd		
A351	Aggregates	351 South East IOW Area – Tarmac Marine Ltd / Volker Dredging Ltd		
A395/1	Aggregates	395/1 Off Selsey Bill – Aggregates Industries UK Ltd / Kendall Bros (Portsmouth) Ltd / Tarmac Marine Ltd		
A395/2	Aggregates	395/2 Off Selsey Bill Area – Kendall Bros (Portsmouth) Ltd / Tarmac Marine Ltd		
A451	Aggregates	451 St Catherine's Area – Westminster Gravels Ltd		
A453	Aggregates	453 Owers Extension – CEMEX UK Marine Ltd.		
A488	Aggregates	488 Inner Owers North – Tarmac Marine Ltd.		
A396/1	Aggregates	Tarmac Marine Ltd Inner Owers Area 396/1		
A396/2	Aggregates	396/2 Inner Owers – Tarmac Marine Ltd		

ID (Figure 5.4.1 / 5.4.2)	Development type	Application reference	Assessment discussion	Environmental measures
A435/1	Aggregates	435/1 Inner Owers – Hanson Aggregates Marine Ltd		
A458	Aggregates	458 West Bassurelle Area – Tarmac Marine Ltd / CEMEX UK Marine Ltd		
A460	Aggregates	460 South Hastings Area – CEMEX UK Marine Ltd / Tarmac Marne Ltd / Hastings Aggregates Marine Ltd		
A461	Aggregates	461 Median Deep Area – Volker Dredging Ltd		
A464	Aggregates	464 West Bassurelle Area – Tarmac Marine Ltd / CEMEX UK Marine Ltd		
A473/1	Aggregates	473/1 Greenich Light East Area - CEMEX UK Marine Ltd		
A473/2	Aggregates	473/2 North Area - Hanson Aggregates Marine Ltd / CEMEX UK Marine Ltd		
A478	Aggregates	478 Area 1 South Area - DEME Building Materials Ltd		
W48	Offshore wind farm	Rampion 1		

ID (Figure 5.4.1 / 5.4.2)	Development type	Application reference	Assessment discussion	Environmental measures
T1	Tidal Energy	Perpetuus Tidal Energy Centre (PTEC)		
TC1	Telecommunication	ATLANTIC CROSSING 1 Century Link		
TC2	Telecommunication	COWES-FAWLEY 2 BT		
TC3	Telecommunication	PORTSMOUTH RYDE BT		
TC5	Telecommunication	RIOJA 2 BT		
TC6	Telecommunication	CIRCLE SOUTH ZAYO		
C1	Power cable	AQUIND (UK to France)		
C2	Power cable	Interconnexion France-Angleterre 2 – IFA-2 HVDC		
C3	Cable	CrossChannel Fibre [6]		

16.13 Transboundary effects

16.13.1 Transboundary effects arise when impacts from a development within one European Economic Area (EEA) states affects the environment of another EEA state(s). A screening of transboundary effects has been carried out and is presented in Appendix B of the Scoping Report (RED, 2020).

16.13.2 The screening exercise concluded that there is no potential for significant transboundary effects upon the interests of other EEA States in relation to marine archaeology to occur as a result of the construction, operation or decommissioning of Rampion 2.

16.14 Inter-related effects

16.1.1 The inter-related effects assessment considers likely significant effects from multiple impacts and activities from the construction, operation and maintenance

and decommissioning phases of Rampion 2 on the same receptor, or group of receptors.

16.14.1 Inter-related effects could potentially arise in one of two ways. The first type of inter-related effect is a Proposed Development lifetime effect, where multiple phases of the Proposed Development interact to create a potentially more significant effect on a receptor than in one phase alone. The phases for Rampion 2 are construction, operation and maintenance, and decommissioning. All Proposed Development lifetime effects are assessed in **Chapter 30: Inter-related effects, Volume 2** of the ES (Document Reference: 6.2.30).

16.14.2 The second type of inter-related effect is receptor-led effects. Receptor-led effects are where effects from different environmental aspects combine spatially and temporally on a receptor. These effects may be short-term, temporary, transient, or longer-term. Marine heritage receptors are not included in the receptor-led effects. Full results of the receptor-led effects assessment can be found in **Chapter 30: Inter-related effects, Volume 2** of the ES (Document Reference: 6.2.30).

16.15 Summary of residual effects

16.15.1 **Table 16-37** presents a summary of the assessment of significant impacts, any relevant embedded environmental measures and residual effects on marine heritage receptors.

Page intentionally blank

Table 16-37 Summary of assessment of residual effects.

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
Construction				
Direct impact: Removal of sediment containing undisturbed archaeological contexts during seabed preparation ahead of construction activities.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Direct Impact: Penetration, compression, and disturbance effects **of piling foundations**.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
			C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	
Direct Impact: Penetration, compression, and disturbance of cable laying operations.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Direct Impact Penetration, compression and disturbance effects of jack-up barges and anchoring of construction vessels during construction activities.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
			C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	
Indirect Impact: Disturbance of sediment containing potential marine heritage receptors (material and contexts) during construction activities.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Indirect impact: Changes to the HSC as a result of construction and survey vessel activities and the addition of cables, foundations and turbines.	**Negligible**	No perceived change or perceived positive change	C-57 (Project specific Outline Marine WSI) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
Operation and maintenance				
Direct Impact: **Penetration compression** and disturbance **effects** of maintenance activities at WTG substation foundations and along, inter-array and export cables.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Indirect Impact: **Disturbance of sediment containing potential marine heritage receptors during** maintenance activities.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
			C-298 (Post-consent reporting and publishing)	
Direct impact: Penetration compression and disturbance effects of jack-up barges and anchoring of operation and maintenance vessels during the operation and maintenance phase.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Indirect impact: Scour effects caused by the presence of WTG substation foundations and the exposure of inter-array and export cables or the use of cable protection measures.	No perceived change or positive change	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
			C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	
Indirect impact: Changes to the HSC as a result of operation and maintenance vessel activities and the presence of the completed wind farm.	**Negligible**	No perceived change or perceived positive change	C-57 (Project specific Outline Marine WSI) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Decommissioning				
Direct impact: Penetration, compression and disturbance effects of jack-up barges and anchoring of decommissioning vessels.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan)	**Not significant**

Activity and impact	Magnitude of impact	Receptor and sensitivity (value) or value	Embedded environmental measures	Assessment of residual effect (significance)
			C-298 (Post-consent reporting and publishing)	
Indirect impact: Draw-down of sediment into voids left by removed WTG foundations leading to loss of sediment or destabilisation of archaeological sites and contexts.	**Negligible**	Marine heritage receptors **negligible** to **very high**	C-57 (Project specific Outline Marine WSI) C-58 (Archaeological assessments of geophysical data) C-59 (Staged geoarchaeological assessments) C-60 (Avoidance of known receptors) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**
Indirect impact: Changes to the HSC as a result of decommissioning activities and the removal of wind farm components.	**Negligible**	No perceived change or perceived positive change	C-57 (Project specific Outline Marine WSI) C-111 (Decommissioning plan) C-277 (Post-consent monitoring plan) C-298 (Post-consent reporting and publishing)	**Not significant**

16.16 Glossary of terms and abbreviations

Table 16-38 Glossary of terms and abbreviations – marine archaeology.

Term (acronym)	Definition
Archaeological Exclusion Zone (AEZ)	Spatially defined zones around known marine heritage receptors that will be avoided during intrusive 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 Notification Area (ANA)	Area identified by the local authority as having a high potential for archaeological remains to be present.
BMAPA	British Marine Aggregate Producers Association.
Baseline conditions	The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
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. It is subdivided in the Early, Middle and Late Bronze Age. Archaeological period lasting from 2,600-700 BC.
CIfA	Chartered Institute for Archaeologists.
Coastal processes	The processes that interact to control the physical characteristics of a natural environment, for example: winds, waves, currents, water levels, sediment transport, turbidity, coastline, beach and seabed morphology.
Coastal retreat	Natural recession of a coastline over time.
Deemed Marine Licence (dML)	If a DCO is granted, this will include provision deeming a marine licence(s) to have been issued under Part 4 of the Marine and Coastal Access Act 2009.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIPs).
Decommissioning	The period during which a development and its associated processes are removed from active operation.

Term (acronym)	Definition
Early Medieval	This dates from the breakdown of Roman rule in Britain c. AD410 to the Norman invasion in AD1066 and is to be used for monuments of post Roman, Saxon and Viking date. Archaeological period lasting from AD410 to 1066.
Early Prehistoric	For monuments which are characteristic of the Palaeolithic to Mesolithic but cannot be specifically assigned. Archaeological period lasting from 50,000 to 4,000 BC.
EEA	European Economic Area.
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 (value) , of the receptor or resource in accordance with defined significance criteria.
EIA Regulations, 2017	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.The EIA regulations require that the effects of a project, where these are likely to have a significant effect on the environment, are taken into account in the decision-making process for the project.
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').
Environmental Statement (ES)	Presents the full findings of the Environmental Impact Assessment and the results of the potential impacts of Rampion 2 Offshore Wind Farm on marine heritage receptors.
ETG	Expert Topic Group.
Evidence Plan Process (EPP)	A voluntary consultation process with specialists' stakeholders to agree the approach and the information required to support the EIA and HRA for certain aspects.
ESCC	East Sussex County Council.
Future Baseline	Refers to the situation in future years without the effect of the Proposed Development.
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.

Term (acronym)	Definition
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 Environment Record (HER)	County maintained databases of all known archaeological monuments and events in the region.
Historic England	Historic England (officially the Historic Buildings and Monuments Commission for England) is an executive non-departmental public body of the British Government sponsored by the Department for Digital, Culture, Media and Sport. It is tasked with protecting the historic environment of England by preserving and listing historic buildings, scheduling ancient monuments, registering historic Parks and Gardens and by advising central and local government.
Historic England National Record of the Historic Environment (NRHE)	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).
Historic Seascape Characterisation (HSC)	Maps and describes historic cultural influences which shape seascape perceptions across marine areas and coastal land and provides an archaeological understanding of time depth in the present seascape. HSC draws from a range of sources to assess the dominant cultural processes that have shaped the present.
Historic Landscape Characterisation (HLC)	Reveals the patterns and connections within a landscape, spatially and through time, and provides a framework for the recording and evaluation of the views and perceptions of people, such as their experiences and memories.
Horizontal Directional Drill (HDD)	A trenchless crossing engineering technique using a drill steered underground without the requirement for open trenches. This technique is often employed when crossing environmentally sensitive areas, major water courses and highways. This method is able to carry out the underground installation of pipes and cables with minimal surface disruption.
Impact	The changes resulting from an action.
Inshore	The sea up to two miles from the coast.

Term (acronym)	Definition
Intertidal	The area of the shoreline which is covered at high tide and uncovered at low tide.
Iron Age	This period follows on from the Bronze Age and is characterized by the use of iron for making tools, and monuments such as hillforts and oppida. The Iron Age is perceived to end with the start of the Roman invasion. Archaeological period lasting from 800 BC to AD 43.
JNAPC	Joint Nautical Archaeology Policy Committee.
LAT	Lowest Astronomical Tide.
MAG	Magnetometer.
Marine aggregate	Marine dredged sand and/or gravel.
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.
MBES	Multi-beam Echo Sounder.
MIS	Marine Isotope Stage.
Marine Management Organisation (MMO)	MMO is an executive non-departmental public body, sponsored by the Department for Environment, Food & Rural Affairs. The MMO licenses, regulates and plans marine activities in the seas around England so that they are carried out in a sustainable way.
Marine Policy Statement (MPS)	Framework for preparing Marine Plans and taking decisions affecting the marine environment.
Medieval	The Medieval period, or Middle Ages, follows the Early Medieval (AD410-1066) and begins with the Norman invasion and ends with the dissolution of the monasteries. Archaeological period lasting from AD1066-1540.
Mesolithic	The Middle Stone Age, occurring between the Palaeolithic and the Neolithic; marks the beginning of a move from a hunter gatherer society towards a sedentary production society. Archaeological period lasting from 10,000-4,000BC.

Term (acronym)	Definition
MHWS	Mean High Water Springs.
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).
NRHE	The National Record of the Historic Environment, a national marine heritage 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).
NPPF	National Planning Policy Framework.
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 4,000-2,200BC.
Offshore	The sea further than two miles from the coast.
Offshore area	An area that encompasses all planned offshore infrastructure.
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.
Onshore area	An area that encompasses all planned onshore infrastructure.
Outline Marine Written Schemes of Investigation (WSI)	Outline Marine WSI, specific for the offshore area and developed during the EIA process to form frameworks for mitigation strategies that will be submitted with the DCO application. Followed by the Draft WSI (based on the Outline WSI) and the final Agreed WSI (based on the Draft WSI).
Palaeolithic	The period is defined by the practice of hunting and gathering and the use of chipped flint tools. This period is usually divided into the Lower, Middle and Upper Palaeolithic. Archaeological period lasting from 50,000-10,000BC.
Preliminary Environmental Information Report (PEIR)	Presents the results of the Environmental Impact Assessment to date and the results of the potential

Term (acronym)	Definition
	impacts of Rampion 2 Offshore Wind Farm on marine archaeology heritage receptors.
Portable Antiquities Scheme (PAS)	Run by the British Museum on behalf of the Museums, Libraries and Archives Council to record archaeological objects found by the public.
Post-medieval	Begins with the dissolution of the monasteries (AD1536-1541) and ends with the death of Queen Victoria (AD 1901). A more specific period is used where known. Archaeological period lasting from AD1540-1901.
Proposed Development	The development that is subject to the application for development consent, as described in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).
Protocol for Archaeological Discoveries (PAD)	Document detailing how finds made during the lifetime of the Proposed Development should be reported.
PTEC	Perpetuus Tidal Energy Centre.
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.
Roman period	Traditionally begins with the Roman invasion in AD43 and ends with the emperor Honorius directing Britain to look to its own defences in AD410. Archaeological period lasting from AD43-410.
SBP	Sub-Bottom Profiler.
Scheduled Monument	A scheduled monument is a nationally important archaeological site or historic building, given protection against unauthorised change (this is also known as Scheduled Ancient Monuments).
Scoping Report	A report that presents the findings of an initial stage in the Environmental Impact Assessment process.
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.

Term (acronym)	Definition
Seascape, landscape and visual (SLVIA)	The Chapter assessing the effects of Rampion 2 on the offshore seascape, and onshore landscape characters and resources, and the visual amenity of these areas.
Secretary of State (SoS)	The senior minister who makes the decision to grant development consent.
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.
The Applicant	Rampion Extension Development Limited (RED).
UHRS	Ultra-High Resolution Seismic.
United Kingdom Hydrographic Office (UKHO)	Database of known wrecks and obstructions held and maintained by the UKHO.
UXO	Unexploded Ordnance.
West Sussex Historic Environment Record	This record collection provides details of all known archaeological assets, sites and former archaeological events within West Sussex.
Written Scheme of Investigation (WSI)	A 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 marine heritage receptors within the development area.
WSCC	West Sussex County Council.
WTG	Wind Turbine Generator.
ZOI	Zone of Influence.

16.17 References

Ancient Monuments and Archaeological Areas Act 1979 (c.53) Available at: https://www.legislation.gov.uk/ukpga/1979/46 [Accessed: 12 June 2023].

Bates, M.R., Briant, R.M., Rhodes, E.J., Schwenninger, J. and Whittaker, J.E. (2010). *A new chronological framework for Middle and Upper Pleistocene landscape evolution in the Sussex/Hampshire Coastal Corridor, UK.* Proceedings of the Geologist's Association, 121: pp. 369-392.

Bates, M.R., Wenban-Smith, F., Briant, R.M. and Marshall, G. (2004). *Palaeolithic Archaeology of the Sussex/Hampshire Coastal Corridor*, project number 3279. Unpublished report for English Heritage.

Burial Act 1857 (c.25) Available at: https://www.legislation.gov.uk/ukpga/Vict/20-21/81/section/25 [Accessed: 12 June 2023].

CIfA (2014a). *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. [online] Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GFinds_1.pdf. [Accessed: 12 June 2023].

CIfA (2014b). *Standard and guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment*. [online] Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GCommissioning_1.pdf.

CIfA (2014c). *Standard and guidance for archaeological field evaluation*. Reading, Charted Institute for Archaeologists. [updated October 2020] Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GFieldevaluation_1.pdf. [Accessed: 12 June 2023].

CIfA (2014d). *Standard and guidance for nautical archaeological recording and reconstruction*. [online] Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GNautical_1.pdf [Accessed: 12 June 2023].

CIfA (2014e). *Standard and guidance for an archaeological watching brief*. [online] Available at: https://www.archaeologists.net/sites/default/files/CIfASGWatchingbrief.pdf. [Accessed: 12 June 2023].

Cornwall Council (2008). E*ngland's Historic Seascapes: HSC Method Consolidation* [online]. Available at: https://doi.org/10.5284/1000033 [Accessed: 12 June 2023].

COWRIE (2007). *Historic Environment Guidance for the Offshore Renewable Energy Sector*. [online]. Available at: https://www.wessexarch.co.uk/sites/default/files/field_file/COWRIE_2007_Wessex_%20-%20archaeo_%20guidance_Final_1-2-07.pdf. [Accessed: 12 June 2023].

COWRIE (2008). *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy*. [online]. Available at: https://www.biofund.org.mz/wp-content/uploads/2018/11/F1349.Cowrie-Ciarch-Web.pdf. [Accessed: 12 June 2023].

COWRIE (2011). *Offshore Geotechnical Investigation and Historic Environment Analysis: Guidance for the Offshore Renewable Energy Sector*. [online]. Available at:

https://www.historicenvironment.scot/media/2376/2011-01-offshore-geotechnical-investigations-and-historic-environment-analysis-guidance-for-the-renewable-energy-sector.pdf [Accessed: 12 June 2023].

Department for Environment, Food and Rural Affairs (DEFRA) (2013). *Scheduled Monuments & nationally important but non-scheduled monuments*. [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/249695/SM_policy_statement_10-2013__2_.pdf [[Accessed: 12 June 2023].].

Department for Environment, Food and Rural Affairs (DEFRA) (2021). *Three year report on the South Inshore and South Offshore Marine Plan*. [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002168/Three_year_report_on_the_South_Inshore_and_South_Offshore_Marine_Plan.pdf [Accessed: 12 June 2023].

Department of Energy and Climate Change (2011). *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf [Accessed: 12 June 2023].

Department of Energy and Climate Change (2011). *Overarching National Policy Statement for Energy (EN-1)*. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf [Accessed: 12 June 2023].

English Heritage. (2011). *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (second edition). [online]. Available at: https://historicengland.org.uk/images-books/publications/environmental-archaeology-2nd/environmental_archaeology/. [Accessed: 12 June 2023].

English Heritage. (2013). *Marine Geophysical Data Acquisition, Processing and Interpretation*. [online]. Available at: https://historicengland.org.uk/images-books/publications/marine-geophysics-data-acquisition-processing-interpretation/mgdapai-guidance-notes/. [Accessed: 12 June 2023].

Gupta, S., Collier, J. S., Palmer-Felgate, A. and Potter, G. (2007). *Catastrophic flooding origin of shelf valley systems in the English Channel*. Nature, 448(7151), pp. 342-345.

Gupta, S., Collier, J., Palmer-Felgate, A., Dickinson, J., Bushe, K. and Humber, S. (2008). *Submerged Palaeo-Arun and Solent Rivers: Reconstruction of Prehistoric Landscapes*. York: Archaeology Data Service.

Historic England. (2015) *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record.* [online] Available at: https://historicengland.org.uk/images-books/publications/geoarchaeology-earth-sciences-to-understand-archaeological-record/heag067-geoarchaeology/. [Accessed: 12 June 2023].

Historic England. (2017) *Historic Seascape Characterisation Thesaurus*. [online]. Available at: https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-2958-1/dissemination/pdf/HSC_Thesaurus_July17.pdf. [Accessed: 12 June 2023].

Historic England. (2018) *The Role of the Human Osteologist in an Archaeological Fieldwork Project*. [online]. Available at: https://historicengland.org.uk/images-books/publications/role-of-human-osteologist-in-archaeological-fieldwork-project/heag263-human-osteologist-archaeological-fieldwork-project/. [Accessed: 12 June 2023].

Historic England. (2020). *Deposit Modelling and Archaeology. Guidance for Mapping Buried Deposits*. [online] Available at: https://historicengland.org.uk/images-books/publications/deposit-modelling-and-archaeology/heag272-deposit-modelling-and-archaeology/. [Accessed: 12 June 2023].

Historic England. (2021). *Commercial Renewable Energy Development and the Historic Environment Advice Note 15*. [online] Available at: https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/heag302-commercial-renewable-energy-development-historic-environment/. [Accessed: 12 June 2023].

HM Government (2018). *South Inshore and South Offshore Marine Plan, Heritage Policies S-HER-1 and S-SCP-1. July 2018.* [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/726867/South_Marine_Plan_2018.pdf [Accessed: 12 June 2023].

Joint Nautical Archaeology Policy Committee (JNAPC) (2006). *Joint Nautical Archaeology Policy Committee Code for Practice for Seabed Development*. [online]. Available at: http://www.jnapc.org.uk/jnapc_brochure_may_2006.pdf. [Accessed: 12 June 2023].

LUC (Land Use Consultants) (2018) *National Historic Seascape Characterisation Consolidation*. [online]. Available at: https://doi.org/10.5284/1046273 [Accessed: 12 June 2023].

Marine and Coastal Access Act 2009 (c.2) Available at: https://www.legislation.gov.uk/ukpga/2009/23/contents [Accessed: 12 June 2023].

Merchant Shipping Act 1995 (part 9, c.2) Available at: https://www.legislation.gov.uk/ukpga/1995/21/part/IX/chapter/II [Accessed: 12 June 2023].

Protection of Wrecks Act 1973 (c.33) Available at: https://www.legislation.gov.uk/ukpga/1973/33 [Accessed: 12 June 2023].

Rampion Extension Development Limited (2020). *Rampion 2 Offshore Wind Farm – Environmental Impact Assessment Scoping Report*. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000006-EN010117%20-%20Scoping%20Report.pdf [Accessed: 12 June 2023].

Rampion Extension Development Limited (2021). *Rampion 2 Offshore Wind Farm Characterisation Surveys Subtidal Habitats Survey*. Gloucester; Ocean Ecology.

Rampion Extension Development Limited (RED), (2021*). Preliminary Environmental Information Report (PEIR)*. [Online] Available at: https://rampion2.com/consultations-2021/formal-consultation-detailed-documents/ [Accessed 22 December 2022].

Roberts, M.B, and Parfitt, S.A. (1999). *Boxgrove: A Middle Pleistocene hominid site at Eartham Quarry, Boxgrove, West Sussex. Archaeological Report 17*. English Heritage.

Roberts, M.B., Stringer, C.B. and Parfitt, S.A. (1994). *A hominid tibia from Middle Pleistocene sediments at Boxgrove, UK.* Nature, 369(6478), pp. 311-313.

RSK Environmental Ltd. (2012). *Rampion Offshore Wind Farm Environmental Statement*. Document 6.1. [online] Available at: https://www.rampionoffshore.com/environmental-statement/ [Accessed 12 June 2023]..

SeaZone Solutions Limited (2011). *England's Historic Seascapes: Demonstrating the Method*. [online] Available at: https://doi.org/10.5284/1000144 [Accessed: 12 June 2023].

The Crown Estate (2017). *Good Practice Guidance Extraction by Dredging of Aggregates from England's Seabed*. [online]. Available at: https://www.bmapa.org/documents/BMAPA_TCE_Good_Practice_Guidance_04.2017.pdf [Accessed: 12 June 2023].

The Crown Estate. (2014). *Protocol for Archaeological Discoveries: Offshore Renewables Project*. [online]. Available at: https://www.wessexarch.co.uk/sites/default/files/field_file/2_Protocol%20For%20Archaeological%20Discoveries.pdf [Accessed: 12 June 2023].

The Crown Estate. (2021). *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects*. [online]. Available at: https://www.thecrownestate.co.uk/media/3917/guide-to-archaeological-requirements-for-offshore-wind.pdf. [Accessed: 12 June 2023].

The Protection of Military Remains Act 1986 (c.1) Available at: https://www.legislation.gov.uk/ukpga/1986/35/section/ [Accessed: 12 June 2023].

The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made [Accessed: 12 June 2023].

The Treasure Act 1996 (c.8) Available at: https://www.legislation.gov.uk/ukpga/1996/24/crossheading/coroners-jurisdiction [Accessed: 12 June 2023].

Rampion 2
WIND FARM