The Great Grid Upgrade

Sea Link

Sea Link

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Contents

Table of Tables

6. Marine Archaeology

6.1 Introduction

6.1.1 This chapter of the Environmental Statement (ES) presents information about the environmental assessment of the likely significant marine archaeological effects that could result from the Proposed Project (as described in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**).

6.1.2 This chapter describes the methodology used, the datasets that have informed the environmental assessment, baseline conditions, mitigation measures and marine archaeological residual significant effects that could result from the Proposed Project.

6.1.3 The Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Application Document 2.2.1 Overall Location.**

6.1.4 This chapter should be read in conjunction with:

- **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**;
- **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**;
- **Application Document 6.2.1.6 Part 1 Introduction Chapter 6 Scoping Opinion and EIA Consultation**;
- **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment**;
- **Application Document 7.5.2 Offshore Construction Environmental Management Plan**;
- **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**; and
- **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**.

6.1.5 This chapter is supported by the following figures:

- **Application Document 6.4.4.6 ES Figures Marine Archaeology.**

6.1.6 This chapter is supported by the following appendices:

- **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**; and
- **Application Document 7.5.5 Chapter 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**.

6.2 Regulatory and Planning Context

6.2.1 This section sets out the legislation and planning policy that is relevant to marine archaeology. A full review of compliance with relevant national and local planning policy

is provided within the Planning Statement submitted as part of the application for Development Consent.

6.2.2 Policy generally seeks to minimise effects from development and to avoid significant adverse effects to marine archaeology receptors. This applies particularly to palaeogeographic deposits and prehistoric artefacts; seabed features including maritime and aviation sites; intertidal and coastal heritage assets; and the historic seascape character of the region.

Legislation

Marine and Coastal Access Act 2009

6.2.3 The 2009 Act (Marine and Coastal Access Act 2009 c.23) is the primary legislation relevant to the marine development planning system. In England, marine licensing and marine planning is the responsibility of the Marine Management Organisation (MMO) as advised by Historic England with regards the cultural environment.

Protection of Wrecks Act 1973, Section One and Two

6.2.4 Section One of the Act (Protection of Wrecks Act 1973 c.33) designates a restricted area around a wreck to prevent uncontrolled interference. These protected areas are likely to contain the remains of a vessel, or its contents, which are designated due to their historical, archaeological, or artistic value. Section Two provides for designation of dangerous sites. Wreck sites must have a known location in order to be designated.

Ancient Monuments and Archaeological Areas Act 1979 (as amended)

6.2.5 This Act (Ancient Monuments and Archaeological Areas Act 1979 c.46) protects terrestrial and marine archaeological heritage of England, Wales and Scotland. Any site can be scheduled that is considered to be of national importance because of its historic, architectural, traditional, artistic or archaeological interest.

Protection of Military remains Act 1986

6.2.6 This Act (Protection of Military Remains Act 1986 c.35) provides protection for the wreckage of military aircraft and designated military vessels. Two types of protection are provided: Protected Places (wrecks designated by name and can be designated even if the location of the site is not known) and Controlled Sites (sites designated by location). It is illegal to disturb these sites. All aircraft lost while in military service are automatically protected under the Act.

Merchant Shipping Act 1995

6.2.7 Part IX: Salvage and Wreck of this Act (Merchant Shipping Act 1995 c.21) sets out the procedures for determining the ownership of underwater material identified as ‘wreck’, defined as flotsam, jetsam, derelict and lagan found in or on the shores of the UK’s territorial waters or any UK tidal water. Ownership of any wreck remains is determined in accordance with the Act as administered by the Receiver of Wreck of the Maritime Coastguard Agency.

National Heritage Act 2002

6.2.8 This Act (National Heritage Act 2002 c.14) extended the powers of the Historic Buildings and Monuments Commission (HBMC, more commonly known as Historic England) to encompass underwater archaeology within ~~the~~ English territorial waters ~~of the UK~~.

National Policy

National Policy Statements

6.2.9 National Policy Statements (NPS) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. Table 6.1, Table 6.2 and Table 6.3 below provide details of the elements of NPS for Energy (EN-1) (Department for Energy Security and Net Zero, 2023a), NPS for Renewable Energy Infrastructure (EN-3) (Department for Energy Security and Net Zero, 2023b) and NPS for Electricity Networks Infrastructure (EN-5) (Department for Energy Security and Net Zero, 2023c) that are relevant to this chapter, and how and where they are covered in the ES.

6.2.10 It is noted in EN-1 (Department for Energy Security and Net Zero, 2023a, p. 51) that the NPSs have taken account of the National Planning Policy Framework (NPPF) (Ministry for Levelling Up, Housing and Communities, 2024), discussed in Section 6.2.11, and in the event of a conflict between this document and an NPS, the NPS prevails for the purpose of the Secretary of State's decision making, given the national significance of the Proposed Project.

Table 6.1 NPS EN-1 requirements relevant to marine archaeology

NPS EN-1 section	Where this is covered in the ES
4.4.8 "*Applicants for a Development Consent Order must take account of any relevant Marine Plans and are expected to complete a Marine Plan assessment as part of their project development, using this information to support an application for development consent*."	The East Inshore and East Offshore Marine Plan (Department for Environment, Food and Rural Affairs, 2014); and South East Inshore Marine Plan (Department for Environment, Food, and Rural Affairs, 2021) have both been taken into account within this assessment and are detailed further in the desk-based assessment (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**)
4.5.9 "*Applicants are encouraged to refer to Marine Plans at an early stage, such as in pre-application, to inform project planning, for example to avoid less favourable locations as a result of other uses or environmental constraints."*	As above

NPS EN-1 section	Where this is covered in the ES
5.4.18 *"The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Secretary of State consider thoroughly the potential effects of a proposed project."*	EIA is required for the Proposed Project and the methodology used for the EIA assessment is presented in Section 6.4.
5.4.35 "*Applicants should include appropriate avoidance, mitigation, compensation and enhancement measures as an integral part of the proposed development."*	Proposed mitigation measures including avoidance are presented in Sections 6.8 and 6.10. The Outline WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**) also details the measures that are recommended for the Proposed Development.
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 along with how the mitigation hierarchy has been applied in the ES."*	An assessment of the direct and indirect impacts on the marine historic environment is presented in Section 0.
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."*	The significance of marine heritage receptors has been discussed in the Baseline Conditions Section (6.7). Data has been obtained from several sources (listed within Section 6.4) including the National Marine Heritage Record (NMHR) and Historic Environment Records (HERs) for Suffolk and Kent.
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 should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation."*	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and the results are summarised in Section 6.7.
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*	The significance of the marine historic environment is included in the Baseline Conditions Section (6.7) and the likely significance of

NPS EN-1 section	Where this is covered in the ES
understood from the application and supporting documents."	such an impact is presented in Section 0 and in Table 6.17.
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."*	An assessment of the direct and indirect impacts on the marine historic environment is presented in Section 0.
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."*	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any known seabed features is recommended, not only due to their historic importance but also as operational hazards. Other proposed mitigation measures are presented in Sections 6.8 and 6.10. The Outline WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**) provides further details of archive deposition for project related data and associated reports.
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 Outline WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**) recommends timescales required for work to be undertaken, associated reporting to be submitted, and archives to be deposited. The Outline WSI will be approved by Historic England prior to its implementation.
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 weight to the asset's conservation. The more important the asset, the greater the weight should be. This is irrespective of whether any potential harm amounts to substantial harm, total loss, or less that substantial harm to its significance."*	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any

NPS EN-1 section	Where this is covered in the ES
	known seabed features is recommended, not only due to their historic importance but also as operational hazards. Other proposed mitigation measures are presented in Sections 6.8 and 6.10. Details regarding conservation are presented in Section 1.11 of the Outline WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**)
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."*	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any known seabed features is recommended, not only due to their historic importance but also as they could be operational hazards for the Proposed Development. Other proposed mitigation measures are presented in Sections 6.8 and 6.10.

Table 6.2 NPS EN-3 requirements relevant to marine archaeology

NPS EN-3 section	Where this is covered in the ES
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."*	Direct and indirect impacts to the marine historic environment are addressed in Section 0.

NPS EN-3 section	Where this is covered in the ES
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)."*	Historic England are a key stakeholder for the Proposed Project and have been consulted throughout the development process (refer to Section 6.3). The Offshore Renewables Protocol for Archaeological Discoveries is no longer active, and a bespoke protocol has been recommended in its place.
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 are assessed in Section 0 of this chapter and also in Section 1.6 of the Outline WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**).
3.8.185-186 *"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. These studies should consider any geotechnical or geophysical surveys that have been undertaken to aid the wind farm design."*	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment within the study area (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and is summarised in Section 6.7. This document includes the archaeological assessment of both geophysical and geotechnical survey data.
3.8.187-189 *"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. Applicants are required to determine how any known heritage assets might best be avoided. The applicant will be expected to conduct all necessary examination and assessment exercises using a variety of survey techniques to plan the development so as to optimise opportunities for avoidance."*	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment within the study area (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and is summarised in Section 6.7. This document includes the archaeological assessment of both geophysical and geotechnical survey data.

NPS EN-3 section	Where this is covered in the ES
	Proposed mitigation measures including avoidance are presented in Sections 6.8 and 6.10.
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."*	Beneficial effects are also considered and are included in Table 6.17, where applicable.
3.8.270-272 *"The avoidance of important heritage assets to ensure their protection in situ, is the most effective form of protection. This can be achieved through the implementation of exclusion zones around known and potential heritage assets which preclude development activities within their boundaries. 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."*	Proposed mitigation measures including avoidance and Archaeological Exclusion Zones (AEZs) are presented in Sections 6.8 and 6.10. All sites considered to be of archaeological importance (or are modern wreck sites considered to be seabed hazards) have an AEZ preventing any works to be undertaken within the extent. Table 6.15 lists all the receptors with AEZs and their recommended buffer size.
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."*	Micro-siting is proposed mitigation measure 25, presented in Sections 6.8 and 6.10.

Table 6.3 NPS EN-5 requirements relevant to marine archaeology

NPS EN-5 section	Where this is covered in the ES
2.2.10-11 "*As well as having duties under Section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest … and …do what [they] reasonably can to mitigate any effect which the proposals would have on the natural*	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment within the study area (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and is summarised in Section 6.7 along with the significance of the resource. The recommended

NPS EN-5 section	Where this is covered in the ES
beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects." *Depending on the location of the proposed development, statutory duties under Section 85 of the Countryside and Rights of Way Act 2000, Section 11A of the National Parks and Access to the Countryside Act 1949 (as amended by Section 62 of the 1995 Environment Act), and Section 17A of the Norfolk and Suffolk Broads Act 1988 may be relevant."*	mitigation to protect the marine archaeological resource is presented in Sections 6.8 and 6.10.
2.13.15 *"The sensitivities of many coastal locations and of the marine environment as well as the potential environmental, community and other impacts in neighbouring onshore areas must be considered in the identification onshore connection points."*	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment within the study area (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and is summarised in Section 6.7 along with the significance of the resource. The recommended mitigation to protect the marine archaeological resource is presented in Sections 6.8 and 6.10.
2.14.1 *"…Applicants should consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process."*	Proposed mitigation measures, including avoidance and AEZs (which best practice favours), are presented in Sections 6.8 and 6.10.

National Planning Policy Framework

6.2.11 The National Planning Policy Framework (NPPF) as revised in December 2024 (Ministry for Levelling Up, Housing and Communities, 2024) sets out national planning policies that reflect priorities of the Government for operation of the planning system and the economic, social and environmental aspects of the development and use of land. The NPPF has a strong emphasis on sustainable development, with a presumption in favour of such development. The NPPF has the potential to be important and relevant to the Secretary of State's (SoS)' consideration of the Proposed Project.

6.2.12 As stated in paragraph 6.2.10, EN-1 (Department for Energy Security and Net Zero, 2023a, p. 51) notes that in the event of a conflict between the guidance within the NPPF and an NPS, the NPS prevails.

6.2.13 Table 6.4 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the ES.

Table 6.4 NPPF requirements relevant to marine archaeology

NPPF section	Where this is covered in the ES
Paragraph 203 *"Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account: the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation; the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring; the desirability of new development making a positive contribution to local character and distinctiveness; and opportunities to draw on the contribution made by the historic environment to the character of a place."*	The significance of the coastal, intertidal and marine heritage assets has been discussed in the Baseline Conditions Section (6.7) of this chapter. The recommended mitigation to protect the archaeological resource is presented in Sections 6.8 and 6.10.
Paragraph 207 "*In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation*".	A desk-based assessment has been undertaken to assess the known and potential archaeological features within the marine historic environment within the study area (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and is summarised in Section 6.7, including an assessment of their significance. Data has been obtained from several sources (within Section 6.4) including the United Kingdom Hydrographic Office (UKHO), NMHR and ~~(~~HERs~~)~~ for Suffolk and Kent. The recommended mitigation to protect the marine archaeological resource is presented in Sections 6.8 and 6.10.
Paragraph 212 *"When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance."*	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any known seabed features is recommended, not only due to their historic importance but also

NPPF section	Where this is covered in the ES
	as operational hazards. Other proposed mitigation measures are presented in Sections 6.8 and 6.10.
Paragraph 213 *"Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification*."	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any known seabed features is recommended, not only due to their historic importance but also as operational hazards. Other proposed mitigation measures are presented in Sections 6.8 and 6.10.
Paragraph 216 *"The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. 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."*	The significance of the marine heritage resource is included in the Baseline Conditions Section (6.7). Best practice favours preservation *in situ* of archaeological remains, and therefore the ideal mitigation is avoidance. Avoidance of any known seabed features is recommended, not only due to their historic importance but also as operational hazards. Other proposed mitigation measures are presented in Sections 6.8 and 6.10.

National Planning Practice Guidance

6.2.14 The NPPF sets out the government's planning policies for England and how these are expected to be applied. The National Planning Practice Guidance provides information relating to the NPPF and other relevant planning practice guidance (GOV.UK, 2024). Guidance relating specifically to the Historic Environment has been utilised for the purposes of this chapter (GOV.UK, 2019).

6.2.15 EN-1 (Department for Energy Security and Net Zero, 2023a, p. 51) notes that in the event of a conflict between the guidance within the National Planning Practice Guidance and an NPS, the NPS prevails.

Marine Planning Policy

6.2.16 The following marine plans are relevant to marine archaeology and have informed the assessment of preliminary effects in this chapter:

- The UK Marine Policy Statement (MPS), which was adopted in 2011, provides the policy framework for the preparation of marine plans and establishes how decisions affecting the marine area should be made (Department for Environment, Food and Rural Affairs, 2011);
- East Inshore and East Offshore Marine Plan (Department for Environment, Food and Rural Affairs, 2014); and
- South East Inshore Marine Plan (Department for Environment, Food, and Rural Affairs, 2021).

Table 6.5 Marine Planning Policies relevant to marine archaeology

Marine Plan	Where this is covered in the ES
The UK MPS ensures that marine resources are used in a sustainable way that will protect heritage assets by using the precautionary principle and relying on sound evidence.	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.
Objective 5 of the **East Inshore and East Offshore Marine Plan** aims to conserve heritage assets, nationally protected landscapes and ensure that decisions consider the seascape of the local area, by considering if developments are appropriate to the area and do not compromise the value of such assets and characteristics.	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report.**
Policy SE-HER-1 of the **South East Inshore Marine Plan** aims to conserve and enhance marine and coastal heritage assets by considering the potential for harm to their significance.	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report.**

Local Planning Policy

6.2.17 The intertidal area of the Offshore Scheme lies within the jurisdiction of East Suffolk Council and within the boundary of Thanet District Council and Dover District Council within Kent.

6.2.18 Local Plan policies relevant to marine archaeology and will inform the assessment in this chapter are detailed in Table 6.6.

Table 6.6 Local Planning Policies relevant to marine archaeology

Suffolk and Kent Coastal Local Plans - Policy	Response
Suffolk Coastal Local Plan Adopted 2020 (East Suffolk Council, 2020)	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.
Local Plan Adopted July 2020 (Thanet District Council, 2020)	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.
Dover District Local Plan to 2040 (Dover District Council, 2022)	Details relevant to this assessment are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.

Relevant Marine Guidance

6.2.19 Additional guidance documents relevant to marine archaeology matters are presented in the following documents:

- sSection 6.2.30 of **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**; and
- section 1.7.4 of **Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**.

6.3 Scoping Opinion and Consultation

Scoping

6.3.1 A Scoping Report (National Grid, 2022) for the Proposed Project was issued to the Planning Inspectorate on 24 October 2022 and a Scoping Opinion (The Planning Inspectorate, 2022) was received from the ~~Secretary of State (~~SoS~~)~~ on 1 December 2022 (**Application Document 6.2.1.6 Part 1 Introduction Chapter 6 Scoping Opinion and EIA Consultation).** Table 6.7 sets out the comments raised in the Scoping Opinion and how these have been addressed in this ES. The Scoping Opinion takes account of responses from prescribed consultees as appropriate. **Application Document 6.2.1.6 Part 1 Introduction Chapter 6 Scoping Opinion and EIA Consultation** provides responses to the comments made by the prescribed consultees at scoping stage and how each comment has been considered.

Table 6.7 Comments raised in the Scoping Opinion

ID	Inspectorate's comments	Response
5.6.1	No matters have been proposed to be scoped out of the assessment.	This has been noted and no matters have been scoped out within this chapter.

ID	Inspectorate's comments	Response
5.6.2	The Scoping Report states that the study area is the offshore scoping boundary as shown on Figure 4.7.1 Marine Archaeological study area. The Inspectorate notes that the extent of the study area will be subject to review and may be extended in future. The ES must provide a clear rationale for the definition of the study area which explains how the study area relates to the ZOI of the Proposed Development. The Applicant's attention is drawn to the comments from Historic England in Appendix 2 of this Opinion on the need to ensure that all impacted seabed areas are considered in the assessment, including areas which could be affected by vessel anchoring during construction.	An assessment of the known and potential archaeological features is presented in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**. Impacts to these known and potential marine archaeological features are addressed in **Application Document 6.2.4.6 Part 4 Marine Chapter 6 Marine Archaeology** of the ES. The entirety of the Order Limits will be assessed, and the results of other disciplines will be utilised where relevant, for instance Physical Environment.
5.6.3	Historic England and Kent County Council have both identified additional sources of baseline data relevant to the assessment in the ES (see Appendix 2 of this Opinion). In addition, Historic England has also advised that the collection of further cores should be considered. The Applicant is strongly encouraged to seek to agree the baseline data with relevant stakeholders and to provide evidence of that agreement in the ES.	Land Use Consultant's consolidated Historic Seascape Characterisation (HSC): Consolidating the National HSC Database (2017) has been included in the ES and associated documents, as per Historic England's request. Coastal archaeological findspots and sites from CITiZAN's coastal map (2023) have also been integrated into the ES and associated documents as per Kent County Council's request. An additional geotechnical survey to duplicate destroyed vibrocores was undertaken in October 2024, although the results will not be integrated into this chapter but will be submitted as a standalone document when completed.
5.6.4	The Scoping Report states that AEZ will not be proposed for features of lower archaeological value but does not explain how the importance of features would be evaluated; it appears from the text that value and importance are being treated as equivalent, but this is not explicitly stated. The ES must clearly explain the rationale	The rationale used to determine the importance/value (considered to be equivalent phrases) has been presented in Section 6.4 of this chapter and in the methodology section of **Application Document 6.3.4.6.A Appendix 4.6.A**

ID	Inspectorate's comments	Response
	used to determine the importance of archaeological features.	**Marine Archaeological Technical Report**.
5.6.5	It is noted that the mitigation for the Proposed Development includes a proposed WSI (Written Scheme of Investigation). As this measure may be relied on to avoid significant environmental effects, the Applicant is advised to submit an outline WSI with its application, in order to give confidence to the ExA and SoS regarding the conclusions of significance.	An outline WSI is included as an appendix to this chapter (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**).

Statutory Consultation

6.3.2 Statutory consultation for the Proposed Project took place between 24 October and 18 December 2023. A further targeted consultation exercise on the main changes to the Proposed Project introduced after the 2023 statutory consultation, was undertaken between 8 July and 11 August 2024. A summary of relevant feedback received during statutory consultation relating to marine archaeology is provided below. Further details on how consultation responses have informed the assessment can be found in Application Document 5.1 Consultation Report and **Application Document 5.1.9 Appendix H Summary 2023 Response.**

6.3.3 Statutory consultation responses from Historic England included the following:

- Comment: Table 4.7.19 states that there will be no significant effect on heritage receptors on the seabed, the sub-seabed heritage and in the intertidal zone following the implementation of the relevant mitigation measures. Given the full assessment has not been completed and surveys are on-going we do not agree this is the case and this will need to be revisited in the ES.

  Response: The results of any additional geophysical, geotechnical and walkover surveys will be incorporated into either the ES chapter and associated appendices, or as an addendum post-submission. Results of the additional marine geophysical survey and walkover surveys undertaken at the landfalls have been incorporated into this chapter and the updated marine archaeology technical report (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**). However, due to a delay in the additional geotechnical survey and intertidal geophysical survey, the results from these assessments will be submitted as a standalone addendum post-submission. The impact assessment will utilise the available datasets to ensure residual significant effect is considered appropriately.

- Comment: 4.7.8.2 & 4.7.8.3 We are pleased to see that avoidance will be the primary mitigation approach for marine heritage and that mitigation options for heritage have been included in the Outline Code of Construction Practice (CoCP). The mitigation approaches outlined in the Outline CoCP seem sensible and appropriate and include the option to investigate potential sites in more detail, protect known sites using an exclusion zone and apply a reporting protocol for any unexpected finds.

Response: The mitigation approaches presented have been taken forward and are considered within this chapter and associated appendices.

- Comment: H03, H05, and H06 should be considered for inclusion within the marine chapter, as they may also be relevant.

  Response: Control and Management Measures H03, H05 and H06 have been included as terrestrial measures for dealing with heritage assets located within the intertidal/coastal area of the Order Limits.

- Comment: The WSI should be referred to in the title as either Outline or Draft, to avoid confusing with the final Marine WSI to be agreed post-consent with the licensing authority and their advisors.

  Response: The title of the WSI has been updated to Outline WSI.

- Comment: Table 4.7.B.1 We note research framework themes that could be addressed are set out here. This is primarily derived from 'People and the Sea'. It should also include themes from the updated North Sea Prehistory Research and Management framework.

  Response: Reference to the North Sea Prehistory Research and Management Framework has been incorporated into the updated Outline WSI.

- Comment: 4.7.B.4.1 timescales are required for the delivery of method statements to archaeological curators for review. This is to ensure clarity between all parties, enough time to review documents, and for any comments to be implemented prior to commencement.

  Response: As agreed with Historic England, a minimum of 20 working days is required for Historic England to review and provide comment on documents and this has been integrated into relevant documents.

- Comment: 4.7.B.7.44 - 57 should consider all relevant dating techniques for stage 4 analysis, not just radiocarbon dating.

  Response: Geoarchaeological dating has been amended in Outline WSI to cover additional scientific dating techniques including Luminescence dating and chronological modelling to use Bayesian approaches.

Further Engagement

6.3.4 Two thematic meetings were held with Historic England as follows:

- 09 March 2024 – meeting to discuss the Statement of Common Ground and in particular the template, which should be split between marine and terrestrial. It was noted that Historic England's preference is for the document to be iterative and updated regularly.
- 27 March 2024 – an update on the additional marine surveys was provided; confirmation of the statutory consultation responses that were received and will be considered in the preparation of the ES documents; brief discussion as to the proposed contents of the Statement of Common Ground; and an update regarding the Goodwin Sands Environmental Information Regulations request.

6.3.5 Goodwin Sands Conservation Trust raised concerns about the Proposed Project in 2023, which were submitted as a formal Environmental Information Regulations request. Wessex Archaeology provided responses, where relevant.

Summary of Scope of Assessment

6.3.6 No impacts have been scoped out of the assessment for marine archaeology.

6.3.7 Potential impacts that could affect marine archaeological assets are as follows:

- Physical disturbance activities causing direct damage and/or loss to the sub-seabed causing damage/loss to heritage receptors on and below the seabed. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).
- Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.
- Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment accretion on the seabed causing beneficial indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.
- Project works that temporarily or permanently change the setting of a heritage receptor. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).
- Project works that temporarily or permanently change the character of the historic seascape.

6.4 Approach and Methodology

6.4.1 **Application Document 6.2.1.5 Part 1 Chapter 5 EIA Approach and Methodology** sets out the overarching approach which has been used in developing the environmental assessment. This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of effects and sets out the significance criteria that have been used for the marine archaeological assessment.

Guidance Specific to the Marine Archaeology Assessment

6.4.2 The marine archaeology assessment has been carried out in accordance with the following good practice guidance documents:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2014);
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2020);

- Statements of Heritage Significance: Analysing Significance in Heritage Assets: Historic England Advice Note 12 (Historic England, 2019);
- Commercial Renewable Energy Development and the Historic Environment: Historic England Advice Note 15 (Historic England, 2021); and
- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021).

6.4.3 Guidance relating specifically to subsea cable projects does not currently exist, however since cable routes are an integral part of offshore wind developments, the guidance above relating to renewable energy and offshore wind farm projects will be utilised for this chapter.

Baseline Data Gathering and Forecasting Methods

Sources

6.4.4 A number of sources of primary and synthesised information were consulted for the marine archaeological assessment (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**):

- geophysical survey datasets:
  - acquired by MMT in 2021 comprising sub-bottom profiler (SBP), sidescan sonar (SSS), magnetometer (Mag.) and Multibeam Echo Sounder (MBES);
  - acquired by Next Geo (Next) in 2024 comprising SBP, SSS, Mag. and MBES;
  - gradiometer survey data acquired by SEP Hydrographic (SEP) in 2024 as Unmanned Aerial Vehicle (UAV) Mag. data;
- associated reports for the above geophysical data (MMT, 2021; SEP Hydrographic, 2024; Next Geo, 2024);
- geotechnical data including 69 provisional vibrocore logs provided by MMT in 2021;
- the UKHO data for charted wrecks and obstructions (received 4 April 2022 and refreshed 23 July 2024);
- the National Marine Heritage Record (NMHR) maintained by Historic England, comprising data for terrestrial and marine archaeological sites, findspots and archaeological events (received 23 March 2022);
- Historic Environment Records results for Suffolk (provided by AECOM's Historic Environment and Cultural Heritage team)~~, Essex (received 17 March 2022)~~ and Kent (received 23 March 2022) comprising databases of their recorded archaeological sites, findspots, and archaeological events;
- the National Heritage List for England maintained by Historic England, comprising data of designated heritage assets including sites protected under the Protection of Military Remains Act 1986 (Protection of Military Remains Act 1986 c.35) and the Protection of Wrecks Act 1973 (Protection of Wrecks Act 1973 c.33);
- results of the walkover surveys for both landfalls;
- coastal archaeological findspots and sites from CITiZAN's coastal map (CITiZAN, 2023);

- datasets comprising the Historic Seascape Characterisation (HSC): Consolidating the National HSC Database (Land Use Consultants, 2017).
- relevant background mapping from the area including British Geological Society (BGS), Admiralty Charts from the UKHO, aerial photographs from the Channel Coastal Observatory, historic maps and Ordnance Survey;
- applicant supplied geophysical survey report (MMT, 2021); and
- relevant documentary sources and grey literature held by Wessex Archaeology and those available through the Archaeological Data Service and other websites.

Desk-based assessment methodology

6.4.5 The marine themes relevant to the marine archaeological baseline assessed in this chapter relate to known and potential palaeogeographic sites and prehistoric artefacts, seabed features including maritime and aviation sites, intertidal and coastal features relating to historic marine activity, and the historic seascape character in and around the study area.

6.4.6 Where possible, data with positional information were incorporated into a project Geographic Information System (GIS) using ArcPro v3.3.1. The data were subsequently compiled into gazetteers of the known archaeological features within the study area.

6.4.7 The palaeogeography baseline summary is based on a review of geological mapping of superficial sediments and solid geology from published BGS sources together with previous assessments undertaken in the region containing the study area. This has been enhanced by the geoarchaeological review of geotechnical data undertaken for 51 vibrocores obtained in 2022 and the associated SBP assessment, used to produce a stratigraphic framework for understanding the archaeological potential of the Quaternary geology within the area investigated.

6.4.8 The assessment of maritime and aviation archaeology was assessed by means of accessing any records of sites, findspots, wrecks, casualties and other seabed features from the UKHO, NMHR and local HER datasets and understanding this resource further through the assessment of available marine geophysical survey data along with discovering new sites and features (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**, Annex 6.7 and 6.8). As well as summarising the known archaeological resource, the baseline assessment also underlines the potential for encountering unknown shipwreck and aircraft crash sites within the study area.

6.4.9 The NMHR and HER data have been discriminated between records for which there is known material on the seabed and Recorded Losses that refer to vessels and aircraft that are known to have been lost, but do not, except by chance, have material on the seabed at their recorded loss location (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**, Annex 6.9 and 6.10). The baseline assessment of maritime and aviation archaeology was further supplemented by a review of relevant primary and secondary source material to provide an indication on the nature of maritime and aviation activity across the region, and subsequent potential for discovering such material.

6.4.10 The assessment of intertidal and coastal heritage assets was assessed from NMHR, Suffolk HER, Kent HER and CITiZAN datasets and was supplemented by archaeological walkover surveys of each landfall (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**, Annex 6.11).

6.4.11 As noted in the MPS (Department for Environment, Food and Rural Affairs, 2011, p. 21), there is no legal definition of 'seascape', however, in accordance with the European Landscape Convention, 'landscape' can be defined as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors"* (Council of Europe, 2000, p. 2). The term 'seascape' has been defined as a subset of 'landscape', and has *"an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land and sea, by natural and/or human factors"* (Natural England, 2010). The character of the historic seascape was assessed using the compiled results of LUC's Historic Seascape Characterisation: Consolidating the National HSC Database (Land Use Consultants, 2017).

Geotechnical and geophysical methodologies

6.4.12 A summary of the methodology relating specifically to the marine geotechnical and geophysical survey assessments is presented below and can be found in more detail in the methodology section of **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.

Geotechnical survey

6.4.13 Geotechnical logs and core photographs for 69 vibrocores were provided by MMT in September 2021 for review and geoarchaeological assessment by Wessex Archaeology (51 of which are located within the marine Orders Limit, as defined for the Statutory Consultation stage). The assessment comprised a Stage 1 investigation, within the five-stage approach developed by Wessex Archaeology (Table 6.5 in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report** ~~Table 6.5~~). The Stage 1 assessment comprised a desk-based review of the geotechnical and geological data to establish the potential for the presence/absence/distribution of archaeological relevant deposits and to broadly characterise them. This evaluation is used as the basis for deciding whether and what Stage 2 archaeological recording is required. Unfortunately, the vibrocores recommended for Stage 2 assessment were subsequently used for engineering lab testing and, as a result, were not usable for the geoarchaeological assessment.

6.4.14 An additional geoarchaeological survey was agreed with Historic England and was undertaken in October 2024 by Next ~~Geo~~. Vibrocores that were originally assessed as being of high or medium priority following the Stage 1 review and were recommended for Stage 2 assessment were retargeted in the survey to allow for the Stage 2 assessment to be undertaken (following a repeated Stage 1 review). The results will be compiled into a standalone document that will be submitted for review as an addendum to the main DCO deliverables post-submission.

6.4.15 Following changes to the Offshore Scheme Order Limits, two of these vibrocores (748-NAT-NB-VC-021 and 748-NAT-NB-VC-022) were found to be located outside the current extent. Subsequently, it was confirmed with National Grid (21 October 2024) that the position of these vibrocores could be moved inside the Order Limits giving the opportunity to characterise the sediments in the channel feature **75037** and its northern extent. In total, nine vibrocores were collected as one needed to be redrilled to reach the target maximum depth of 6.5 mbsf.

6.4.16 The additional geotechnical survey undertaken in October 2024 by Next ~~Geo~~ also obtained 11 vibrocores from four additional areas of the Offshore Scheme Boundary, as defined for the Statutory Consultation stage. Only nine vibrocores were envisaged for

this survey, but two additional vibrocores were obtained as the first vibrocores failed to reach the maximum depth of 6.5 mbsf and needed to be redrilled. The Stage 1 assessment of these vibrocores and recommendations for additional analysis will be integrated into a standalone report submitted for review post-submission.

6.4.17 Therefore, the geoarchaeological assessment within this chapter will utilise the Stage 1 review of the 51 vibrocores supplemented by a series of geoarchaeological deposit models constructed for the study area together with relevant sources that provide a good regional understanding of the palaeoenvironment. This information is considered suitable for the environmental impact assessment necessary for cable burial, as recommended in Gribble & Leather (2011) and Wessex Archaeology (2007).

Geophysical survey

6.4.18 The marine geophysical survey data were acquired during three separate surveys. The initial data were acquired between 18 August 2021 and 6 September 2021 by MMT. The nearshore geophysical data were acquired onboard ~~the~~ *Mersey Discovery* and the offshore geophysical data were acquired onboard MV *Northern Franklin*. This survey involved the acquisition of a full suite of geophysical datasets, i.e. SSS, MBES, Mag. and SBP ~~and Mag~~.

6.4.19 Following route development and changes to the routing requiring additional geophysical survey coverage, further survey data were acquired by Next between 10 November 2023 and 6 March 2024 over five additional survey areas. This survey also involved the acquisition of a full suite of geophysical data onboard the vessel *SHORE Presence*.

6.4.20 A final dataset, nearshore Mag. obtained using a UAV within Pegwell Bay, was acquired by SEP Hydrographic (on behalf of Ocean ~~i~~Infinity) during June 2023.

6.4.21 The geophysical study area is defined as the extents of the SSS dataset (or UAV Mag. d~~D~~ata at the Pegwell Bay landfall) within the wider Offshore Scheme. ~~The Offshore Scheme has been widened at the Kent landfall~~ Due to the timing and ongoing evolution of the Offshore Scheme, including route changes to avoid other sensitive features and designated sites, the total coverage of the nearshore geophysical survey does not fully align with the extent of the Offshore Scheme Order Limits in Pegwell Bay. ~~-~~This is due to the Order Limit boundary in Pegwell Bay being extended prior to submission to account for possible anchoring of vessels in the nearshore area during cable installation and for vehicles to access the trenchless crossing exit pits from the former hoverport.

6.4.22 To address these discrepancies between the survey data coverage and the extents of the Offshore Scheme Order Limits, the Applicant has committed to completing further pre-construction geophysical surveys within Pegwell Bay as part of a UXO survey of the Offshore Scheme. ~~-~~Results from this additional survey will be used to inform the identification of any potential features of archaeological importance located beyond the extent of the previous survey to determine, based on planned activities in the extended Order Limit boundary, the potential for any effects on these features. A standalone report will be compiled of the results of the archaeological assessment of the data. This commitment is included in **Application Document 7.5.3.2 (B) CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**, submitted at Deadline 1, specifically MA09.

6.4.21 ~~and additional geophysical survey data have not been obtained in this wider area at present (visible on **Application Document 6.4.4.6.1 Marine archaeological study area**). The Applicant has committed to undertake a further suite of geophysical surveys~~

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~~of the wider area as part of a UXO survey of the Offshore Scheme (undertaken as part of additional mitigation measure MA09). Therefore, the datasets acquired in 2021 and 2024 do not at present cover the entire extent of the Offshore Scheme Boundary.~~

~~6.4.22~~6.4.23 Details regarding the processing of geophysical survey data for archaeological assessment can be found in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.

~~6.4.23~~6.4.24 The data were assessed and grouped, allowing one ID number to be assigned to a single object for which there may be, for example, a UKHO record, a MBES anomaly and multiple SSS anomalies. Once all the geophysical anomalies and desk-based information have been grouped, a discrimination flag is added to the record to discriminate against those which are not thought to be of an archaeological concern. For anomalies located on the seabed, these flags are ascribed as follows (Table 6.8).

Table 6.8 Criteria discriminating relevance of identified features

Overview	Discrimination	Criteria	Data type
Archaeological	P1	Feature of probable archaeological interest, either because of its palaeogeography or likelihood for producing palaeoenvironmental material	SBP, MBES
Archaeological	P2	Feature of possible archaeological interest	SBP, MBES
Archaeological	A1	Anthropogenic origin of archaeological interest	MBES, SSS, Mag.
Archaeological	A2_h	Anomaly of likely anthropogenic origin but of unknown date; may be of archaeological interest or a modern feature	MBES, SSS, Mag.
Archaeological	A2_I	Anomaly of possible anthropogenic origin but interpretation is uncertain; may be anthropogenic or a natural feature	MBES, SSS, Mag.
Archaeological	A3	Historic record of possible archaeological interest with no corresponding geophysical anomaly	MBES, SSS, Mag.

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~~6.4.24~~6.4.25 The grouping and discrimination of information at this stage is based on all available information and is not definitive. It allows for all features of potential archaeological interest to be highlighted, while retaining all the information produced during the course of the geophysical interpretation and desk-based assessment for further evaluation should more information become available.

Assessment of setting

6.4.26 The MPS (Department for Environment, Food and Rural Affairs, 2011, p. 22) notes that when considering the significance of heritage assets and their setting:

6.4.25 ~~,~~ *"the particular nature of the interest in the assets and the value they hold for this and future generations"* must be considered and this *"understanding should be applied to avoid or minimise conflict between conservation of that significance and any proposals for development."*

6.4.27 EN-1 states that as part of the ES:

6.4.26 ~~,~~ *"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"* (Department for Energy Security and Net Zero, 2023a, p. 125). In addition, 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."* (Department for Energy Security and Net Zero, 2023a, p. 129)~~.~~

6.4.28 Although the NPPF is designed to be applicable to local planning policy and the historic environment onshore, it provides a definition of setting that also applies to the historic environment. The NPPF (Ministry for Levelling Up, Housing and Communities, 2024, p. 75) defines setting as:

~~-~~*"the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral."*

6.4.276.4.29 Furthermore, the significance of an asset can be harmed or lost through development occurring within its setting. As heritage assets are irreplaceable, any harm or loss to the setting of an asset needs to be justified.

6.4.286.4.30 Currently, there is no specific guidance regarding the assessment of setting for offshore archaeological and cultural heritage assets. However, Historic England's The Setting of Heritage Assets - Historic Environment Good Practice Advice in Planning 3 (Historic England, 2017a) provides general guidance, largely applicable to terrestrial sites, and notes that the importance of setting *"lies in what it contributes to the significance of the heritage asset"* (*ibid*., p. 4). With regards to significance for heritage policy, NPPF notes that the interest of a heritage asset *"may be archaeological, architectural, artistic or historic"* (Ministry for Levelling Up, Housing and Communities, 2024, p. 75).

6.4.296.4.31 Historic England states that setting depends on a "wide range of physical elements within, as well as perceptual and associational attributes pertaining to, the heritage asset's surroundings" (Historic England, 2017a, p. 4). The assessment of setting in this document follows the guidance discussed in the paragraphs above, is based on the baseline assessment of the palaeogeography, maritime and aviation assets, and is described using the following two factors:

- Pphysical surroundings and views – which includes the physical presence of the asset on the seabed, its surroundings, and relationship with other assets and navigational hazards in the immediate area. Views to and from the asset, and how

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the asset is experienced in its immediate physical surroundings are also considered.; and

- Nn-on-visual factors – including the way the asset is appreciated in a broader historical, artistic and intellectual capacity, and the asset's associations.

6.4.306.4.32 All marine heritage assets have an element of setting that contributes to their importance. Although the position of an asset on the seabed has not necessarily been deliberately chosen, an event occurred that caused each asset to be present on the seabed, for instance through military action (e.g. hitting a mine perhaps within a known minefield or during a battle), due to an interaction with a navigational hazard (e.g. being stranded on a sandbank) or environmental conditions (e.g. a storm), or following a collision perhaps on an established trade route.

6.4.316.4.33 It may not be possible to ascertain the setting of currently unidentified isolated marine heritage assets, where limited information is known, for example wrecks that have not been identified or characterised to determine their period of build, use or loss. Similarly, setting cannot be assessed for geophysical anomalies of archaeological potential or potential sites that have not yet been discovered. However, it could be surmised that the setting of unidentified assets could be suggested or enhanced by understanding the environment in which it is located or proximity to other known seabed assets. For instance, it is likely that an unidentified wreck located on Goodwin Sands may have sunk due to the navigational hazard of the sandbank, contributing to its setting, the value of which would increase as further information is found about the site.

6.4.326.4.34 Offshore heritage assets are generally only experienced by divers, remotely operated vehicle (ROV) or by geophysical survey, and the views to the asset are often very limited due to reduced visibility in the water column. Non-visual factors may include associations with particular battles, wars, minefields and other historic events, as well as how the wreck can be appreciated in its wider context, for example through well-known trade routes, collisions or local industry. Association between the asset and the local social history is another important aspect of an asset's non-visual importance, including rescue attempts or losses occurring within modern memory.

6.4.336.4.35 The effects that the Proposed Project may have on setting can be assessed by reviewing the location and siting, form and appearance of the Proposed Project, additional effects and permanence (Historic England, 2017a). The Proposed Project should be assessed as to whether it will enhance or harm the significance of the asset: through the principle of development alone; through the scale, prominence, proximity or placement; or through its detailed design (Historic England, 2017a).

6.4.346.4.36 This assessment indicates whether the setting (i.e. any relationship between deposits/material with their wider environment) of offshore archaeological and cultural heritage assets could be altered, which could lead to an overall diminished value.

6.4.356.4.37 Should the development be assessed as harming the setting of an asset, potential mitigation measures are outlined in the guidance (Historic England, 2017a) .

Assessment Criteria

Sensitivity of marine archaeological receptors

6.4.366.4.38 The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. With regards marine archaeology, receptor sensitivity is typically assessed using the following factors:

- value - a measure of the receptor's importance, rarity and worth;
- adaptability or vulnerability - the degree to which a receptor can avoid or adapt to an effect;
- tolerance - the ability of a receptor to accommodate temporary or permanent change without significant adverse impact; and
- recoverability - the temporal scale over and extent to which a receptor will recover following an effect.

6.4.39 The MPS notes that -*"heritage assets are a finite and often irreplaceable resource and can be vulnerable to a wide range of human activities and natural processes"* (Department for Environment, Food and Rural Affairs, 2011, p. 21).

6.4.40 -In considering the significance of heritage assets and their setting, the MPS goes on to say:

"should take into account the particular nature of the interest in the assets and the value they hold for this and future generations. This understanding should be applied to avoid or minimise conflict between conservation of that significance and any proposals for development" (Department for Environment, Food and Rural Affairs, 2011, p. 22).

6.4.376.4.41 Consequently, for the purpose of this assessment, the sensitivity of each receptor is predominantly quantified only by their archaeological value. Where receptors are considered to be capable of adapting to, tolerating or recovering from indirect impacts, these factors were incorporated into the assessment of their sensitivity.

6.4.386.4.42 The archaeological value of known offshore archaeology and cultural heritage receptors are assessed on a site-by-site basis using professional judgement and experience, with reference to relevant criteria.

6.4.396.4.43 There are several criteria for assessing an offshore archaeology and cultural heritage receptor's archaeological value or significance, which are considered in detail in the Marine Archaeology Technical Report (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and summarised as following. English Heritage's Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage, 2008, p. 7) uses the following criteria to assess significance: evidential value; historical value; aesthetic value; and communal value. Historic England's draft update of the Conservation Principles document (Historic England, 2017b, p. 1) refers to these values, however it also stresses the terms used in the NPPF (Ministry for Levelling Up, Housing and Communities, 2024, p. 75): archaeological, architectural, artistic or historic. This document also notes that significance is derived not only from a heritage asset's physical presence but also its setting (*ibid*.).

6.4.406.4.44 While designation indicates that a receptor has been identified as being of high archaeological value and is afforded statutory protection, non-designated archaeological assets are not necessarily of lesser archaeological value or significance. Consequently, non-designated receptors that can be demonstrated to be of equivalent archaeological value to designated sites are considered to be of equivalent significance as confirmed by the Overarching National Policy Statement for Energy (Department for Energy Security and Net Zero, 2023a, p. 124).

6.4.416.4.45 The nature of the marine archaeological resource is such that there is a high level of uncertainty concerning the distribution of potential, unknown archaeological material on the seabed. Often data regarding the nature and extent of sites are limited, out of

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date or non-existent and, as such, the precautionary principle that unknown potential cultural heritage receptors are considered to be of high sensitivity and high archaeological value until further information becomes available to refine this, has been and will be applied to all aspects of the archaeological impact assessment.

6.4.426.4.46 The archaeological value of known archaeological and cultural heritage assets was assessed on a six-point scale using professional judgement informed by criteria provided in Table 6.9 below.

Table 6.9 Criteria to assess the archaeological value of marine heritage assets

Value	Definition
Very high	• Best known or only example and/or significant potential to contribute to knowledge and understanding and/or public engagement. Assets with a demonstrable international dimension to their importance are likely to fall within this category. • Receptors with a demonstrable international dimension to their importance are likely to fall within this category. • Wrecked ships and aircraft that are protected under the Protection of Wrecks Act 1973 (Protection of Wrecks Act 1973 c.33), Ancient Monuments and Archaeological Areas Act 1979 (as amended) (Ancient Monuments and Archaeological Areas Act 1979 c.46) or Protection of Military Remains Act 1986 (Protection of Military Remains Act 1986 c.35) with an international dimension to their importance, plus as-yet undesignated sites that are demonstrably of equivalent archaeological value. • Known submerged prehistoric sites and landscapes with the confirmed presence of largely *in situ* artefactual material.
High	• Above average and/or high potential to contribute to knowledge and understanding and/or public engagement. • Receptors with a demonstrable national level dimension to their importance are likely to fall within this category. • All other wrecked ships and aircraft with statutory protection under the Protection of Wrecks Act 1973 (Protection of Wrecks Act 1973 c.33), Ancient Monuments and Archaeological Areas Act 1979 (as amended) (Ancient Monuments and Archaeological Areas Act 1979 c.46) or Protection of Military Remains Act 1986 (Protection of Military Remains Act 1986 c.35), plus as-yet undesignated sites that are demonstrably of equivalent archaeological value.

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Value	Definition
	• Palaeogeographic features with demonstrable potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape. • Where there is not presently enough information available about the site to assess its importance, the precautionary principle, that potential cultural heritage assets or known receptors for which insufficient information exists to gauge their value (for example a buried magnetic anomaly) are considered to be high value until further information becomes available to refine this, must be used.
Medium	• Average example and/or moderate potential to contribute to knowledge and understanding and/or public engagement. • Receptors with a demonstrable district level dimension to their importance are likely to fall within this category. • Includes wrecks of ships and aircraft that do not have statutory protection or equivalent significance, but have moderate potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation. • Prehistoric deposits with moderate potential to contribute to an understanding of the palaeoenvironment.
Low	• Below average example and/or low potential to contribute to knowledge and understanding and/or public engagement. • Receptors with a demonstrable local dimension to their importance are likely to fall within this category. • Includes wrecks of ships and aircraft that do not have statutory protection or equivalent significance, but have low potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation. • Prehistoric deposits with low potential to contribute to an understanding of the palaeoenvironment.
Negligible	Poor example and/or little or no potential to contribute to knowledge and understanding and/or public engagement. Assets with little or no surviving archaeological interest.
Unknown	Incorporated into the High criteria due to the precautionary approach that potential cultural heritage assets or known receptors for which insufficient information exists to gauge their archaeological value (for example a buried magnetic anomaly) are considered to be of high archaeological value until further information becomes available to refine this.

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Magnitude of marine archaeological effects

6.4.436.4.47 The magnitude of an effect upon known and potential marine archaeological receptors ranges from between large to negligible, and is defined by the following factors:

- scale of change (severity) - the degree of change to or from the baseline environment relative to existing environmental conditions caused by the impact being described;
- spatial extent - the extent of an impact is the full area over which an impact occurs; and
- duration and frequency - a measure of how long the impact is expected to last and how often the impact will occur (it may be continuous or periodic).

6.4.446.4.48 Within this assessment, the magnitude of impact if defined by the criteria presented in Table 6.10.

Table 6.10 Criteria to assess the magnitude of impact

Magnitude	Definition
Large	Adverse: Loss of resource and/or quality and integrity of resource or severe damage to key characteristics, features or elements, such that the post-development character of the archaeological asset will be fundamentally or considerably changed. Beneficial: Total or considerable protection and understanding gained from key elements or features above and beyond the pre-development conditions, such that the post-development character and quality of the archaeological heritage asset will be fundamentally better understood.
Medium	Adverse: Loss of resource, but not adversely affecting the integrity, or partial loss of/damage to key characteristics, features or elements, such that the post-development character of the archaeological heritage asset will be partially changed. Beneficial: Protection and understanding gained from key elements or features above the pre-development conditions, such that the post-development character and quality of the archaeological heritage asset will be considerably better understood.
Small	Adverse: Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. Beneficial: Minor benefit to, or in addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk or negative impact occurring.
Negligible	Adverse: Very minor loss of detrimental alteration to one or more characteristics, features or elements. Beneficial: Very minor benefit to or positive addition of one or more characteristics, features or elements.

Significance of marine archaeological effects

6.4.456.4.49 Evaluations of the magnitude of impacts will be combined with evaluations of the sensitivity of receptors, undertaken using professional judgement, to provide a resulting significance of effect that will be considered as between negligible and major.

6.4.466.4.50 As set out in **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**, the general approach taken to determining the residual significance of effect is to state whether effects are likely or unlikely to be significant.

Assumptions and Limitations

Archives data

6.4.476.4.51 Data used to compile this report consists of secondary information derived from a variety of sources, only some of which have been directly examined for the purposes of this assessment. The assumption is made that the data, as well as that derived from other secondary sources, are reasonably accurate.

6.4.486.4.52 The records held by the UKHO, NMHR, HERs of Suffolk and Kent, and the other sources used in this assessment are not a record of all surviving cultural heritage assets, rather a record of the discovery of a wide range of archaeological and historical components of the marine historic environment. The information held within these datasets is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown. In particular, this relates to buried archaeological features.

6.4.496.4.53 The data supplied by the UKHO, NMHR and HERs were obtained between March and April 2022 and will not be refreshed for the duration of the Proposed Project. As a result, any new records that are entered into these archives may not be included within this, or future, deliverables.

6.4.506.4.54 Data supplied by the UKHO, NMHR and HERs have been converted, from the co-ordinate system they were supplied in, to the Project coordinate system, ETRS89 UTM31N. However, some records within the NMHR shapefiles (supplied in WGS84 lat/long) were not placing in the correct location on the Wessex Archaeology project GIS according to the BNG positions in the accompanying records. As a result, this dataset had to be recreated using the BNG positions and subsequently converted to ETRS89 UTM31N.

Geoarchaeological data

6.4.516.4.55 Vibrocores obtained in September 2021 were targeted and used for engineering lab testing prior to their geoarchaeological analysis. Although parts of these cores still exist, Wessex Archaeology's geoarchaeologists believed there was little potential for the next stage of recording of these samples (for a Stage 2 assessment) as it is assumed that they had since been at least partly destroyed, disturbed or bagged, losing any stratigraphic context or dating opportunity. Therefore, the vibrocores were not usable for the Stage 2 assessment.

6.4.526.4.56 Due to an amendment to the Order Limits for the Statutory Consultation stage, an additional geotechnical survey was undertaken in October 2024. During this survey, nine (including one that needed to be redrilled to reach the target maximum depth of 6.5 mbsf) duplicate vibrocores from the 2021 geotechnical survey, targeting the medium and high archaeological potential areas recommended for further analysis, were obtained to allow the Stage 2 assessment to be undertaken.

6.4.536.4.57 The additional geotechnical survey in October 2024 also included the recovery of 11 vibrocores from the four additional areas of the Offshore Scheme Boundary that were not included in the original geoarchaeological survey. Only nine vibrocores were envisaged for this survey, but two additional vibrocores were obtained as the first vibrocores failed to reach the maximum depth of 6.5 mbsf and needed to be redrilled.

6.4.546.4.58 Due to timing, the geoarchaeological results of this survey will not be integrated into this- chapter but will be submitted post-submission as an addendum to the technical report in a standalone document.

6.4.556.4.59 Therefore, the geoarchaeological assessment in this chapter does not include vibrocore data for the entire Offshore Scheme, as defined for the Statutory Consultation stage, but will utilise the assessment of 51 vibrocores from the 2021 survey and the 2024 SBP data that covers much of the additional areas. It will also be supplemented by the results of the 2024 geotechnical survey that will be submitted post-submission as a standalone document. This approach has been agreed with Historic England.

Geophysical data

6.4.566.4.60 The geophysical study area is defined as the extents of the SSS dataset (or UAV Mag. dData at the Pegwell Bay landfall) within the wider Offshore Scheme. A majority of the Offshore Scheme is covered by the geophysical survey data, however the Offshore Scheme has been widened at the Kent landfall and additional geophysical survey data have not been obtained in this wider area at present (visible on **Application Document 6.4.4.6.1 Marine archaeological study area**). The Applicant has committed to undertake a further suite of geophysical surveys of the wider area as part of a UXO survey of the Offshore Scheme~~, although a UXO survey is planned to be undertaken covering the wider Offshore Scheme~~. Therefore, the datasets acquired in 2021 and 2024 do not at present cover the entire extent of the Offshore Scheme Boundary.

6.4.576.4.61 The geophysical survey data were individually assessed for quality and their suitability for archaeological purposes (further details regarding the criteria are presented in Table 6.8 in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**). The MMT 2021 SSS data have been rated as 'Average' as some data files displayed weather noise and cable snatching due to sea state and/or weather conditions, particularly in the nearshore areas, but overall, the data were not affected to a significant degree and therefore are considered suitable for archaeological interpretation.

6.4.586.4.62 The marine Mag. data from both the MMT and Next surveys have been rated as 'Average' as, in general, the data were good, but there was some influence from background geology which may have masked some smaller features, and some impacts from weather conditions visible in the MMT 2021 data. For both surveys, the line spacing of 50 m in the offshore survey area means that smaller ferrous features which are not directly covered by a line of Mag. data may not have been picked up in the data. However larger features such as wrecks and substantial ferrous debris were largely still identifiable in the data and, as such, the dataset was considered suitable for archaeological interpretation.

Walkover survey data

6.4.596.4.63 Due to equipment malfunction during the June 2023 survey of the Kent landfall, the locations of the positions of intertidal heritage assets may not be accurate, with a

maximum error of 10 m. The second walkover at the Kent landfall in August 2024 meant this data could be verified and correct locations were merged into one overall dataset.

6.4.606.4.64 Some features from the first Kent walkover were not identified during the second survey, potentially due to the inaccuracy of the locations during the first survey and also the adverse weather conditions experienced during the second survey. Since the locations and presence of these features could not be corroborated during the second survey, the original data has been retained with the caveat regarding the accuracy of the positions.

6.5 Basis of Assessment

6.5.1 This section sets out the assumptions that have been made in respect of design flexibility maintained within the Proposed Project and the consideration that has been given to alternative scenarios and the sensitivity of the assessment to changes in the construction commencement year.

6.5.2 Details of the available flexibility and assessment scenarios are presented in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project** and **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**.

Flexibility Assumptions

6.5.3 The environmental assessments have been undertaken based on the description of the Proposed Project provided in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**. To take account of the flexibility allowed in the Proposed Project, consideration has been given to the potential for effects to be of greater or different significance should any of the permanent or temporary infrastructure elements be moved within the Limits of Deviation (LoD) or Order Limits.

6.5.4 The assumptions made regarding the use of flexibility for the main assessment, and any alternatives assumptions are set out in Table 6.11 below.

Table 6.11 Flexibility assumptions

Element of flexibility	How it has been considered within the assessment?
Lateral LoD marine HVDC cable	The worst-case scenario assessed for the Offshore Scheme is one bundled HVDC (x2) and one Fibre Optic cable in one trench. This bundled scenario may be placed anywhere within the Offshore Scheme Boundary. This has been predominantly assessed as part of the Construction phase of the Proposed Project.

Sensitivity Test

6.5.5 It is likely that under the terms of the draft DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026.

Consideration has been given to whether the effects reported will be any different if the works were to commence in any year up to year five. Where there is a difference, this is reported in Section 0.

6.6 Study Area

6.6.1 The study area comprises the extent of the Offshore Scheme as defined by the Order Limits shapefile (supplied 10 June 2024) up to the Mean High Water Spring (MHWS) mark and is presented on **Figure 6.4.4.6.1 Marine archaeological study area**. The study area overlaps with the terrestrial historic environment and cultural heritage study area between the MHWS and Mean Low Water Spring (MLWS) mark. An assessment of potential effects on the terrestrial historic environment and cultural heritage is presented in **Application Document 6.2.2.3 Part 2 Suffolk Chapter 3 Cultural Heritage [APP-050]** and **Application Document 6.2.3.3 Part 3 Kent Chapter 3 Cultural Heritage [APP-063]**.

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6.6.2 Marine archaeological sites identified in the geophysical survey data that are located outside the study area, but their linear/boundary extents or their associated mitigation (in the form of AEZs) intersect with the study area, have also been included in this assessment. Sites that are located extremely close to the boundary of the study area (usually within 10 m) have also been included where they could represent buried ferrous material and their dimensions are unconfirmed.

6.7 Baseline Conditions

6.7.1 The baseline conditions within the study area are summarised below with regard to: palaeogeography including prehistoric remains; seabed features including maritime and aviation sites; intertidal and coastal heritage assets; and the historic seascape character of the region. A technical report comprising the full archaeological assessment of geophysical and geotechnical survey data and the desk-based review of available datasets and research is appended to this chapter (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**).

Palaeogeography

Current baseline

6.7.2 There are no designated sites or known sites of prehistoric date within the study area.

6.7.3 The identified geology of the study area has been divided into four distinct units, summarised as:

- Units 1 a - b: solid, pre-Quaternary bedrock not considered to be of archaeological potential;
- Unit 2: Plio-Pleistocene marine deposit pre-dating the earliest known occupation of Britain and therefore not considered to be of archaeological potential;
- Units 3 b - d: Pleistocene and early Holocene sediments visible in SBP data as both buried and underfilled palaeochannels, and cut and fill features containing deposits of sands, gravels, silts, clays and peats. These deposits have the potential to contain both *in situ* and derived archaeological material, alongside preserved organic remains of potential palaeoenvironmental importance; and

- Unit 4: modern seabed sediment that have the potential to contain re-worked artefacts and may cover wreck sites and other cultural heritage in areas of sufficient thickness.

6.7.4 The palaeogeographic assessment, supported by the geotechnical review, for the study area identified several features of archaeological potential located within the Unit 3 sediments. These features are presented on **Figure 6.4.4.6.2 Palaeogeographic ~~R~~receptors of ~~A~~archaeological ~~P~~potential and ~~G~~geoarchaeological ~~P~~priority of ~~V~~vibrocores** in **Application Document 6.4.4.6 ES Figures Marine Archaeology** and comprise:

- ~~N~~nine channels: one of which contained alluvium and peat interpreted as being of high paleoenvironmental potential (**75006**) and one that contained organic material interpreted as being of medium paleoenvironmental potential (**75032**). The remaining channels may relate to features of archaeological interest and have the potential to contain palaeoenvironmental material although no corresponding vibrocore data was obtained.~~;~~
- ~~F~~four channel complexes, three of which (**75029**, **75030** and **75031**) are potentially part of the offshore route of the Thames/Medway river system, and one (**75035**) that is potentially part of the offshore route of the River Stour. All have the potential to contain palaeoenvironmental material.~~;~~
- ~~T~~thirteen cut and fill features: one of which contained alluvium interpreted as being of medium paleoenvironmental potential (**75024**), and one of which is considered a complex feature with multiple phases of cut and fill (**75023**).~~; and~~.
- ~~T~~two areas of acoustic blanking that have the potential to be shallow gas which may have been caused by the microbial breakdown of organic matter and therefore may contain sediments of palaeoenvironmental interest (**75007** and **75009**).

6.7.5 The depths of these features below the seabed are as little as 0.2 m (depending on the mobility of the overlying sand) and therefore will be impacted by project-related works that impact the seabed beyond this depth, for instance trenching to a depth of 1.5 m.

Value and sensitivity

6.7.6 Whilst there are no designated sites or known sites of prehistoric date within the study area, there is potential for prehistoric archaeological material to be discovered during seabed works associated with the Proposed Project. Discoveries may include the presence of as yet undiscovered *in situ* palaeolandscape deposits (for example peats, estuarine and low-energy coastal sediments of archaeological interest), palaeochannels of river systems, prehistoric sites and finds located within the inundated palaeogeography, and a high potential for isolated derived finds in a secondary context.

6.7.7 A summary of the archaeological value of potential heritage assets ~~are~~ is outlined in Table 6.12.

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Table 6.12 Archaeological value of palaeogeographic heritage assets within the study area

Asset type	Description	Value
Potential *in situ* prehistoric sites	Primary context features and associated artefacts and their physical setting (if found).	Very high
	Known submerged prehistoric sites and palaeolandscape features with the demonstrable potential to include artefactual material.	Very high
Potential submerged palaeolandscapes features	Other known submerged palaeolandscape features and deposits likely to date to periods of prehistoric archaeological interest with the potential to contain *in situ* material.	High
Prehistoric derived Prehistoric finds	Isolated discoveries of prehistoric archaeological material discovered within secondary contexts.	Medium
Potential palaeoenvironmental evidence	Isolated examples of palaeoenvironmental material.	Low
	Palaeoenvironmental material associated with specific palaeolandscape features or archaeological material.	High

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6.7.8 Based on age and the rarity of Palaeolithic and Mesolithic finds in marine contexts, if any sites or material was discovered, they will likely be of very high, probably national, archaeological importance. A guidance note published by English Heritage (now Historic England) Identifying and Protecting Palaeolithic Remains: archaeological guidance for planning authorities and developers (1998) indicated that sites containing Palaeolithic features are so rare in Britain that they should be regarded as nationally important and wherever possible should remain undisturbed. This was reiterated in Historic England's 2023 guidance, Curating the Palaeolithic (Historic England, 2023).

6.7.9 All palaeogeographic features and material are fragile and non-renewable and have the potential to be damaged or destroyed if they are directly impacted during the seabed preparation and construction phases of the Proposed Project. Any damage to archaeological sites or material is permanent and recovery is limited to stabilisation or reburial, limiting further impact. There is no potential for the recoverability of any buried deposits if they are affected following a direct impact. Therefore, the overall sensitivity of palaeogeographic features and material should be regarded as very high.

Seabed Features (Maritime and Aviation)

Current baseline

6.7.10 There are currently no maritime or aviation sites within the study area that are subject to statutory protection.

6.7.11 A detailed description of the seabed features baselines is presented in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**. The locations of these seabed features are shown on **Figure 7.5.5.3 Seabed Rreceptors of Aarchaeological Ppotential ~~of~~ in Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI).**

6.7.12 Within the study area for this chapter, a total of 1281 anomalies were identified during the geophysical assessment as being of possible archaeological potential and are discriminated as follows:

- forty-three A1 features (anthropogenic origin of archaeological interest);
- 408 A2_h features (anomaly of likely anthropogenic origin but of unknown date; may be of archaeological interest or a modern feature);
- 826 A2_l features (anomaly of possible anthropogenic origin but interpretation is uncertain; may be anthropogenic or a natural feature); and
- four A3 records (historic record of possible archaeological interest with no corresponding geophysical anomaly).

6.7.13 An additional eight seabed features are also located within the study area, either beyond the boundary of the geophysical survey area or were not included in the geophysical survey assessment due to the detail in the UKHO record indicating that the site relates to a modern vessel.

6.7.14 The anomalies recorded during the geophysical assessment together with the additional eight records can be further classified by probable type, as follows:

- fourteen wrecks;
- twenty-six debris fields;
- ninety-four areas of debris;
- thirty-two areas of seabed disturbance;
- fifty-eight linear debris;
- one bright reflector;
- 103 dark reflectors;
- eighty-six mounds;
- four depressions;
- six magnetic trends;
- 853 magnetic anomalies;
- nine recorded UKHO wrecks; and
- three recorded UKHO obstructions.

Value and sensitivity

6.7.15 The perceived archaeological value of an individual asset is generally assessed and assigned on a site-by-site basis. Those regarded as being of special interest may be designated under relevant legislation.

6.7.16 There are no known records of aircraft crash sites within the study area.

6.7.17 Eleven of the named vessels were lost during the First or Second World Wars and are all considered to have high archaeological value due to the importance of their military involvement during the wars (**2004**, **2008**, **7173**, **7269**, **7414**, **7472**, **7494**, **7495**, **70117** **70174** and **70516**).

6.7.18 Four records relate to recent losses and, whilst they are still potential seabed hazards, they are considered to have negligible archaeological value (**2003**, **2006**, **2009** and **2011**).

6.7.19 In accordance with the precautionary approach, the nine un-named wrecks are considered as high archaeological value assets until proven otherwise (**2002**, **7116**, **7120**, **7176**, **7231**, **7426**, **7500**, **7721** and **70090**). Similarly, as the archaeological value of potential shipwrecks and aircraft cannot be evaluated until they are discovered, potential wrecks of all periods should be expected to be of **high** archaeological value until proven otherwise.

6.7.20 As there is insufficient information to assess the archaeological value of each individual unidentified anomaly identified in the geophysical assessment (A1, A2_h and A2_l), all these additional anomalies must be considered to have high archaeological value until more information becomes available. With further investigation, these anomalies have the potential to represent sites of archaeological significance, whereby AEZs may be implemented and further mitigation recommended with advice of the Archaeological Curator(s).

6.7.21 As the archaeological value of potential shipwrecks cannot be evaluated until they are discovered, potential wrecks of all periods should be expected to be of high archaeological value, in accordance with the precautionary approach. Aircraft are considered to have significance for remembrance and commemoration, but also have an implicit heritage value as historic artefacts, providing information on the aircraft itself and also the circumstances of its use and loss (English Heritage, 2002). In addition, all aircraft that crash while in military service are protected under the Protection of Military Remains Act 1986 (Protection of Military Remains Act 1986 c.35), and therefore should be considered as designated sites until proven to be non-military. On this basis, all potential aircraft sites are of high archaeological value.

6.7.22 Derived artefacts are likely to be of limited archaeological value as individual discoveries. However, the occurrence of a number of seemingly isolated objects within a particular area has the potential to indicate shipping routes or maritime battlegrounds, or possibly even indicate the presence of a hitherto unknown wreck site. Isolated maritime finds are, therefore, regarded as being of medium archaeological value. Isolated aircraft finds are considered as being of medium archaeological value as they may provide insight into patterns of historical aviation across the Study Area or indicate the presence of uncharted aircraft crash sites.

6.7.23 There is potential for the presence of archaeological material of a maritime nature, spanning from the Mesolithic period to the present day within the study area. The potential is summarised by general date ranges, based on the Selection Guide: Boats and Ships in Archaeological Contexts (Wessex Archaeology, 2008) and is presented in

Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report.

6.7.24 The potential for further discoveries has been explored further through the assessment of Recorded Losses, navigational hazards and potential for preservation. These are summarised here but discussed in more detail in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**.

6.7.25 Recorded Losses refer to ships and aircraft that are recorded as having been lost, but for which the exact locations are not known, and no material has been encountered on the seabed within the Named Location. The NMHR, Suffolk HER and Kent HER datasets have over sixty records of Recorded Losses located within three Named Location polygons that intersect, or are close to, the boundary of the study area. This total comprises 61 ships and one aircraft. Further details regarding these losses are provided in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**. Overall, Recorded Losses suggest general potential for types and character of vessels moving through the study area and aircraft losses over time. The vessels date from the 13th century to the modern period, cover a wide range of vessel types and suggest causes of loss including being driven ashore, loss during storms and collision. The NMHR Recorded Loss for an aircraft crash site records the location of a B-17 Flying Fortress within the study area (NMHR_1602379). A walkover survey was undertaken in 2017 to inform the Thanet Extension Offshore Wind Farm and the remaining material associated with the aircraft were located on Sandwich Flats to the south of Pegwell Bay (Vattenfall Wind Power Ltd, 2018). The NMHR record for this site has not since been updated and therefore the position for the aircraft in this record is incorrect and ~~does~~ will not be impacted by the Proposed Project.

6.7.26 In terms of navigational hazards, the study area traverses several coastal and offshore Areas of Maritime Archaeological Potential~~AMAPs~~ (generally associated with the navigational hazards above) that are all defined as having fine-grained sediments and therefore a high potential of preservation. The remaining study area covered by the project assessment comprises a mixture of the high potential fine-grained sediments and further offshore, more coarse-grained sediments that have a lower potential of preservation (Merritt, Parham, & McElvogue, 2007).

6.7.27 The study area is generally considered to be an exposed coastal area with offshore banks that, at the Kent landfall, may provide shelter. The northern element of the study area is characterised as being particularly exposed to northeasterly and easterly winds with shallow muddy foreshore and banks inshore. The study area also traverses an offshore area that is considered to be exposed to all wind directions, which is proven by the substantial number of Recorded Losses for vessels that foundered as a result of poor weather conditions. Furthermore, the mudflats of Pegwell Bay and Sizewell Bank also present a considerable navigational hazard at both landfalls.

6.7.28 The boundary of the Offshore Scheme corresponds with the edge of the Goodwin Sands Marine Conservation Zone ~~MCZ~~; lying just off the coast of Kent and stretching from Ramsgate in the north to Kingsdown in the south, the Goodwin Sands represents a significant navigational hazard as an area of mobile sandbanks yet is combined with a high potential for preservation. Over 800 wrecks have been recorded on the Goodwin Sands, either as Recorded Losses or as wreck remains (Cant, 2013, p. 15). The Goodwin Sands are considered to have international and localised significance, not only as the gateway to the Continent, and as a major navigational hazard, but also for the way they have become embedded in historical narratives of the area and in present consciousness, through art and literature (Cant, 2013, p. 20).

6.7.29 Due to this region being a heavily used shipping route around the UK, into London and also internationally, another hazard to maritime vessels is collision. This is recorded on several records associated with Recorded Losses across the study area.

6.7.30 A summary of the archaeological value of the currently known and potential seabed features, are presented in Table 6.13.

Table 6.13 Archaeological value of seabed features within the study area

Asset type	Description		Total	Value
Known assets	Named shipwreck sites of anthropogenic origin (A1) – sunk during the First and Second World Wars (**7173, 7269, 7414, 7472, 7494, 70117** and **70516**)		7	High
	Un-named shipwreck sites of anthropogenic origin (A1) (**7116, 7120, 7176, 7231, 7426, 7721** and **70090**)		7	High
	Debris of anthropogenic origin (A1) (**7177**, **7433**, **7608**, **70091**, **70114**, **70115**, **70116**, **70118**, **70121**, **70127** and **70134**)		11	High
	Debris fields of anthropogenic origin (A1) (**7174**, **7178**, **7270**, **7430**, **7434**, **7471**, **7617**, **7647**, **70066**, **70093**, **70125**, **70129** and **70722**)		13	High
	Magnetic anomalies of anthropogenic origin (A1) (**7487**, **7612**, **7613** and **7631**)		4	High
	Historic record of possible archaeological interest with no corresponding geophysical anomaly	Named recorded A3 wreck (**7495** and **70174**)	2	High
		Un-named recorded A3 wreck (**7500**)	1	High
		Recorded A3 obstruction (**70452**)	1	High
		Additional recorded UKHO and NMHR modern named wrecks (**2003**, **2006**, **2009** and **2011**)	4	Negligible
		Additional recorded UKHO named wrecks sunk during	2	High

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Asset type	Description	Total	Value
	the First and Second World Wars (**2004** and **2008**)		
	Additional recorded UKHO un-named wrecks (**2002**)	1	High
	Additional recorded UKHO obstructions (**2001**)	1	Medium
Additional geophysical anomalies	Anomalies identified during the geophysical assessment that are of likely anthropogenic origin but of unknown date; may be of archaeological interest or a modern feature (A2_h).	408	High
	Anomalies identified during the geophysical assessment that are of possible anthropogenic origin, but interpretation is uncertain; may be anthropogenic or a natural feature (A2_l)	826	High
Potential wrecks	Shipwrecks that are yet to be discovered within the study area.	-	High
	Aircraft that are yet to be discovered within the study area.	-	High
Potential derived maritime artefacts	Isolated artefacts lost from a boat or ship or moved from a wreck site.	-	Medium
	Isolated artefacts lost from an aircraft or moved from an aircraft crash site.	-	Medium

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6.7.31 All archaeological seabed features are fragile and non-renewable and have the potential to be damaged or destroyed if they are directly or indirectly impacted during the seabed preparation and construction phases of the Proposed Project. Any damage to archaeological sites or material is permanent and recovery is limited to stabilisation or reburial, limiting further impact. There is no potential for the recoverability of any seabed features if they are affected by a direct or adverse indirect impact. Therefore, the overall sensitivity of known and potential wrecks, aircraft and associated material and debris should be regarded as very high.

Intertidal and Coastal Features

Current baseline

6.7.32 There are currently no coastal or intertidal sites within the study area that are subject to statutory protection.

6.7.33 Within the study area, there are a total of 34 records relating to archaeological (and potential archaeological) features, structures, obstructions, findspots and a magnetic anomaly. These comprise ~~O~~one record at the Suffolk landfall and 33 at the Kent landfall. These records have been compiled from NMHR, UKHO, ~~SHER,~~ Kent HER and CITiZAN databases, together with the results of the archaeological walkover surveys and Channel Coastal Observatory aerial images.

6.7.34 These records relate to medieval/post-medieval fish traps, a 19th century rifle range, several Second World War coastal defence structures, the Ramsgate International Hoverport terminal, modern wooden posts potentially relating to a platform/structure, numerous wooden and metal posts of unknown date and function, several findspots for material that has since been recovered and small metal items still *in situ* and one UKHO obstruction described as foul ground.

6.7.35 A total of 141 geophysical anomalies, located in the intertidal area of Pegwell Bay between the MLWS and MHWS marks, were also identified during the SEP magnetometer survey in 2024, comprising one A1 magnetic anomaly with corresponding AEZ, 54 A2_h anomalies and 8~~8~~6 A2_l magnetic anomalies. Only one anomaly may relate to a Kent HER record for Second World War beach defences, although no visible material was identified during the walkover surveys. With further investigation, these anomalies have the potential to represent sites of archaeological significance, whereby AEZs may be implemented and further mitigation recommended with advice of the Archaeological Curator(s).

6.7.36 A detailed description of the coastal and intertidal baseline is presented in **Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**. The locations of the coastal and intertidal features are shown on **Figure 6.4.4.6.4 Coastal and ~~I~~intertidal R~~r~~eceptors of A~~a~~rchaeological P~~p~~otential in Application Document 6.4.4.6 ES Figures Marine Archaeology**.

Value and sensitivity

6.7.37 The perceived archaeological value of an individual asset is generally assessed and assigned on a site-by-site basis. Those regarded as being of special interest may be designated under relevant legislation.

6.7.38 The possible fish traps are considered to have high archaeological value and will have relationships with other such features that are prevalent in the region. Furthermore, the setting of such features are integral to their archaeological value.

6.7.39 The archaeological value of findspots that have been recovered is not relevant (negligible) as they have most likely been removed from the location they were discovered and will not be impacted by the Proposed Project.

6.7.40 There are numerous features that relate to Second World War material (extant or non-extant); if further material is discovered during works associated with the Proposed Project, these will need to be assessed within the wider setting of military events and coastal defences. However, the archaeological value of such material, if discovered, could be considered low as they may relate to a modern site that were a common occurrence on most coastlines of south and east Britain during the war.

6.7.41 If further information is obtained regarding the unidentified modern features, structures and *in situ* findspots, including the two disarticulated structures, then their current archaeological value considered to be low may change.

6.7.42 The setting of the hoverport terminal is integral to its function and hard standing and structural remains are still clearly visible despite not being in use for over 40 years. The archaeological value, however, of these remains is considered to be low.

6.7.43 The archaeological value of the unidentified surface features, obstructions, *in situ* findspots and sub-surface geophysical magnetic anomalies of unknown date cannot be ascertained at present since not enough is known to confirm their extent, function or age, and therefore their associated archaeological value.

~~6.7.44 The value of the unidentified surface features, obstructions, *in situ* findspots and sub-surface geophysical magnetic anomalies of unknown date cannot be ascertained at present since not enough is known to confirm their extent, function or age.~~

~~6.7.45~~6.7.44 If further information is obtained regarding the unidentified surface features, obstructions, *in situ* findspots and sub-surface geophysical magnetic anomalies of unknown date, then their current archaeological value considered to be high may change. In~~N~~ line with the precautionary approach, these features are considered to have high archaeological value until further information becomes available to refine this.

~~6.7.46~~6.7.45 A summary of the archaeological value of the intertidal archaeological resource is presented in Table 6.14.

Table 6.14 Archaeological value of intertidal and coastal heritage assets within the study area

Asset type	Description	Total	Value
Known assets	Medieval/post-medieval fish traps (**1020** and **1028**)	2	High
	Recovered findspots (**1017**, **1038-1041**)	5	Low
	Military structures (**1005-1008**)	4	Low
	Modern hoverport structure (**1036**)	1	Low
	Unidentified modern features, structures and *in situ* findspots (**1002**, **1003**, **1009-1016**, **1018**, **1019**, **1022-1025** and **1030**)	17	Low
	Unidentified surface features, obstructions and *in situ* findspots of unknown date (**1026**, **1027**, **1029** and **1032**)	4	High

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Asset type	Description	Total	Value
	Unidentified sub-surface magnetic anomalies (**1021** and anomalies from the geophysical assessment)	142	High
Potential derived intertidal/coastal assets	Sites discovered within the intertidal/coastal area	-	High
Potential derived intertidal artefacts	Isolated artefacts and findspots dating to all periods which are located within the intertidal/coastal area.	-	Medium

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~~6.7.47~~6.7.46 All intertidal and coastal heritage assets are fragile and non-renewable and have the potential to be damaged or destroyed if they are directly impacted during the seabed preparation and construction phases of the Proposed Project. Any damage to archaeological sites or material is permanent and recovery is limited to stabilisation or reburial, limiting further impact. There is no potential for the recoverability of any intertidal and coastal heritage assets if they are affected by a direct impact. Therefore, the overall sensitivity of known and potential intertidal heritage assets should be regarded as very high.

Historic Seascape Characterisation

Current baseline

~~6.7.48~~6.7.47 The assessment of the HSC within the study area was undertaken using the results of LUC's Historic Seascape Characterisation (HSC): Consolidating the National HSC Database (Land Use Consultants, 2017), which consolidated the eight existing HSC implementation projects (undertaken between 2008 and 2015) into a single national database.

~~6.7.49~~6.7.48 The method assesses and defines areas with HSC types that promote an understanding of historic trends and processes, to inform the sustainable management of change over time.

~~6.7.50~~6.7.49 The study area has been characterised as having the following elements:

- reclaimed land (from tidal marsh);
- cultural topography landward (wetland);
- recreation (open ground, wildlife watching);
- reclaimed land (from tidal marsh);
- settlement (urban);
- recreation (parks and gardens; wildlife watching);
- fishing (bottom trawling, drift netting, potting);

- maritime safety (buoyage, safety area);
- navigation (wreck hazard, hazardous water, navigation route, shoals and flats, ferry crossing);
- ports and docks (dockyard, harbour);
- recreation (leisure beach, leisure sailing, wildlife watching);
- cultural topography landward (wetland);
- cultural topography marine (palaeochannel);
- energy industry (submarine power cable, renewable energy installation (wind)); and
- telecommunications (submarine telecommunications cable).

Value and sensitivity

6.7.516.7.50 The HSC of the study area is considered to be of medium archaeological value, due to the region's important and prolonged maritime history and its continued use today. The nature of HSC is such that it reflects not only the past character of the seascape but also the present, and the current HSC is already characterised by the broad category of energy industry, more specifically, submarine power cables. Therefore, the overall character of the area will remain predominantly the same during the construction and operation of the Proposed Project.

6.7.526.7.51 Furthermore, the HSC will be able to tolerate and recover from the activities associated with the Proposed Project and therefore has an overall medium-low sensitivity.

Future Baseline

6.7.536.7.52 The baseline environment is not static and will exhibit some degree of change over time, with or without the Proposed Project in place. If undisturbed by the Proposed Project, there will be limited change to the baseline conditions discussed above relating to palaeogeographic sites and prehistoric finds, or maritime and aviation sites and finds beyond those caused by natural physical environment and natural deterioration. There will likely be continued erosion and slow degradation of exposed metal and wooden wrecks on the seabed (aviation or maritime). Those wrecks that are partially buried are expected to degrade at a slower rate than those that are exposed.

6.7.546.7.53 Direct impact to the physical baseline resource may occur post-consent where mitigation measures are insufficient to protect the archaeological resource or are not established prior to interaction with the seabed occurring. Physical environment processes may occur that could have either a beneficial or adverse secondary impact on marine archaeology.

6.7.556.7.54 With regards to HSC, the study area already includes submarine power cables and therefore the Proposed Project will not cause additional impact on the HSC of the study area.

6.7.566.7.55 When considering alongside other developments in the region, it is possible that the Proposed Project could have a cumulative impact on the current baseline resource.

6.8 Proposed Project Design and Embedded Mitigation

6.8.1 The Proposed Project has been designed, as far as possible, following the mitigation hierarchy in order to, in the first instance, avoid or minimise marine archaeological impacts and effects through the process of design development, and by embedding measures into the design of the Proposed Project.

6.8.2 As set out in **Application Document 6.2.1.5 Part 1 Chapter 5 EIA Approach and Methodology**, mitigation measures typically fall into one of the three categories: embedded measures; control and management measures; and mitigation measures.

Embedded Measures

6.8.3 Embedded measures have been integral in reducing the marine archaeological effects of the Proposed Project. Measures that that have been incorporated are:

- Sensitive routeing and siting of infrastructure and temporary works; and
- Commitments made within **Application Document 7.5.3.2 Appendix B Register of Environmental Actions and Commitments (REAC)**.

Control and Management Measures

6.8.4 The following measures have been included within **Application Document 7.5.3.1 Appendix A Outline Code of Construction Practice** relevant to the control and management of impacts that could affect marine archaeology receptors:

- Marine:
  - GM01: Designated (and as minimal as possible) anchoring areas and protocols shall be employed during marine operations to minimise physical disturbance of the seabed.
  - GM02: As-built locations of cable and external protection will be supplied to UKHO (Admiralty), The Crown Estate and Kingfisher (KIS-ORCA).
  - MPE01: During the course of cable route clearance, specific activities will be completed to remove items from the seabed. Out of Service cables will be removed as per industry guidelines, larger debris including lost fishing gear will be removed prior to cable installation and a pre-lay grapnel run will be completed to ensure smaller debris is removed. In the event that abandoned, lost or discarded fishing gear ('ALDFG') is encountered, it may be necessary in certain circumstances to bring ALDFG onto the vessel deck. In these instances, marked ALDFG will be returned to the MMO/local Inshore Fisheries and Conservation Authority (IFCA) for onward retrieval by the owner of the marked gear, in line with existing best practice. Not all gear (particularly 'active' gear) is marked; if necessary to bring onto the vessel deck, unmarked gear will be disposed of via conventional onshore waste channels. Recovered objects identified as 'wreck' must be reported to the Receiver of Wreck within 28 days under the obligations of the Merchant Shipping Act 1995 and must be stored and maintained at the finder's expense until a decision is made on ownership. It is recommended that advice is sought from the marine archaeological consultant with regards survey campaigns and data assessments, to ensure, where possible, 'wreck' of possible or known archaeological interest can be avoided and left *in situ*.
  - MA01: A Written Scheme of Investigation (WSI) including a Protocol for Archaeological Discoveries will be agreed with the Archaeological Curator via the Regulator and implemented (**Application Document 7.5.5 Outline Offshore**

Overarching Written Scheme of Investigation (OWSI)) prior to works commencing. Unavoidable impacts to potential archaeological receptors would be addressed through a series of agreed control and management measures to deal with the discoveries once impacts have occurred. These measures would be outlined in a WSI and would be in place throughout the construction, operation, maintenance and decommissioning phases. The WSI would address unavoidable impacts that may occur anywhere in the Offshore Scheme and particularly where the nature of the Proposed Project means that some details have not been confirmed when an application is submitted, allowing flexibility within clearly defined parameters (Rochdale Envelope or Design Envelope) in accordance with archaeological best practice. A project-specific Protocol for Archaeological Discoveries will be established to support the reporting of unexpected archaeological material during the lifetime of the Project. Impact to unexpected archaeological material is reduced by promptly receiving archaeological advice and undertaking recording and/or conserving any objects that have been disturbed. Additional investigation of features with an uncertain identity or archaeological value can often mean their true nature and value can be better understood. A Protocol for Archaeological Discoveries reduces the impact on the marine historic environment by enabling Project staff to report their finds in a manner that is convenient and effective. Any additional marine geophysical survey, diver or ROV survey footage that takes place within the area will be assessed by a suitably qualified marine geophysicist or marine archaeologist, as appropriate. If an archaeologically important site is subsequently discovered during Project works, a temporary exclusion zone (TEZ) will be established to allow for further investigation to take place. The TEZ would then be re-evaluated, removed or expanded, based on the results of further investigations.

- MA02: A WSI will also include offsetting of archaeological impact where necessary through the completion of a palaeo-environmental assessment of deposits of high geoarchaeological potential which may be disturbed.
- MA03: The project will be run in compliance with all relevant legislation, consents and permits, for example the Marine and Coastal Access Act 2009, Protection of Military Remains 1986, Merchant Shipping Act 1995, Protection of Wrecks Act 1973 and Ancient Monuments and Archaeological Areas Act 1979.
- MA04: Locations of known marine archaeological interest/value within the marine environment will be avoided by all marine vessels by the implementation of appropriately sized Archaeological Exclusions Zones (AEZs). No works that could impact the seabed will be undertaken within the extent of an AEZ during the construction, operation and maintenance, or decommissioning phases of the Offshore Scheme. AEZs may be amended (enlarged, reduced, moved or removed) because of further data assessment or archaeological field evaluation and must be undertaken in consultation with the Archaeological Curator, Historic England. The locations and extents of all recommended AEZs are presented in the Outline WSI **(Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**).
- MA05: Where a previously unknown heritage asset is discovered, or a known heritage asset proves to be more significant than foreseen at the time of application, the project will inform the MMO, as advised by Historic England, and will agree a solution that protects the significance of the new discovery, so far as is practicable, within the project parameters.

- MA06 Archaeological features of lower archaeological value will be avoided where practicable. Micro-siting of the cable route and siting of infrastructure and temporary works will help to avoid seabed features, such as geophysical anomalies of archaeological potential. It is recommended that consultation with the archaeological consultant is undertaken with regards to routing around such anomalies of archaeological potential.
- MA07: Archaeological input at the planning stages of any further survey work should be undertaken. Archaeological Method Statements will be prepared for the following additional works: ground truthing of anomalies (e.g. Remotely Operated Vehicle (ROV), diver survey or coordination with Unexploded Ordnance (UXO) campaigns); marine geophysical or geotechnical surveys; intertidal, coastal or marine watching briefs; measures to protect marine heritage assets from indirect impacts (e.g. physical buffers); and post-construction monitoring works. Method Statements will be prepared by a suitably qualified, experienced and accredited marine archaeological consultant and will require approval by the Regulator (the MMO), and the Archaeological Curator (Historic England for marine works and the respective local authority curatorial bodies that serve Suffolk and Kent for works in the intertidal zone).

- Terrestrial:
  - H01: Locations of known archaeological interest/value, or areas where archaeological work is planned, will be signposted/fenced off to avoid unintentional damage.
  - H02: Where a previously unknown heritage asset is discovered, or a known heritage asset proves to be more significant than foreseen at the time of application, the Project Team will inform the relevant local planning authority and will agree a solution that protects the significance of the new discovery, so far as is practicable, within the Proposed Project parameters.
  - H03: Archaeological excavation, recording, and publication to be undertaken where archaeological features cannot be avoided. A scope of works will be agreed with heritage stakeholders (including the relevant County Archaeologist) prior to works commencing in the relevant area and agreed in the mitigation strategy/site specific Written Scheme of Investigation.
  - H04: Archaeological Strip, Map, and Record, to be undertaken in pre-agreed areas of archaeological potential/features. Scope of works to be agreed with heritage stakeholders (including the relevant County Archaeologist) prior to works commencing in the relevant area and agreed in the mitigation strategy/site specific Written Scheme of Investigation.
  - H06: Palaeo-environmental modelling/profiling in areas of potential. Scope of works to be agreed with heritage stakeholders (including the relevant County Archaeologist) prior to works commencing and agreed in the mitigation strategy/site specific Written Scheme of Investigation.

Table 6.15 Recommended AEZs within the study area

WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
2002	Dangerous wreck	408081	5765927	100 m buffer around UKHO point
2003	Dangerous wreck (dead)	407342	5757133	50 m buffer around UKHO point
2004	Dangerous wreck (dead)	400390	5706466	100 m buffer around UKHO point
2006	Dangerous wreck	399656	5700989	100 m buffer around UKHO point
2008	Wreck (dead)	389455	5685030	50 m buffer around UKHO point
2009	Wreck (dead)	389200	5685809	50 m buffer around UKHO point
7116	A1 - Wreck	407156	5779591	50 m around recorded position
7120	A1 - Wreck	407873	5778194	50 m around recorded position

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
7173	A1 - Wreck	408301	5772169	50 m around recorded position
7174	A1 - Debris field	408313	5772193	25 m buffer around current feature extent
7176	A1 - Wreck	408291	5772086	50 m around recorded position
7177	A1 - Debris	408291	5772108	25 m buffer around current feature extent
7178	A1 - Debris field	408291	5772086	25 m buffer around current feature extent
7231	A1 - Wreck	408203	5764778	50 m around recorded position
7269	A1 - Wreck	406446	5750778	50 m around recorded position
7270	A1 - Debris field	406438	5750788	25 m buffer around current feature extent

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
7414	A1 - Wreck	399935	5701752	50 m around recorded position
7426	A1 - Wreck	399875	5700385	50 m around recorded position
7430	A1 - Debris field	399891	5700391	25 m buffer around current feature extent
7433	A1 - Debris	399846	5700382	25 m buffer around current feature extent
7434	A1 - Debris field	399899	5700369	25 m buffer around current feature extent
7471	A1 - Debris field	400574	5693564	25 m buffer around current feature extent
7472	A1 - Wreck	400613	5693544	50 m around recorded position
7487	A1 - Magnetic	399532	5691524	50 m around recorded position

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
7494	A1 - Wreck	398778	5690029	50 m around recorded position
7495	A3 - Recorded wreck	398693	5689906	100 m around recorded position
7500	A3 - Recorded wreck	399517	5691466	100 m around recorded position
7608	A1 - Debris	394774	5685247	25 m buffer around current feature extent
7612	A1 - Magnetic	394619	5685125	50 m around recorded position
7613	A1 - Magnetic	394568	5685116	50 m around recorded position
7617	A1 - Debris field	394418	5685137	25 m buffer around current feature extent
7631	A1 - Magnetic	393912	5684931	50 m around recorded position
7647	A1 - Debris field	393047	5685030	25 m buffer around current

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
				feature extent
7721	A1 - Wreck	389778	5685518	50 m around recorded position
70066	A1 - Debris field	408201	5764765	25 m buffer around current feature extent
70090	A1 - Wreck	407527	5759254	50 m around recorded position
70091	A1 - Debris	407544	5759263	25 m buffer around current feature extent
70093	A1 - Debris field	407519	5759241	25 m buffer around current feature extent
70114	A1 - Debris	406741	5756416	25 m buffer around current feature extent
70115	A1 - Debris	406776	5756403	25 m buffer around current feature extent

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
70116	A1 - Debris	406756	5756390	25 m buffer around current feature extent
70117	A1 - Wreck	406737	5756355	50 m around recorded position
70118	A1 - Debris	406726	5756385	25 m buffer around current feature extent
70121	A1 - Debris	406769	5756339	25 m buffer around current feature extent
70125	A1 - Debris field	406753	5756322	25 m buffer around current feature extent
70127	A1 - Debris	406786	5756314	25 m buffer around current feature extent
70129	A1 - Debris field	406712	5756318	25 m buffer around current feature extent
70134	A1 - Debris	406702	5756286	25 m buffer

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WA ID	Classification/ Wreck category	Position (ETRS89 UTM31N)		Exclusion zone (m)
		Easting	Northing	
				around current feature extent
70174	A3 - Recorded wreck	406124	5750234	100 m around recorded position
70452	A3 - Recorded obstruction	397413	5688511	100 m around recorded position
70516	A1 - Wreck (badly deteriorated and buried)	396675	5687279	100 m buffer around current feature extent
70722	A1 - Debris field	391841	5685008	25 m buffer around current feature extent
70758	A1 - Magnetic	386067	5687107	50 m around recorded position

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6.8.5 Additional mitigation and enhancement measures relevant to marine archaeology receptors are presented in Section 6.10.

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6.9 Assessment of Impacts and Likely Significant Effects

6.9.1 The assessment of the effects of the Offshore Scheme on marine archaeology receptors described in this section considers the embedded, control and management measures described in Section 6.8.

6.9.2 Marine archaeological receptors relating to known and potential palaeogeography and prehistoric artefacts, seabed features including maritime and aviation sites including associated artefacts, intertidal and coastal heritage assets, and the historic seascape character of the region have been identified as receptors that may be

adversely/beneficially impacted by the Proposed Project. The potential impacts on these receptors are discussed further in this section.

6.9.3 Potential impacts to seabed, sub-seabed and intertidal/coastal marine heritage assets include both direct and indirect impacts. All known and potential seabed archaeological receptors and intertidal/coastal heritage assets ~~archaeological receptors~~ have the potential to be physically damaged, destabilised or destroyed if they are directly or indirectly impacted during the construction, operation and maintenance, and decommissioning phases of the Proposed Project. Furthermore, archaeological receptors have no recoverability if they are affected by a direct physical impact and therefore all damage to archaeological sites or material is permanent and recovery is limited to stabilisation or reburial to limit further impact. ~~Archaeological receptors have no recoverability if they are affected by a direct or indirect physical impact.~~

6.9.4 Direct impacts can include direct damage to structures, features, deposits and artefacts, and the disturbance of relationships between these elements and the wider surroundings. The setting of known and named wreck sites may also be impacted and in turn this could potentially affect the archaeological significance of such receptors.

6.9.5 Direct impacts are most likely to occur during the construction phase of the Offshore Scheme affecting the known and potential archaeological receptors identified above. Project activities that interact with the seabed, sub-seabed, intertidal/coastal area and the associated sediments during the construction phase may result in negative effects upon archaeological assets. Furthermore, marine archaeological receptors with height, such as shipwrecks, may also be impacted by activities that occur within the water column, including pre-installation activities and cable installation activities.

6.9.6 The indirect interactions upon the known and potential marine archaeological receptors occur as a result of changes to hydrodynamic patterns and sediment transport regimes, where these changes have occurred as a consequence of activities and infrastructure associated with the Proposed Project activities. Scour has a negative or adverse impact on marine archaeological receptors whereby it can expose (or further expose) material which leads to increased rates of deterioration through biological, chemical and physical processes. Alternatively, the redeposition of sediments following settling of sediment plumes can be beneficial to the preservation of marine archaeological receptors as greater sediment cover increases the potential for anaerobic environment, which inhibits a range of biological, chemical and physical degradation processes.

6.9.7 This section assesses the impacts and likely significant effects which could occur during the installation, operation and maintenance, and decommissioning phases of the Offshore Scheme based on the description of the Proposed Project and the maximum design scenario within **Application Document 6.2.1.4 Part 1 Chapter 4 Description of the Proposed Project**~~.~~ and **Application Document 9.13 Pegwell Bay Construction Method Technical Note**, submitted at Deadline 1.

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6.9.8 Table 6.16 summarises the impacts considered as part of this assessment.

Table 6.16 Summary of impact pathways and maximum design scenario

Potential Impact	Maximum Design Scenario
Construction	

Potential Impact	Maximum Design Scenario
Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Pre-installation seabed preparation activities, including: • Pre-lay surveys: – to obtain geotechnical samples (including vibrocores). Maximum design scenario will be dependent on the width and depth of the sampling method and their frequency across the Proposed Project; and/or – to identify and remove (lift and shift or detonation) buried UXO. Maximum design scenario will be dependent on the location and depth of UXO anomalies. • Pre-sweeping activities: – sand wave lowering requiring the removal of seabed up to an average depth of 2 m using dredgers, ploughs, mass flow excavators (MFE) or controlled flow excavators (CFE). Maximum design scenarios will be dependent on the presence of unavoidable sand waves with a maximum swathe of 10-20 m generating a total volume of material measuring 250,000 m³. • Submarine cable installation methodologies for bundled cables comprising two HVDC cables and one fibre optic cable within one trench measuring a maximum width of 1.5 m and maximum depth of 2.5 m, including: – jet trenching disturbing an area of seabed measuring between 6 and 12 m wide over a length of 43.5 km; – mechanical trencher methodologies disturbing an area of seabed measuring between 5 and 15 m wide over a maximum length of 59 km;

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Potential Impact	Maximum Design Scenario
	○ MFE or CFE disturbing an area of seabed measuring up to 5 m wide with a length to be determined; and ○ where multiple options are deployed, the maximum width of seabed disturbance is up to 20 m over a length of 47 km. • Trench backfilling and external cable protection, including: ○ Placement of remedial rock berms. Rock berms will be up to 7 m wide (no lowering) at the base. Remedial rock berm over a length of 12 km with a total area of 0.084 km^2; ○ 0.017 km^2 rock backfill over a length of 38 km (between KP35 to KP58, and between KP81.5 to KP96.5). ○ 0.00036 km^2 concrete mattresses at Suffolk Landfall. ○ 0.05 km^2 concrete mattresses/rock berm protection at cable crossings. There are ten in-service cable crossings that will require protection (maximum footprint of 0.005 km^2 per crossing). • Vessel activities, including: ○ marine cable lay vessel (CLV) working no further inshore than the 10 m depth contour; ○ cable barges at the shallower waters of the landfalls comprising either: ○ a jack-up barge with up to four spud-legs, each of which have a diameter of up to 8 m giving a footprint of approximately 50 m^2. One barge is expected at each of the four cable ducts

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Potential Impact	Maximum Design Scenario
	producing a total footprint of approximately 200 m² at each landfall; or – ~~o~~ flat-top pontoon barge using up to an eight-point mooring system. Each anchor could be up to 2 m in length and will be deployed up to 800 m from the barge generating a 23 m² footprint around each anchor. – ~~•~~ rock placement vessels, guard vessels and specialised support vessels if direct or indirect interaction/disturbance with the seabed occurs. – – Wet storage areas on the seabed used for storing cables to allow a field joint to be installed. • • Ground preparation and cable laying activities within the intertidal zone at the landfall sites, including: – ~~•~~ Trenchless cable installation activities such as horizontal directional drilling (HDD) with a depth of between 17-25 m at the Suffolk landfall and between 185-20 m at the Kent landfall; – ~~f~~ ~~•~~ four boreholes at each landfall measuring 400-600 mm in diameter and extending for a length of 1.525 km at the Suffolk landfall and 0.943 km at the Kent landfall.~~;~~ ~~• HDD exit pit at each landfall measuring 200 m² and up to 2 m below seabed level; and~~ **S~~S~~uffolk landfall:** • Use of jack-up barge (JUB) at 4 HDD entry/exit point locations (50

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Potential Impact	Maximum Design Scenario
	m² at each HDD entry/exit point location).
	Kent landfall:
	• T~~•~~temporary cofferdams at the Kent landfall measuring up to 30 m in length, 5 m wide with a depth of 6 m below seabed level.
	• Construction working area around HDD exit pits (120 m x 180 m)
	• JUB or back~~-~~, hoe dredger at 4 HDD entry/exit point locations (50 m2 at each HDD entry/exit point location)
	• cable lay barge and associated anchoring (8 x anchors each with 32 m² footprint each and berthed barge).
	• ~~-~~Temporary installation of concrete mattresses/~~rockbags~~rock bags forming post installation protection at each HDD duct totalling up to five mattresses per exit point (20 in total at each landfall) will removed prior to marine cable pull-in~~.-;~~
	• Superficial disturbance of the mudflats within the LoD from the movement of plant and vehicles during construction programme, including to and from the hoverport. The ~~MDS~~maximum design scenario is up to 20 construction plant/vehicles at any one time (based on cable pull in) and 40 movements per day, at peak times). All vehicles removed daily.
	Trenching for cable installation in Pegwell Bay, assuming unbundling of the two cables at MLWS and buried in separate trenches (2 x 20 m) for a distance of 1,500 m to HDD, gives estimated area of disturbance of 60,000 for two cables = 60,000 m².

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Potential Impact	Maximum Design Scenario
	•
	Offshore Scheme installation • Pre-installation seabed preparation activities including: – obtaining geotechnical samples (including vibrocores), dependent on width and depth of sampling method and frequency across the Proposed Project; – identification and removal (lift and shift or detonation) of buried UXO, dependent on the location and depth of UXO anomalies; – 0.36 km^2 of disturbance from the pre-lay grapnel run (maximum swathe of 3 m up to a length of 120 km); and – 0.35 km^2 of disturbance from sand wave lowering (pre-sweeping) (maximum swathe 20 m over a length of 17.56 km, to a depth of 2 m between KP96.32 to KP113.883). • Cable installation activities including: – 3.015 km^2 of disturbance from cable trenching (from Suffolk HDD pits to MLWS at Pegwell Bay. This may include various methods including ploughing, jet trenching, and/or mechanical trenching (maximum swathe of 25 m, to a depth of up to 2.5 m, over a length of up to 122 km); – works vessels and associated anchoring systems that impact the seabed, including marine cable lay vessels (CLV) and rock placement vessels, guard vessels and specialised support vessels; and

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Potential Impact	Maximum Design Scenario
	– use of wet storage areas. • Trench backfilling and external cable protection, including: – 0.084 km² of rock berms up to 7 m wide over a length of 12 km; – 0.017 km² rock backfill over a length of 38 km (between KP35 to KP58, and between KP81.5 to KP96.5); and – 0.05 km² concrete mattresses/rock berm protection at ten in-service cable crossings (maximum footprint of 0.005 km² per crossing). **Suffolk Landfall** Cable installation activities: • Total area of 0.0002 km² of seabed/coastal disturbance from a jack-up barge (JUB) at four HDD entry/exit point locations (50 m² at each HDD entry/exit point location to a depth of 2 m below seabed); • Trenchless cable depth up to 25 m; • Temporary installation of up to five concrete mattresses/rockbags at each duct (totalling 0.00036 km²); **Kent Landfall** A summary of the maximum design scenario is presented below. See **Application Document 9.13 Pegwell Bay Construction Method Technical Note** for more details. Cable installation activities, with a total area of 0.022460892 km² of disturbance from the following: • Cofferdams and four HDD exit pits will be located within a designated working area of 0.0216 k m² (120 x 180 m) maximum area of excavator footprint in the upper intertidal.

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Potential Impact	Maximum Design Scenario
	• 0.0002 k m^2 of disturbance from use of JUB or back-hoe dredger at four HDD entry/exit point locations (50 m^2 at each HDD entry/exit point location); • 0.000032 km^2 of disturbance from the use of a CLB and associated anchoring (8 x anchors each with 32 m^2 footprint each and berthed barge); • 0.0003 km^2 of disturbance from the use of a temporary cofferdam at four HDD entry/exit point locations (0.000075 km^2 at each HDD entry/exit point). Each cofferdam will measure a maximum length of 30 m, 5 m wide with a piling depth approximately 6 m below ground level and excavation depth within the cofferdams to a depth below seabed of 2 m. Cofferdams will be constructed using sheet piles, pre-fabricated tanks or a moonpool barge; • 0.00036 km^2 from the temporary placement of up to five concrete mattresses/rock bags at HDD entry/exit points. Assumed to be five per HDD exit (worst-case scenario measuring 0.45 m x 3.0 m x 6.0 m) followed by permanent reburial (below seabed level) in the same location. ; • Superficial impact and compression of the mudflats within the Limit of Deviation (LoD) from the movement of plant and vehicles during the construction programme, including to and from the hoverport. The MDS is up to 20 construction plant/vehicles at any one time (based on cable pull in) and 40 movements per day, at peak times). All vehicles removed daily; • Superficial impact and compression of the mudflats within

Potential Impact	Maximum Design Scenario
	the LoD from the placement of cable rollers; • ~~-~~Trenching for cable installation in Pegwell Bay, assuming unbundling of the two cables at MLWS and buried in separate trenches (2 x 20 m) for a distance of 1,500 m to HDD, gives estimated area of disturbance of 60,000 for two cables = 60,000 m^2.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Pre-installation seabed preparation activities, including: • ~~-~~Pre-sweeping activities: — ~~o~~ sand wave lowering requiring the removal of seabed up to an average depth of 2 m using dredgers, ploughs, mass flow excavators (MFE) or controlled flow excavators (CFE). Maximum design scenarios will be dependent on the presence of unavoidable sand waves with a maximum swathe of 10-20 m generating a total volume of material measuring 250,000 m^3. Trench backfilling and external cable protection, including: • ~~-~~rock backfill, particularly between KP 38 to KP 58 and KP 81.5 to KP 96 covering a total length of 38,000 m and total area of 17,100 m^2. • ~~-~~remedial works: — ~~o~~ rock placement with an estimated length of 12,000 m and area of 0.084 km^2; — ~~o~~ rock placement; and/or — ~~o~~ CFE to collapse the trench walls to achieve backfill. • ~~-~~0.05 km^2 concrete mattresses/rock berm protection at cable crossings. There are ten in-service cable crossings that will

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Potential Impact	Maximum Design Scenario
	require protection (maximum footprint of 0.005 km2 per crossing). • ~~•~~rock bags assumed to be five per HDD exit at both landfalls. • Vessel activities, including: • ~~• marine cable lay vessel (~~CLV~~)~~ working no further inshore than the 10 m depth contour; • ~~•~~ CLB~~cable barges~~ at the shallower waters of the landfalls comprising either: — ~~o~~ a jack-up barge with up to four spud-legs, each of which have a diameter of up to 8 m giving a footprint of approximately 50 m² at each jack-up location. One barge is expected at each of the four cable ducts producing a total footprint of approximately 200 m² at each landfall; or — ~~o~~ flat-top pontoon barge using up to an eight-point anchor mooring system. Each anchor could be up to 2 m in length and will be deployed up to ~~800~~ 400 m from the barge generating a ~~23~~ 32 m² footprint around each anchor. • ~~•~~rock placement vessels, guard vessels and specialised support vessels if direct or indirect interaction/disturbance with the seabed occurs.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment accretion on the seabed causing beneficial indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Pre-installation seabed preparation activities, including: • ~~•~~Pre-sweeping activities: — ~~o~~ sand wave lowering requiring the removal of seabed up to an average depth of 2 m using dredgers, ploughs, mass flow excavators (MFE) or controlled flow excavators (CFE). Maximum design scenarios will

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Potential Impact	Maximum Design Scenario

	be dependent on the presence of unavoidable sand waves with a maximum swathe of 10-20 m generating a total volume of material measuring 250,000 m³.
	
	Trench backfilling and external cable protection, including:
	• ~~•~~ rock backfill, particularly between KP 38 to KP 58 and KP 81.5 to KP 96 covering a total length of 38,000 m and total area of 17,100 m².
	• ~~•~~ remedial works:
	  ~~o~~ rock placement with an estimated length of 12,000 m and area of 0.084 km²;
	  ~~o~~ rock placement; and/or
	  ~~o~~ CFE to collapse the trench walls to achieve backfill.
	• ~~•~~ 0.05 km² concrete mattresses/rock berm protection at cable crossings. There are ten in-service cable crossings that will require protection (maximum footprint of 0.005 km2 per crossing).
	• ~~•~~ rock bags assumed to be five per HDD exit at both landfalls.
	
	Vessel activities, including:
	• ~~• marine cable lay vessel (~~CLV~~)~~ working no further inshore than the 10 m depth contour;
	• ~~• cable barges~~ CLB at the shallower waters of the landfalls comprising either:
	  ~~o~~ a jack-up barge with up to four spud-legs, each of which have a diameter of up to 8 m giving a footprint of approximately 50 m² at each jack-up location. One barge is expected at each of the four cable ducts producing a

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Potential Impact	Maximum Design Scenario
	total footprint of approximately 200 m² at each landfall; or – o flat-top pontoon barge using up to an eight-point anchor mooring system. Each anchor could be up to 2 m in length and will be deployed up to 800 400 m from the barge generating a 23 32 m² footprint around each anchor. • R• rock placement vessels, guard vessels and specialised support vessels if direct or indirect interaction/disturbance with the seabed occurs.
Project works that temporarily or permanently change the setting of a heritage receptor. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Any project-related activity or infrastructure that directly or indirectly affects the setting of a heritage receptor (marine or intertidal/coastal), including any pre-installation intertidal and seabed preparation activities, intertidal and submarine cable installation, trench backfilling and external cable protection and increased vessel activity and terrestrial vehicle traffic.
Project works that temporarily or permanently change the character of the historic seascape.	Any project-related activity, infrastructure or additional marine or terrestrial traffic that affects the character of the historic seascape of the region, including any pre-installation intertidal and seabed preparation activities, intertidal and submarine cable installation, trench backfilling and external cable protection and increased vessel or terrestrial vehicles activity.
Operation and Maintenance	
Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric	Regular monitoring surveys that, despite being non-intrusive, may interact with the seabed, for instance autonomous underwater vehicles (AUVs) and Remotely Operated Vehicles (ROVs). Potential impact by support vessels could also occur dependent on the use of anchoring systems.

Potential Impact	Maximum Design Scenario
finds, historic terrestrial, marine and aviation features).	Localised lengths of the cable within areas of mobile sediment may require maintenance, including: • addition of mattresses; • rock and grout bags; • installation of remedial rock berms; • additional trenching (where appropriate); and/or • removal of excess sand depth. At the Suffolk landfall, the repair process will comprise the following activities that directly or indirectly interact with the seabed: • deployment of guard vessel; • nearshore barge to allow divers to excavate buried spare HDD bellmouth; • CLV/~~barge~~ CLB with spare cable length to repair and associated equipment spread; • Offshore repair joint and spread; and • Deburial works in deeper water and post lay protection works. Offshore, repairs to the marine cable will require the following activities that directly or indirectly interact with the seabed: • deployment of guard vessel; • visual seabed inspection and deburial works and post-lay protection works; and • CLV with spare cable length for repair and associated joints. Due to the exposed mudflats at the Pegwell Bay landfall, the repair process will utilise similar equipment to that used during construction of the HDD crossing and cable installation, and will comprise the following

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Potential Impact	Maximum Design Scenario
	activities that directly or indirectly interact with the seabed: • ~~-~~nearshore barge to excavate the buried spare duct bellmouth and trench approach; • ~~-~~CLV/~~barge~~ CLB with spare cable to enable pull-in operation and associated equipment spread; and • ~~-~~damaged section of cable may need to be recovered. Where the entire landfall cable requires replacing, similar equipment and methodology as the construction and cable installation operations will be utilised and the spare HDD duct targeted. Should a cable fault occur in the intertidal area, the cable bundle will be uncovered and the fault repaired, using either jack-up vessels or a CLB. Excavators would bury the repaired section.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Any project-related operational and maintenance activity, infrastructure or additional marine traffic that causes indirect impacts leading to an adverse effect on marine archaeological features. The potential activities are similar to those used during the construction phase.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment accretion on the seabed causing beneficial indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Any project-related operational and maintenance activity, infrastructure or additional marine traffic that causes indirect impacts leading to a beneficial effect on marine archaeological features. The potential activities are similar to those used during the construction phase.
Project works that temporarily or permanently change the setting of a heritage receptor. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric	Any project-related activity or infrastructure that directly or indirectly affects the setting of a heritage receptor (marine or intertidal/coastal), including any operational and maintenance activities together with increased associated vessel activity.

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Potential Impact	Maximum Design Scenario
finds, historic terrestrial, marine and aviation features).	
Project works that temporarily or permanently change the character of the historic seascape.	Any project-related activity or infrastructure that directly or indirectly affects the character of the historic seascape of the region, including any operational and maintenance activities together with increased associated vessel activity.
Decommissioning	
Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Where the redundant cable is to be removed and recovered, techniques similar to the construction phase will be utilised although these are considered to be simpler, minimising seabed disturbance. This includes any project-related activity that causes direct damage and/or loss to heritage receptors, together with increased associated vessel activity. In areas where the redundant cable is shallow buried, it may be pulled out by associated vessels without the use of other equipment. In areas where the redundant cable is more deeply buried or located in a more mobile seabed, jetting or CFE methods will be used to release the cable. Removal of the trenchless solutions from the transition joint bay passing under the beach landfalls to the bellmouth exits will be reviewed at the time of decommissioning and therefore the impacts caused by this activity is currently unknown but is considered to be similar to during the construction phase.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Any project-related decommissioning activity, infrastructure or additional marine traffic that causes indirect impacts leading to an adverse effect on marine archaeological features. The potential activities are similar to those used during the construction phase although are considered to be simpler, minimising seabed disturbance.
Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment accretion on the seabed causing beneficial indirect effects on seabed heritage receptors. Receptors comprise known and potential maritime and aviation features in a marine context.	Any project-related decommissioning activity, infrastructure or additional marine traffic that causes indirect impacts leading to a beneficial effect on marine archaeological features. The potential activities are similar to those used during the construction phase although are considered to be simpler, minimising seabed disturbance.

Potential Impact	Maximum Design Scenario
Project works that temporarily or permanently change the setting of a heritage receptor. Receptors comprise known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Any project-related decommissioning activity that directly or indirectly affects the setting of a heritage receptor (marine or intertidal/coastal), together with increased associated vessel activity.
Project works that temporarily or permanently change the character of the historic seascape.	Any project-related decommissioning activity that directly or indirectly affects the character of the historic seascape of the region, together with increased associated vessel activity.

Construction Phase

6.9.9 Activities undertaken during the construction phase have the potential to impact marine archaeology receptors either directly and indirectly, located on or under the seabed, resulting in their total or partial physical loss, a change to their setting, and/or the disruption of relationships between receptors within their wider surroundings.

6.9.10 Construction activities that may lead to impacts include:

- Direct:
  - pre-installation seabed preparation and activities, including pre-lay surveys, pre-sweeping activities;
  - intertidal and submarine cable installation;
  - trench backfilling and external cable protection;
  - vessel activities, including marine CLV and ~~cable barges~~ CLB that contact the seabed with spud-legs and anchoring systems;
  - placing of infrastructure inside wet storage areas; ~~and~~
  - ground penetration, compression and cable laying activities within the intertidal zone, including:
    - ~~-~~trenchless cable installation using HDD of up to four~~,~~ boreholes and ~~,~~ associated exit pits;
    - ~~,-~~concrete mattresses/rockbags and stone/sand bags;
    - ~~and a~~ temporary cofferdams at the Kent landfall;
    - marine cable pull-in support at the Kent landfall including temporary cofferdams or sheet piling, a beached CLB and associated anchoring, and additional supporting terrestrial vehicle traffic;

- placement of cable rollers on the intertidal seabed at the Kent landfall; ~~and~~
- ~~C~~cable burial within cable trench between HDD pits and ~~Mean Low Water Spring (~~MLWS~~)~~ (could be two trenches if cables unbundled at MLWS); and~~.~~
- onshore construction access and vehicle traffic traversing and working within the intertidal area causing ground penetration and compression.

- Indirect:
  - changes to hydrodynamic and sedimentary regimes associated with disturbances to the seabed, leading to scour and/or transport of suspended sediment.

Direct damage and/or loss to known and potential heritage receptors on and below the seabed

6.9.11 As discussed in Section 6.7, the overall sensitivity of archaeological receptors at risk of this impact is **very high**, with their archaeological value ranging from low to very high.

6.9.12 All damage to archaeological sites or material is permanent and recovery is limited to stabilisation or re-burial to limit further impact. There is no potential for the recoverability of any seabed or sub-seabed assets following a direct impact. The magnitude of direct impacts on marine archaeological receptors, if they were to occur, is **large**. Without mitigation, the significance of effects on the archaeological receptors would be **major adverse**.

6.9.13 As outlined in paragraph 6.4.21, as a result of an increase in the Order Limits at Pegwell Bay to accommodate potential requirements for vessels to anchor in the nearshore area and for vehicles to access the trenchless crossing exit pits from the former hoverport, there is a discrepancy between extent of the geophysical survey coverage and the Order Limits in this location. ~~-~~However, the Limits of Deviation (LOD) which is the area within which the Offshore Scheme and all associated construction works will be located, remain unchanged. ~~-~~The LOD in Pegwell Bay are included in **Application Document 2.5.2 Work Plans – Kent**.

6.9.14 ~~Acknwlegding~~Acknowledging that there is ~~Due to the~~ incomplete geophysical survey coverage of the Offshore Scheme at Pegwell Bay, Kent, ~~there is an~~and a potential increased risk of impact on currently unknown sub-seabed archaeological receptors from vessel anchors and vehicle movements in this unsurveyed area, the Applicant has committed to undertake a geophysical survey assessment to cover this gap (incorporated into additional mitigation measure MA09), with the results being integrated with previous interpretations to further inform mitigation and consent compliance.

~~6.9.13~~6.9.15 With the implementation of appropriate mitigation, as outlined in Section 6.8 and Section 6.10, the magnitude would be reduced to **small**, leading to a residual effect that is **minor adverse**, which is considered to be not significant. Mitigation measures include namely AEZs, micro-siting around receptors, further investigation of significant sites, undertaking archaeological watching briefs in the intertidal area at each landfall, ~~and the~~ use of a bespoke Protocol for Archaeological Discoveries with further investigation and assessment required as necessary, and undertaking geophysical survey and assessment for the entirety of the Offshore Scheme at Pegwell Bay, Kent.~~, the magnitude would be reduced to **small**, leading to a residual effect that is **minor adverse**, which is considered to be not significant.~~

Changes to hydrodynamic and sedimentary regimes causing adverse or beneficial indirect effects on seabed heritage receptors

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6.9.146.9.16 As discussed in Section 6.7, the overall sensitivity of archaeological receptors at risk of this impact is **very high**, with their archaeological value ranging from low to high.

6.9.156.9.17 This impact has been supported by the Physical Environment assessment presented in **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment**. The chapter explains that the significance of effect on the changes to seabed bathymetry and morphology, local hydrodynamic, wave and sediment transport processes and increased suspended sediment and deposition of disturbed sediments caused by the preparation of the route (~~PGLR~~ pre-lay grapnel run and pre-sweeping) and installation of the cable (including the use of nearshore and intertidal vessels, ~~and~~ equipment and other vehicles, construction and use of ~~a~~ cofferdams at the Kent landfall, and excavation of HDD exit pits) would be minor adverse.

Adverse impact

6.9.166.9.18 Changes to hydrodynamic and sedimentary regimes that lead to erosion or scour could cause permanent and irreversible impact on known and potential archaeological receptors. Therefore, the magnitude of this impact, if it were to occur, would be **medium**. Without mitigation, the significance of effects on the archaeological receptors could be **moderate adverse**.

6.9.176.9.19 With the implementation of appropriate mitigation, including full geophysical survey coverage and assessment for the entirety of the Offshore Scheme at Pegwell Bay, Kent, undertaking archaeological watching briefs in the intertidal area at each landfall, a Protocol for Archaeological Discoveries for reporting exposed archaeological material including potentially further investigation of the material that could lead to an exclusion zone being implemented and post-construction monitoring (all of which is detailed is the Outline WSI), the magnitude would reduce to **small**, leading to a residual effect that is **minor adverse**, which is considered to be not significant.

Beneficial impact

6.9.186.9.20 Although difficult to quantify, changes to hydrodynamic and sedimentary regimes that cause sediment accretion on the seabed, potentially providing temporary or permanent protection to marine archaeology and cultural heritage receptors, could have a magnitude of **small.**

6.9.196.9.21 The burial of marine archaeology heritage assets will be favourable to their preservation and as such the significance of the effect is considered to be **minor beneficial**.

6.9.206.9.22 It is recommended that post-construction monitoring occurs (within additional mitigation and enhancement measure MA09) to ensure that the effect of the impact does not become adverse, whereby changes to hydrodynamic and sedimentary regimes long-term lead to a reduction of seabed sediment, potentially exposing marine archaeological receptors leading to increased rates of deterioration. Where post-construction monitoring confirms that the effect remains to be beneficial, the magnitude will remain **small**, and the overall residual significance of effect will remain as **minor beneficial**.

Project works that temporarily or permanently change the setting of a known heritage receptor

6.9.216.9.23 During and following the construction of the Proposed Project, the nature of the seabed will have been changed due to the presence of the marine cable and associated infrastructure at the two landfalls, which may have an effect on the setting of archaeological heritage assets discussed in the baseline sSection (6.7).

6.9.226.9.24 The setting of the known assets has been assessed in the accompanying marine archaeological technical report (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and indicates whether the setting of marine and intertidal/coastal archaeological heritage assets could be altered by the Proposed Project or the associated works vessels or vehicles, which could lead to an overall reduced value.

6.9.236.9.25 As discussed in Section 6.7, the overall sensitivity of archaeological receptors that could be affected by this impact is **very high**, with their archaeological value ranging from low to very high.

6.9.246.9.26 Only a few of the marine receptors located within the study area are visited by divers whereby the position of the Proposed Project and the associated construction vessels could impact the setting of such marine sites, whereby their physical surroundings, relationship to other assets and the way they are experienced or appreciated could be affected. However, as such sites will be avoided by the Proposed Project, the impact on their setting is reduced. Military remains (marine and coastal) are considered to be part of the wider setting of military events, including the East Coast War Channels, and coastal defence network, and therefore could be impacted by the Proposed Project.

6.9.256.9.27 As a result, the overall magnitude of this impact on the change to the setting of heritage receptors during the construction phase is considered to be **medium** leading to a **moderate adverse** significance of effect.

6.9.266.9.28 As per the mitigation measures outlined in Section 6.8, the known archaeological receptors (for which a setting assessment has been undertaken) will be avoided by the Proposed Project and as such the magnitude is reduced to **small** leading to a residual effect of **minor adverse**, which is considered to be not significant.

Project works that temporarily or permanently change the character of the historic seascape

6.9.276.9.29 The historic seascape character of the study area is considered to have a **medium** sensitivity with an overall medium archaeological value, due, in part, to the important and prolonged maritime and military histories of the south and east coasts.

6.9.286.9.30 The magnitude of this impact on the change to the character of the historic seascape of the region is considered to be **small**, since the study area is already characterised by a broad spectrum of offshore industry including multiple telecommunications and power cable routes. Additionally, once the Proposed Project has been constructed and will not be visible from sea level, the character of the historic seascape should return to its pre-development level. As a result, the significance of effect is considered to be **negligible adverse**.

6.9.296.9.31 Since no mitigation is proposed for this impact, the residual effect is predicted to remain as **negligible adverse**, which is considered to be not significant.

Operation and Maintenance Phase

6.9.306.9.32 Activities undertaken during the operation and maintenance phase have the potential to impact marine archaeology receptors either directly and indirectly, located on or under the seabed, resulting in their total or partial physical loss, a change to their setting, and/or the disruption of relationships between receptors within their wider surroundings.

6.9.316.9.33 Operation and maintenance activities that may lead to impacts include:

- Direct:
  - marine monitoring surveys that, despite being non-intrusive, may interact with the seabed;
  - additional cable trenches and backfilling (marine and intertidal);
  - submarine cable repair/replacement (marine and intertidal);
  - placement of additional external cable protection (marine and intertidal);
  - vehicles traversing between the former ~~H~~hoverport and the work area within intertidal areas, particularly Pegwell Bay; and
  - vessel activities that contact the seabed with spud-legs and anchoring systems (marine and intertidal).
- Indirect:
  - changes to hydrodynamic and sedimentary regimes associated with disturbances to the seabed, leading to scour and/or transport of suspended sediment.

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Direct damage and/or loss to known and potential heritage receptors on and below the seabed

6.9.326.9.34 As discussed in Section 6.7, the sensitivity of archaeological receptors at risk of this impact is **very high**, with their archaeological value ranging from low to very high.

6.9.336.9.35 Similar to the construction phase, the magnitude of direct impacts on known and potential heritage receptors as part of operation and maintenance activities, if they were to occur, would be **large**. Any impact on marine and intertidal/coastal archaeological features would be permanent and irreversible.

6.9.36 Within areas where impact has already occurred during the construction phase, there is unlikely to be further effect. However, in areas that have not yet been impacted, without mitigation, the significance of effects on marine archaeology receptors could be **major adverse**.

6.9.346.9.37 Due to the incomplete geophysical survey coverage of the Offshore Scheme at Pegwell Bay, Kent, there is an increased risk of impact on currently unknown sub-seabed archaeological receptors. The Applicant has committed to undertake a geophysical survey assessment to cover this gap (incorporated into additional mitigation measure MA09), with the results being integrated with previous interpretations to further inform mitigation and consent compliance.

6.9.356.9.38 With the implementation of appropriate mitigation, as outlined in Section 6.8 and Section 6.10, the magnitude would be reduced to **small**, leading to a residual significance of effect that is **minor adverse**, which is considered to be not significant. Mitigation measures include namely AEZs, micro-siting around receptors, further investigation of significant sites, undertaking archaeological watching briefs in the

intertidal area at each landfall, ~~and the~~ use of a bespoke Protocol for Archaeological Discoveries with further investigation and assessment required as necessary~~,~~, and undertaking geophysical survey and assessment for the entirety of the Offshore Scheme at Pegwell Bay, Kent.~~the magnitude would be reduced to **small**, leading to a residual significance of effect that is **minor adverse**, which is considered to be not significant.~~

Changes to hydrodynamic and sedimentary regimes causing adverse or beneficial indirect effects on seabed heritage receptors

~~6.9.36~~6.9.39 As discussed in Section 6.7, the overall sensitivity of archaeological receptors at risk of this impact is **very high**, with their archaeological value ranging from low to high.

~~6.9.37~~6.9.40 This impact has been supported by the Physical Environment assessment presented in **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment**. The chapter explains that the significance of effect on the changes to seabed bathymetry and morphology, local hydrodynamic, wave and sediment transport processes and increased suspended sediment and deposition of disturbed sediments caused by the preparation of the route (~~PGLR~~ pre-lay grapnel run and pre-sweeping) and installation of the cable (including the use of nearshore and intertidal vessels~~, and~~ equipment and other vehicles, construction and use of ~~a~~ cofferdams at the Kent landfall, and excavation of HDD exit pits) would be minor adverse.

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Adverse

~~6.9.38~~6.9.41 Changes to hydrodynamic and sedimentary regimes that lead to erosion or scour could cause permanent and irreversible impact on known and potential archaeological receptors. Therefore, the magnitude of this impact, if it were to occur, would be **medium**. Without mitigation, the significance of the effects on archaeological receptors could be **moderate adverse**.

6.9.42 With the implementation of appropriate mitigation, including full geophysical survey coverage and assessment for the entirety of the Offshore Scheme at Pegwell Bay, Kent, undertaking archaeological watching briefs in the intertidal area at each landfall, a Protocol for Archaeological Discoveries for reporting exposed archaeological material including potentially further investigation of the material that could lead to an exclusion zone being implemented and post-construction monitoring (all of which is detailed is the Outline WSI), the magnitude would reduce to **small**, leading to a residual effect that is **minor adverse**, which is considered to be not significant.

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~~6.9.39~~

Beneficial

~~6.9.40~~6.9.43 Although difficult to quantify, changes to hydrodynamic and sedimentary regimes that cause sediment accretion on the seabed, potentially providing temporary or permanent protection to marine archaeology and cultural heritage receptors, could have a magnitude of **small**.

~~6.9.41~~6.9.44 The burial of marine archaeology heritage assets will be favourable to their preservation and as such the significance of the effect is considered to be **minor beneficial**.

6.9.426.9.45 It is recommended that post-construction monitoring occurs (within additional mitigation and enhancement measure MA09) to ensure that the effect of the impact does not become adverse, whereby changes to hydrodynamic and sedimentary regimes long-term lead to a reduction of seabed sediment, potentially exposing marine archaeological receptors leading to increased rates of deterioration. Where post-construction monitoring confirms that the effect remains to be beneficial, the magnitude will remain **small**, and the overall residual significance of effect will remain as **minor beneficial**.

Project works that temporarily or permanently change the setting of a known heritage receptor

6.9.436.9.46 During and following the construction of the Proposed Project, the nature of the seabed will have been changed due to the presence of the marine cable and associated infrastructure at the two landfalls, which may have an effect on the setting of archaeological heritage assets discussed in the baseline s~~S~~ection (6.7).

6.9.446.9.47 The setting of the known assets has been assessed in the accompanying marine archaeological technical report (**Application Document 6.3.4.6.A Appendix 4.6.A Marine Archaeological Technical Report**) and indicates whether the setting of marine and intertidal/coastal archaeological heritage assets could be altered by the Proposed Project or the associated works vessels or vehicles, which could lead to an overall reduced value.

6.9.456.9.48 As discussed in Section 6.7, the overall sensitivity of archaeological receptors that could be affected by this impact is **very high**, with their archaeological value ranging from low to very high.

6.9.466.9.49 Only a few of the marine receptors located within the study area are visited by divers whereby the position of the Proposed Project and the associated construction vessels could impact the setting of such marine sites, whereby their physical surroundings, relationship to other assets and the way they are experienced or appreciated could be affected. However, as such sites will be avoided by the Proposed Project, the impact on their setting is reduced. Military remains (marine and coastal) are considered to be part of the wider setting of military events, including the East Coast War Channels, and coastal defence network, and therefore could be impacted by the Proposed Project.

6.9.476.9.50 Due to the reduced scale of works that are expected to be undertaken during the operation and maintenance phase along with the reduced presence of project-related vessels compared to the operation phase, the overall magnitude of this impact on the change to the setting of heritage receptors is considered to be **small** leading to a significance of effect that could be **moderate adverse**.

6.9.486.9.51 As per the mitigation measures outlined in Section 6.8, the known archaeological receptors (for which a setting assessment has been undertaken) will be avoided by the Proposed Project and as such the magnitude will reduce to **negligible** leading to a residual effect of this impact being reduced to **negligible adverse**, which is considered to be not significant.

Project works that temporarily or permanently change the character of the historic seascape

6.9.496.9.52 The historic seascape character of the study area is considered to be **moderate** sensitivity with an overall medium archaeological value, due, in part, to the important and prolonged maritime and military histories of the south and east coasts.

6.9.506.9.53 The magnitude of this impact on the change to the character of the historic seascape of the region is considered to be **small**, since the study area is already characterised by a broad spectrum of offshore industry including multiple telecommunications and power cable routes. Additionally, once the Proposed Project has been constructed and will not be visible from sea level, the character of the historic seascape should return to its pre-development level. As a result, the significance of effect is considered to be **negligible adverse**.

6.9.516.9.54 Since no mitigation is proposed for this impact, the residual effect is predicted to remain as **negligible adverse**, due to the reduced amount of marine traffic that will be present during the maintenance and operation phase, which is considered to be not significant.

Decommissioning Phase

6.9.526.9.55 As with cable installation activities, decommissioning activities have the potential to impact marine archaeology receptors either directly or indirectly, located on or under the seabed, resulting in their total or partial physical loss, a change to their setting, and/or the disruption of relationships between receptors within their wider surroundings. The techniques for decommissioning are considered to be simpler than during construction, whereby minimising seabed disturbance is prioritised over cable integrity. Therefore, any impacts are likely to be less than during the construction phase.

6.9.536.9.56 A decommissioning plan will be written once the final route and installation methodology has been engineered and will be updated throughout the life of the Proposed Project.

6.9.546.9.57 Activities to undertake the decommissioning of the cable will be dependent on the burial depth of the cable and the mobility of the seabed, which may have significantly changed. Furthermore, if the cables are left buried *in situ*, likely significant effects from decommissioning will be avoided. If the redundant cables are to be removed at decommissioning it is assumed that impacts from activities would be of a similar nature to those for cable installation and any effects of those impacts would be of a similar or lesser significance, and therefore would be not significant.

6.10 Additional Mitigation and Enhancement Measures

6.10.1 Mitigation measures are additional topic and site-specific measures that have been applied to mitigate or offset any likely significant effects. Mitigation measures included that are relevant to marine archaeology receptors are:

- MA08: Where sensitive routeing and siting of infrastructure and temporary works around marine heritage assets is not possible, anomaly investigation will be undertaken to confirm the nature and value of the seabed anomaly. Methods of ground truthing assessment could include ROV or diver survey offshore and watching briefs onshore, and could be undertaken in conjunction and in coordination with other surveys associated with the Offshore Scheme, for example UXO or obstruction surveys. All relevant information and data derived from such surveys should be assessed by a suitably qualified, experienced and accredited marine archaeological consultant, and in accordance with the associated WSI;

- MA09: Any further marine geophysical or geotechnical surveys undertaken, for instance post-consent or post-construction, will be archaeologically assessed and interpreted by a suitably qualified, experienced and accredited marine archaeological geophysicist or geoarchaeologist. Work will be undertaken in accordance with the associated WSI (**Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation (OWSI)**) and accompanying Method Statements. The results of such surveys will be integrated with previous interpretations and reported on accordingly to inform archaeological mitigation and consent compliance~~the EIA process~~. It is also recommended that archaeological specialists are included in the design of any geophysical and geotechnical surveys to ensure that opportunities are maximised where possible;
- MA10: Watching briefs will be utilised in the intertidal, coastal or marine areas where any intrusive works are planned. These could include pre-lay grapnel runs or intertidal cable-laying in an excavated trench. The proposed methodology will be presented in a Method Statement and agreed through consultation with the Regulator, the MMO, and the Archaeological Curator, Historic England, for marine works and the respective local authority curatorial bodies that serve Suffolk and Kent for works in the intertidal and coastal zone;
- MA11:~~–~~ Once the design of the Offshore Scheme has been confirmed, it may be possible to ascertain measures to protect heritage assets that could be indirectly impacted, for instance by scouring, exposure or erosion, caused by direct impacts to the seabed. For instance, 'physical buffers' may be placed around a heritage asset to protect it from scour. The proposed methodology for such works will be outlined in a Method Statement and approved by the Archaeological Curator, Historic England and the Regulator, the MMO.
- MA12: The Marine WSI contains details of the mitigation measures to prevent and reduce impact to marine archaeological features and material. The Marine Written Scheme of Investigation (WSI) and any associated Archaeological Method Statements must be complied with throughout the project. Contractors should be provided with GIS files containing up to date details of the location of all marine archaeological anomalies, which should all be avoided where possible. Locations and extents of all AEZs should also be provided, whereby impact to the seabed is prohibited inside these areas. Where accidental impact inside an AEZ does occur, contractors should be aware of the process for reporting it to the MMO, with advice from Historic England. Work within the AEZ should immediately cease if impact is known to have occurred. If any archaeological material is discovered, contractors must ensure that the bespoke Protocol for Archaeological Discoveries for the Proposed Project is followed, and reporting of material occurs accordingly. Prior to works, contractors must provide contact details as required for the purposes of the Protocol.
- MA13: Prior to works commencing, contractors should have familiarised themselves with the Protocol for Archaeological Discoveries and undertake awareness training. Contractors should provide relevant contact details to the Archaeological Contractor to ensure the lines of communication are clear for the Protocol to run smoothly. If archaeological material is discovered, contractors must ensure that the Protocol is followed, and reporting of material occurs accordingly. The obligations of the Merchant Shipping Act 1995 and Protection of Military Remains Act 1986 will be complied with.

- MA14: Contractors should be provided with GIS files containing information showing areas of archaeological potential with regards to palaeolandscapes. Contractors should be made aware of the interests of the archaeological contractor with regards surveys.

6.10.2 The measures above will require archaeological Method Statements (mitigation measure 26) prepared by an archaeological consultant and approved by the Archaeological Curator(s) and Regulator prior to the commencement of any works that could cause impact to marine or intertidal/coastal heritage receptors.

6.11 Residual Effects and Conclusions

6.11.1 Embedded and control and management mitigation measures are presented in Section 6.7 and additional mitigation and enhancement measures are presented in Section 6.10. With the implementation of these mitigation measures, the residual effects of all potential impacts should be reduced to between negligible adverse and minor beneficial, which are considered not significant in terms of EIA.

6.11.1 Table 6.17 shows a summary of the residual effects on marine archaeology.

6.11.2 Under the terms of the DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026. Consideration has been given to whether the effects reported above would be any different if the Proposed Project works were to commence in any year up to year five, and subsequently it is thought that there will be a negligible difference to the residual effects if the works were to commence in any year up to year five. The rate of erosion and degradation for each site will depend on the material that it is made from, whether it is buried, partially buried or exposed and whether it is affected by hydrodynamic and sedimentary regimes and scour. It is likely that during this five-year period the condition and preservation of archaeological features considered within this assessment will remain relatively unaltered.

6.12 Transboundary Effects

6.12.1 A transboundary effect is any significant adverse effect on the environment resulting from human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of another State.

6.12.2 All works associated with the Proposed Project fall within the UK jurisdiction (12 nautical miles (nm)). Given the distance of the Proposed Project from French waters (approximately 25 km), no significant transboundary effects have been identified. Predicted disturbance from the Proposed Project is short term and local and are therefore not anticipated to be sufficient to influence marine archaeology receptors outside UK waters, and subsequently cause transboundary effects.

Damage to shipwrecks, aircraft crash sites and archaeological material located within UK territorial waters but that originated from other nations would be considered a transboundary effect and would fall within the jurisdiction of another country. This would require liaison with regulators and associated archaeological curators from relevant countries. Since all seabed features will be avoided through AEZs and micro-siting, it is unlikely that impact will occur to known sites of a foreign origin. Currently unknown sites that are discovered and potentially impacted as a result of the Proposed Project will require further investigation to understand whether they originated outside the UK.

Table 6.17 Summary of residual effects on marine archaeology

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
Construction	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Very high	Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed.	Large	Major adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
Construction	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).	Very high	Physical disturbance activities causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors.	Medium	Moderate adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)
Construction	Known and potential marine	Very high	Physical disturbance activities	Small	Minor beneficial	MA09.	Small	Minor beneficial (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).		causing changes to hydrodynamic and sedimentary regimes leading to sediment accretion on the seabed and scour, causing beneficial indirect effects on seabed heritage receptors.					
Construction	Known and potential marine palaeogeographic sites and prehistoric	Very high	Project works that temporarily or permanently change the	Medium	Moderate adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features)		setting of a heritage receptor.					
Construction	The Historic Seascape Character of the region	Medium	Project works that temporarily or permanently change the character of the historic seascape.	Small	Negligible adverse	No	Negligible	Negligible adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
Operation and maintenance	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features)	Very high	Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed.	Large	Major adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)
Operation and	Known and potential marine	Very high	Physical disturbance activities	Medium	Moderate adverse	MA08, MA09, MA10, MA11,	Small	Minor adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
maintenance	palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).		causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors.			MA12, MA13, MA14.		
Operation and maintenance	Known and potential marine palaeogeographic sites and prehistoric	Very high	Physical disturbance activities causing changes to hydrodynami	Small	Minor beneficial	MA09.	Small	Minor beneficial (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).		c and sedimentary regimes leading to sediment accretion on the seabed and scour, causing beneficial indirect effects on seabed heritage receptors.					
Operation and maintenance	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and	Very high	Project works that temporarily or permanently change the setting of a heritage receptor.	Small	Moderate adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Negligible	Negligible adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features)							
Operation and maintenance	The Historic Seascape Character of the region	Medium	Project works that temporarily or permanently change the character of the historic seascape.	Small	Negligible adverse	No	Small	Negligible adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
Decommissioning	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features)	Very high	Physical disturbance activities causing direct damage and/or loss to heritage receptors on and below the seabed.	Large	Major adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)
Decommissioning	Known and potential marine	Very high	Physical disturbance activities	Medium	Moderate adverse	MA08, MA09, MA10, MA11,	Small	Minor adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	palaeogeographic sites and prehistoric finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).		causing changes to hydrodynamic and sedimentary regimes leading to sediment reduction on the seabed and scour, causing adverse indirect effects on seabed heritage receptors.			MA12, MA13, MA14.		
Decommissioning	Known and potential marine palaeogeographic sites and prehistoric	Very high	Physical disturbance activities causing changes to hydrodynami	Small	Minor beneficial	MA09.	Small	Minor beneficial (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	finds; known and potential maritime and aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features).		c and sedimentary regimes leading to sediment accretion on the seabed and scour, causing beneficial indirect effects on seabed heritage receptors.					
Decommissioning	Known and potential marine palaeogeographic sites and prehistoric finds; known and potential maritime and	Very high	Project works that temporarily or permanently change the setting of a heritage receptor.	Medium	Moderate adverse	MA08, MA09, MA10, MA11, MA12, MA13, MA14.	Small	Minor adverse (Not significant)

Phase	Receptor	Sensitivity	Impact	Effect		Additional Mitigation Measures	Residual Effect	
				Magnitude	Significance		Magnitude	Significance
	aviation features in a marine context; and intertidal and coastal heritage receptors (including known and potential palaeogeographic sites and prehistoric finds, historic terrestrial, marine and aviation features)							
Decommissioning	The Historic Seascape Character of the region	Medium	Project works that temporarily or permanently change the character of the historic seascape.	Negligible	Negligible adverse	No	Negligible	Negligible adverse (Not significant)

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