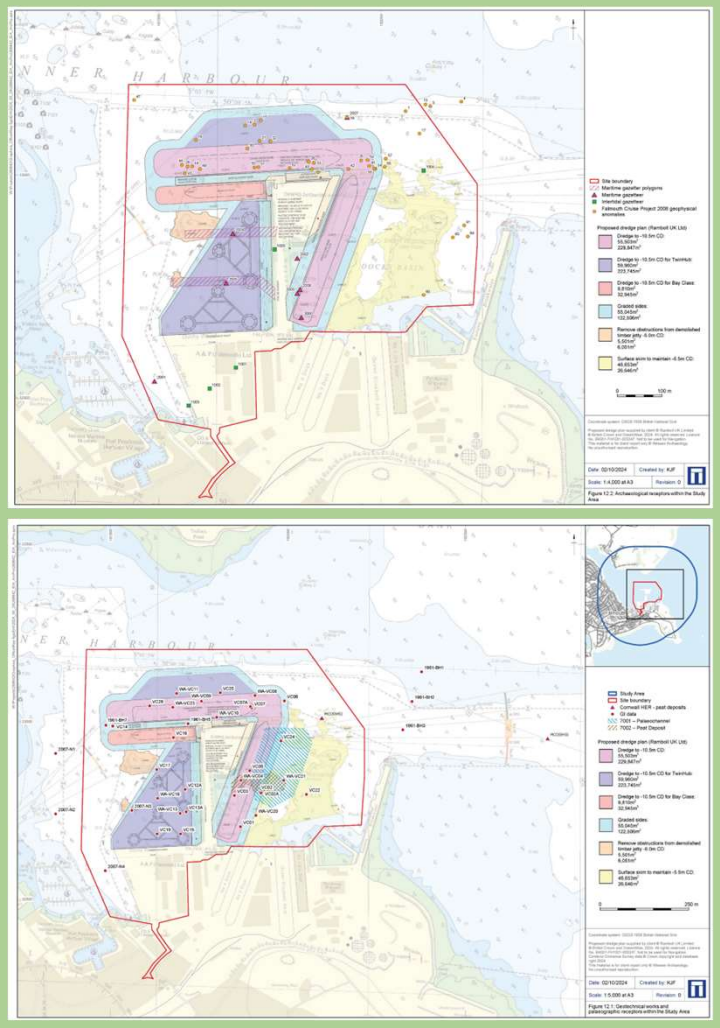
11. Marine Archaeology



Archaeological Receptors within the Study Area

The marine archaeology ES chapter reports on the likely marine archaeology effects associated with the demolition and construction stage and operational stage of the proposed development.

Existing Conditions

A combination of a desk-based (review of mapping and documentary sources) and field studies (site walkover, geoarchaeological assessment of marine sediment cores and interpretation of geophysical data) was undertaken to establish the marine archaeology baseline conditions that might be affected by the proposed development.

The following have been identified within the study area:

- Pleistocene and Holocene deposits with archaeological and geoarchaeological potential occur within the site;
- No sites that are subject to statutory protection;
- Four known recorded wrecks within the study area, in addition to a further wreck and an identified anchor and length of chain;
- Two known obstructions in the intertidal zone to the west of the Western Wharf, constituting two anchors and removed or covered military infrastructure; and
- A record of peat within the seabed to the east of the Northern Arm.

Demolition and Construction

During the demolition and construction stage the following impacts and effects have been assessed:

- Direct impacts on known and potential marine archaeology receptors from demolition and construction activities (including dredging) due to physical disturbance of the seabed and sub-seabed. This would result in a **significant major adverse** effect;
- Direct temporary impacts on the setting of a heritage receptor and the character of the historic seascape due to the dredging, demolition and construction works. This would result in a not significant negligible adverse effect; and
- Indirect impacts to marine archaeology receptors due to changes to hydrodynamic and sediment transport processes. This would result in a not significant negligible adverse effect.

It has been agreed with Historic England that a Written Scheme of Investigation (WSI) will detail mitigation measures required, including:

- Archaeological Exclusion Zones if required;
- Recovery and recording of identified anchors;
- Recording of wreck along eastern side of Western Wharf;
- Protocol for Archaeological Discoveries; and
- Palaeoenvironmental assessment of peat deposits.

These will be subject to agreement with Historic England. This will reduce any significant effects to negligible adverse and not significant.

Operation

During operation the following impacts and effects have been assessed:

- Direct permanent impacts on the setting of a heritage receptor and the character of the historic seascape due to the operation of the development. This would result in a not significant negligible adverse effect.

11 Marine Archaeology

11.1 Introduction

11.1.1 This chapter reports on the likely marine archaeology effects associated with the demolition and construction stage and operational stage of the proposed development.

11.1.2 This chapter is supported by the following technical appendices within ES Volume 2:

- Technical Appendix 11.1 – Falmouth Docks Development Marine Archaeological Technical Report (Wessex Archaeology 2024a);
- Technical Appendix 11.2 – Falmouth Docks Development Marine Geoarchaeological Assessment (Wessex Archaeology 2024b); and
- Technical Appendix 11.3 – Falmouth Docks Development Offshore Written Scheme of Investigations (Wessex Archaeology 2024c).

11.1.3 The assessment has been informed by the following legislation, policies and published guidance:

- National Legislation and Policy:
  - Marine and Coastal Access Act 2009;
  - Protection of Wrecks Act 1973: Section One;
  - Protection of Wrecks Act 1973: Section Two;
  - Ancient Monuments and Archaeological Area Act 1979 (as amended);
  - Merchant Shipping Act 1995;
  - Marine Policy Statement (Department for Environment, Food and Rural Affairs (DEFRA) 2011);
  - National Policy Statement for Ports (Department for Transport 2012); and
  - National Planning Policy Framework (Department for Levelling Up, Housing and Communities 2023).
- Regional and Local Policy:
  - Cornwall Maritime Strategy 2012 – 2030 (Cornwall Council 2012).
- National guidance and industry standards:
  - Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers (English Heritage 1998);
  - Managing Lithic Scatters: Archaeological Guidance for Planning Authorities and Developers (English Heritage 2000);
  - Military Aircraft Crash Sites: Archaeological guidance on their significance and future management (English Heritage 2002);
  - Marine Aggregate Dredging and the Historic Environment. Assessing, evaluation, mitigation and monitoring the archaeological effects of marine aggregate dredging: Guidance note (BMAPA and English Heritage 2003);
  - Protocol for reporting finds of archaeological interest (BMAPA and English Heritage 2005);
  - The Code of Practice for Seabed Developers (Joint Nautical Archaeology Policy Committee 2006);
  - Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage (now Historic England) 2008);
  - Our Seas – A shared resource: High level marine objectives (DEFRA 2009);
  - Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition) (English Heritage 2011);
  - Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather 2011);
  - Marine Geophysics Data Acquisition, Processing and Interpretation Guidance Notes (Plets *et al.* 2013);
  - Ports and the Historic Environment. NHPP 4A3 (Historic ports, dockyards, harbours and coastal resorts) (Fisher Associates 2014);
  - Dredging and Port Construction: Interaction with Features of Archaeological or Heritage Interest (PIANC 2014);
  - Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record (Historic England 2015a);
  - Managing Significance in Decision-Taking in the Historic Environment Historic Environment Good Practice Advice in Planning: 2 (Historic England 2015b);
  - Piling and Archaeology: Guidelines and Best Practice (Historic England 2015c);
  - The Assessment and Management of Marine Archaeology in Port and Harbour Development (Historic England 2016a);
  - Preserving Archaeological Remains: Decision-taking for Sites under Development (Historic England 2016b);
  - The Setting of Heritage Assets – Historic Environment Good Practice Advice in Planning: 3 (Second Edition) (Historic England 2017a);
  - Conservation Principles for the Sustainable Management of the Historic Environment (Historic England 2017b);
  - Ships and Boats: Prehistory to Present – Designation Selection Guide (Historic England 2017c);
  - Statements of Heritage Significance: Analysing Significance in Heritage Assets: Historic England Advice Note 12 (Historic England 2019);
  - Deposit Modelling and Archaeology Guidance for Mapping Buried Deposits (Historic England 2020);
  - Standard and Guidance for Archaeological Advice by Historic Environment Services (Chartered Institute for Archaeologists 2020a);
  - Standard and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists 2020b);
  - Standard and guidance for nautical archaeological recording and reconstruction (CIfA 2020c);
  - Code of Conduct: Professional Ethics in Archaeology (Chartered Institute for Archaeologists 2022); and
  - Curating the Palaeolithic (Historic England 2023).

11.2 Consultation

11.2.1 Table 11-1 summarises the key EIA Scoping Opinion responses with respect to the marine archaeology assessment.

Table 11-1: Summary of Consultation

Consultee /Date of Consultation	Summary of Comments	Summary of Action Taken and Where in this Chapter Comments are Addressed
Falmouth Harbour Scoping response received 11 September 2023	Heritage: Custom House Quay, North Quay and Environs are listed structures and not specifically mentioned / detailed in fig. 13-1. Falmouth Harbour are concerned that construction could affect / damage these in particular piling/excavation close to assets and therefore considered that this area should be in scope for impact assessment and mitigation as necessary.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage
Historic England Scoping response received 11 September 2023	This development could, potentially, have an impact within the setting of a number of designated heritage assets in the area around the site. In line with the advice in the National Planning Policy Framework (NPPF), we would expect the Environmental Statement to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage
Historic England Scoping response received 11 September 2023	We would also expect the Environmental Statement to consider the potential impacts on non-designated features of historic, architectural, archaeological or artistic interest, since these can also be of national importance and make an important contribution to the character and local distinctiveness of an area and its sense of place. This information is available via the local authority Historic Environment Record (www.heritagegateway.org.uk < http://www.heritagegateway.org.uk >) and relevant local authority staff.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage
Historic England Scoping response received 11 September 2023	We would strongly recommend that you involve Cornwall Council's Conservation Officer and the archaeological staff at Cornwall Council's Historic Environment Planning team in the development of this assessment. They are best placed to advise on: local historic environment issues and priorities; how the proposal can be tailored to avoid and minimise potential adverse impacts on the historic environment; the nature and design of any required mitigation measures; and opportunities for securing wider benefits for the future conservation and management of heritage assets. It is important that the assessment is designed to ensure that all impacts are fully understood. Section drawings and techniques such as photomontages are a useful part of this.	Relevant stakeholder engagement has been undertaken as part of the assessment. This comment is more relevant to Chapter 12: Archaeology and Heritage.
Historic England Scoping response received 11 September 2023	The assessment should also take account of the potential impact which associated activities (such as construction, servicing and maintenance and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to *in situ* decomposition or destruction of below ground archaeological remains and deposits and can also lead to subsidence of buildings and monuments.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage
Historic England Scoping response received 11 September 2023	In relation to the Scoping Report, we are pleased to see that attention has been given to the potential marine archaeological impacts in addition to terrestrial heritage factors. The marine scoping assessment rightly raises the potential for the presence of palaeogeological features and deposits. For instance, in the Carrick Roads/Falmouth area this may include elements of submerged prehistoric forests and drowned former land surfaces and soils/peats. We would expect to see the assessment and evaluation of this aspect of the marine archaeological resource include both geoarchaeological (mentioned in the report) and palaeoenvironmental approaches in assessing significance and from that, an identification of the nature and magnitude of potential impacts.	Noted. The archaeological assessment of specific geophysical and geotechnical survey data has been incorporated in the baseline characteristics for marine archaeology (Section 11.8). Discussion of the potential impacts on palaeogeography is outlined in Section 11.9, while the mitigation for these impacts is outlined in Section 11.10
Historic England Planning Scoping response received 8 September 2023	From the Historic Environment Planning perspective, Section 13 of the application scoping document summarises the general approach to the above ground historic assets and setting etc. As stated in the document, there is an encircling Conservation Area and nearby at Pendennis a Scheduled Monument with numerous other Listed buildings distributed across the landscape to the west, the south and the particularly to the south-east. Whilst it appears that the proposals generally follow the existing lines of the docks/wharves, there may well be implications relating to the setting of monuments, particularly if there are height implications. However, the provision of a detailed Heritage Impact Assessment and Heritage Statement should be able to confirm the significance of the existing structures and whether there may be the necessity for design changes (as mitigation) to the wharves to reflect existing significance and setting ' especially given the visual proximity of Falmouth Conservation Area.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage

Table 11-1: Summary of Consultation

Consultee /Date of Consultation	Summary of Comments	Summary of Action Taken and Where in this Chapter Comments are Addressed
	The Planning (Listed Buildings and Conservation Areas) Act 1990 sets out the general duty in respect to Listed Buildings and Conservation Areas. The application has been considered; there are no further historic environment observations to make in respect of this proposal. Where any specific issues arise in relation to the impact of the proposal on the Listed Building please re-consult the Historic Environment (Planning) Service.	
Historic Environment Planning (Archaeology) Scoping response received 8 September 2023	The sections in the submitted scoping document (Ramboll 01/08/2023) which relate to heritage are Section 12 (Marine Archaeology), Section 13 (Heritage) and the supporting Appendices 4C-E incl. We note that our conservation colleagues in Historic Environment Planning have been consulted in regard to the setting of the Falmouth Conservation Area and Grade II Listed Buildings. With Historic England consulted in regard to the setting of Grade I and II* Listed Buildings and Scheduled Monuments. As parts of the application site also fall within the remit of the MMO, Historic England may also comment on the archaeological potential within the marine area. Our advice is solely in regard to the buried archaeological potential and historic building (or structure) recording. We concur with the proposed methodology to assess the archaeological baseline and impacts outlined in the scoping opinion report.	Addressed by Onshore consultant - Chapter 12: Archaeology and Heritage
Historic England Consultation on Marine Archaeology assessment including geoarchaeological work and geophysical assessment scope 10 July 2024	Consultation with Historic England to review Marine Archaeology assessment details and present current results. Included discussion of geoarchaeological work completed alongside scope of geophysical assessment to include only rapid review of multibeam echo sounder, side scan sonar and magnetometry data due to extent of 20th century dredging within proposed development and later infilling of sediment to form current seabed surface and upper strata. Sub bottom profiler data has been assessed for buried palaeolandscape information deeper within the seabed sediments and was integrated with geoarchaeological assessment. Historic England were content with work completed and noted that best practice had been followed during the assessment. Mitigation recommendations for Stage 3 palaeoenvironmental assessment and archaeological watching brief set out in a draft WSI were put forward.	Approach confirmed and completed within marine archaeological technical report (Volume 1, Appendix 11.1 – Falmouth Docks Development Marine Desk-Based Assessment). Mitigation recommendations set out in Section 11.10 and within draft WSI submitted alongside this ES.

11.3 Assessment Scope

11.3.1 To facilitate the impact assessment process and ensure consistency in the terminology of significance, a standard assessment methodology has been applied. This methodology has been developed from professional judgement along with a range of sources, including:

- Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage (now Historic England) 2008);
- Dredging and Port Construction: Interaction with Features of Archaeological or Heritage Interest (PIANC 2014); and
- The Setting of Heritage Assets – Historic Environment Good Practice Advice in Planning: 3 (Second Edition, Historic England 2017a).

11.3.2 Note that likely effects with respect to the terrestrial historic environment (including both terrestrial archaeology and built heritage) are considered in Chapter 12: Heritage, and are not included in this chapter.

Technical Scope

11.3.3 The technical scope of the assessment has considered the following impact pathways during the demolition and construction stage:

- Direct impacts on known and potential marine archaeology receptors from demolition and construction activities due to physical disturbance of the seabed and sub-seabed;
- Direct impacts on known and potential marine archaeology receptors from capital dredging into previously undisturbed sediments due to physical disturbance of the seabed and sub-seabed;
- Direct temporary impacts on the setting of a heritage receptor and historic seascape due to the dredging, demolition and construction works; and
- Indirect impacts to marine archaeology receptors due to changes to hydrodynamic and sedimentary processes.

11.3.4 The technical scope of the assessment has considered the following impact pathways during the operational stage:

- Direct permanent impacts on the setting of a heritage receptor during operation of the proposed development; and
- Direct permanent impacts on the character of the historic seascape during operation of the proposed development.

11.3.5 Current predictions on hydrodynamic and sedimentary processes do not suggest significant changes to the current regime and therefore low levels of maintenance dredging will be required within the proposed development's operational phase. If it is required, then it would be removing mobile sediment material with no in-situ archaeological material, and so no impact related to this has been scoped in.

Spatial Scope

11.3.6 The study area comprises the area contained within the marine section of the site with an additional buffer of 1 km (Figure 11-1). The marine section of the site comprises the area where there is potential for direct impacts to marine archaeology from the marine proposed development works, while the additional buffer allows for a better understanding of the broader archaeological baseline environment of the area, as well as capturing marine records for poorly located receptors within the vicinity of the site boundary.

Temporal Scope and Assessment Scenarios

11.3.7 The assessment has considered impacts on the current known and potential baseline arising during the demolition and construction stage, which would be expected to be either temporary and short-term (0 – 5 years) or permanent in relation to direct impacts.

11.3.8 The assessment has considered impacts arising during the operational development stage which would be expected to be permanent in nature and long-term in duration, i.e. more than 10 years.

11.3.9 The assessment has been undertaken against the existing baseline, based on data sources set out in the subsequent section.

11.4 Baseline Characterisation Method

Desk Study

11.4.1 In order to establish the existing marine archaeology baseline conditions in the study area and wider search area, up to mean high-water spring (MHWS) line, relevant data were reviewed and assessed (Wessex Archaeology 2024a; 2024b).

11.4.2 The baseline summary for maritime and aviation archaeology was assessed by means of accessing any records of sites, findspots, wrecks, casualties and other seabed features.

11.4.3 The baseline assessment of maritime and aviation archaeology was further supplemented by a review of relevant primary and secondary source material in order to provide an indication on the nature of maritime and aviation activity across the region. As well as summarising the known archaeological resource, the baseline assessment underlines the potential for encountering unknown shipwreck and aircraft crash sites within the study area.

11.4.4 The data sets and associated sources can be summarised as follows:

- The United Kingdom Hydrographic Office (UKHO) data for charted wrecks and obstructions;
- The National Marine Heritage Record (NMHR) maintained by Historic England, comprising data for marine archaeological sites including sites protected under the Protection of Military Remains Act 1986;
- The National Heritage List for England (NHLE) maintained by Historic England, comprising data of designated heritage assets including sites protected under the Ancient Monuments and Archaeological Area Act 1979 (as amended) and the Protection of Wrecks Act 1973;
- Cornwall Council (CC) Historic Environment Records (HER) (acquired January 2024);
- Various online resources including the British Geological Survey (BGS) Geology of Britain Viewer;
- Historic Seascape Characterisation (HSC) using the consolidated HSC national database (LUC 2017);
- Relevant mapping including Admiralty Charts, historic maps, historic aerial imagery and Ordnance Survey sources; and
- Relevant documentary sources and grey literature held by Wessex Archaeology, provided by A&P Falmouth and those available through the Archaeological Data Service and other websites.

Field Study

11.4.5 In addition to the desk-based assessment of the marine archaeology baseline conditions, field studies and assessments of survey data were completed, as follows:

- A walkover survey of the site on 31 October 2023 to identify any extant archaeological material within the intertidal zone;
- A geoarchaeological assessment of geotechnical core logs and cores from historic and project-specific geotechnical surveys completed in March 2024; and
- An archaeological assessment of the historic and project-specific marine geophysical survey data, specifically the sub-bottom profiler (SBP) data.

11.4.6 The baseline summary for seabed prehistory was assessed using the historic and project-specific geotechnical and geophysical survey data, recovered through borehole logs, field recording and survey data assessment and analysis. This in-field data was supplemented by a review of geological mapping from the BGS, inclusive of solid geology and seabed sediments.

11.4.7 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:

- physical 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 the asset is experienced in its immediate physical surroundings are also considered; and;
- non-visual factors – including the way the asset is appreciated in a broader historical, artistic, and intellectual capacity, and the asset's associations.

11.4.8 The HSC assessment methodology defined areas with HSC types through the identification and interpretation of the historic dimension of the present day coastal and marine environment. This is achieved by addressing the multi-level character of the sea, by splitting the marine zone into five tiered levels: the coastal area, the sea surface, the water column, the sea floor, and the subsea floor.

11.5 Assessment Method

Methodology

11.5.1 The baseline marine archaeological resource was defined and assessed based on desk study, field work and interpretation of geophysical survey data, using professional judgement and a range of published guidance and industry standards. The methodology for the assessment of effects of the proposed development on the marine archaeological baseline is set out in subsequent sections.

11.6 Assessment Criteria

11.6.1 The general criteria used to assess if an effect is significant or not, is set out in Chapter 2: EIA Process and Methdology, further details are provided herein. This is determined by consideration of the sensitivity of the receptor, magnitude of impact and scale of the effect. In considering the significance of an effect, consideration has been given to the duration of the effect, the geographical extent of the effect and the application of professional judgement.

11.6.2 The terms used to define receptor sensitivity and magnitude of impact are set out in subsequent sections and based on a range of sources, particularly Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage (now Historic England) 2008) and Ships and Boats: Prehistory to Present – Selection Guide (Historic England 2017c). These criteria have been adopted in order to implement a specific methodology for offshore archaeology and cultural heritage.

Receptor Sensitivity/Value Criteria

11.6.3 The ability of a receptor to accommodate change and its ability to recover if affected is a function of its sensitivity. Receptor sensitivity is typically assessed via the following factors:

- Adaptability – 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;
- Recoverability – the temporal scale over and extent to which a receptor will recover following an effect; and
- Value – a measure of the receptor's importance, rarity and worth.

11.6.4 As archaeological receptors cannot adapt, tolerate, or recover from physical impacts caused by a proposed development, for the purpose of this assessment, the sensitivity of each asset will be quantified only by its value.

11.6.5 For non-designated assets, significance (value) is best defined by Historic England's *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (Historic England 2008), which describe value as a combination of evidential value; historical value; aesthetic value; and communal value. Evidential value derives from the physical fabric of an asset and its ability to provide evidence relating to how the asset was made and used and how this changed through time. Historical value can derive from particular aspects of past ways of life, or association with notable families, persons, events, or movements – it is the connection between past events and society with the present. Aesthetic value relates to the design, construction and craftmanship of an asset. It can include setting and views to and from the asset, which may have

changed through time. Communal value derives from the meanings that an historic asset has for the people who relate to it, or for whom it figures in their collective experience or memory. It may be commemorative, spiritual, or symbolic, such as meaning for identity or collective memory.

11.6.6 It should be noted that, while designation indicates that a receptor has been identified as being of high value, non-designated archaeological assets are not necessarily of lesser value. Consequently, non-designated receptors that can be demonstrated to be of equivalent value to designated sites are considered to be of equivalent significance.

11.6.7 The nature of the marine archaeological resource is such that there is a high level of uncertainty concerning remains on the seabed. Often data regarding the nature and extent of sites are limited or out of date and, as such, the precautionary principle has been applied to all aspects of archaeological impact assessment. All sites are considered to have archaeological value and, in accordance with the precautionary approach, the value of potential sites cannot be evaluated until they are discovered, therefore potential sites of all periods should be expected to be of high value.

11.6.8 The perceived value of known archaeological assets were assessed on a site-by-site basis on a five-point scale using professional judgement and past experience.

11.6.9 The value of receptors has been classified as uncertain, negligible, low, medium or high, in accordance with the criteria set out in Table 11-2.

Table 11-2: Definitions of the value levels for heritage assets

Value (sensitivity) of asset	Criteria
Uncertain	Heritage assets for which the importance of the resource has not been ascertained. Archaeological resources the importance of which cannot be ascertained.
Negligible	Heritage assets with very little or no surviving archaeological interest and little or no evidential, historic, aesthetic, or communal value as identified by Conservation Principles. Heritage assets, or groups of assets that cannot appreciably contribute to acknowledged regional research objectives.
Low	Within a marine context, low value assets include: • Heritage assets displaying limited evidential, historic, aesthetic, or communal value as identified by Conservation Principles; • Heritage assets, groups of assets that contribute to a limited degree to regional research objectives, particularly those identified in research frameworks; • 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.
Medium	Within a marine context, medium value assets include: • Heritage assets that are not designated and that do not meet the criteria for designation (e.g. as a Protected Wreck or scheduled monument) but display evidential, historic, aesthetic or communal value as identified by Conservation Principles; • Heritage assets, groups of assets or landscapes that contribute to regional research objectives, particularly those identified in research frameworks; • 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.
High	Internationally or nationally important. Within a marine context, high value heritage assets include: • World Heritage Sites and heritage assets of acknowledged international importance, or that can contribute significantly to acknowledged international research objectives; • Wrecked ships and aircraft that are protected under the Protection of Wrecks Act 1973, Ancient Monuments and Archaeological Areas Act 1979 or Protection of Military Remains Act 1986 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. Palaeogeographic features with demonstrable potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape; • Additionally, in line with the UK Marine Policy Statement, any remains which are not currently designated but have equivalent significance to a designated asset are also considered to be of high value.

11.6.10 With specific regard to shipwrecks, On the Importance of Shipwrecks (Wessex Archaeology 2006) suggests importance can be assessed through the following criteria: build, use, loss, survival and investigation.

11.6.11 In general, Ships and Boats: Prehistory to Present –Selection Guide (Historic England 2017c) drew some generalisations about importance based on the age of the wreck:

- Pre-1500 AD: this covers the period from the earliest Prehistoric evidence for human maritime activity to the end of the medieval period, around 1508. Little is known of watercraft or vessels from this period and archaeological evidence of them is so rare that all examples of craft are likely to be of special value;
- 1501-1815: this encompasses the Tudor and Stuart periods, the English Civil War, the Anglo-Dutch Wars and later the American Independence and French Revolutionary Wars. Wreck and vessel remains from this date are also quite rare and can be expected to be of special value;
- 1816-1913: this period witnessed great changes in the way in which vessels were built and used, corresponding with the introduction of metal to shipbuilding and steam to propulsion technology. Examples of watercraft from this period are more numerous and as such, it is those that specifically contribute to an understanding of these changes that should be regarded as having special value;
- 1914-1945: this period encompasses the First World War, the Interwar years and the Second World War. This date range contains Britain's highest volume of recorded boat and ships losses. Those which might be regarded as having special interest are likely to relate to technological changes and to local and global activities during this period; and
- Post 1945: the final period extends from 1946 through the post-war years to the present day. Vessels from this date range would have to present a strong case if they are to be considered of special interest.

11.6.12 According to this composite timeline, vessels that pre-date 1816 are likely to be considered of special value on the basis of their rarity and subsequent national and international value in our understanding of maritime activity and shipping movements during these periods.

Impact Magnitude Criteria

11.6.13 Factors that have been considered to determine the magnitude of potential change and thereby the magnitude of impact include the area of influence/spatial extent, duration, frequency, and reversibility of impact. Note that for heritage assets, direct physical impacts will be permanent and irreversible. However, indirect impacts such as changes to sedimentation may be reversible or subject to alteration following cessation of dredging activity, depending on the nature of the change to sedimentation. Any loss of sediment and erosion of heritage assets will not be reversible, but where heritage assets are better protected by the accumulation of deeper sediment, this may be

considered a reversible change and also beneficial. The definitions for these criteria are presented in Table 11-3.

Table 11-3: Definitions of the magnitude of impacts for heritage assets

Magnitude of change (impact)	Description
No Change	No loss or alteration of characteristics, features, or elements; no observable impact in either
Negligible	For Adverse: • Very minor loss or detrimental alteration to one or more characteristics, features or elements, such that the post-development character of the archaeological asset would be negligibly changed. For Beneficial: • Very minor benefit to or positive addition of one or more characteristics, features or elements, such that the post-development character and quality of the archaeological heritage asset would be better understood.
Low	For Adverse: • Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, such that the post-development character of the archaeological asset would be slightly changed. For Beneficial: • Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on heritage asset or a reduced risk of adverse impact occurring, such that the post-development character and quality of the archaeological heritage asset would be better understood.
Medium	For Adverse: • Loss of resource, but not adversely affecting the integrity; partial loss of/ damage to key characteristics, features or elements, such that the post-development character of the archaeological heritage asset would be partially changed. For 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 would be considerably better understood.
High	For Adverse: • Loss of resource and/ or quality and integrity of resource; severe damage to key characteristics, features, or elements, such that the post-development character of the archaeological asset would be fundamentally or considerably changed. For 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 would be fundamentally better understood.

Scale of Effect Criteria

11.6.14 Impacts have been assessed on the basis of the value/sensitivity of receptors against the magnitude of impact to determine the scale of effect as presented in Table 11-4. No change is not included in this table as it represents no impact and therefore has no scale of impact, similarly uncertain is not included as the sensitivity of the receptor is unknown.

Table 11-4: Scale of Effect Criteria

Sensitivity of Receptor	Magnitude of Change (impact)			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible	Negligible	Negligible
Low	Negligible	Negligible	Minor	Moderate
Medium	Negligible	Minor	Moderate	Major
High	Negligible	Moderate	Major	Major

11.6.15 The matrix provides a guide to the assessment but is not a substitute for professional judgement and interpretation, particularly where the sensitivity or effect magnitude levels are not clear or are borderline between categories.

11.6.16 Based on professional judgement, moderate and major effects are considered significant in EIA terms.

11.6.17 In determining the significance of reported effects, consideration has been given to the type of effect i.e. direct, indirect or secondary, the geographical extent of the effect and the duration of the effect i.e. temporary which is considered to be either short-term (up to 5 years) or medium-term (5-10 years) or long-term (10 years or more) or permanent. Effects due to direct impacts on marine archaeological receptors except for setting and HSC are considered permanent as each receptor is a unique element of the archaeological resource and any damage or removal cannot be undone. Direct impacts to the setting or HSC related to archaeological receptors can be temporary during construction or demolition works due to the non-permanent nature of the works themselves, or permanent if related to the physical material of the completed development.

11.6.18 Duration of effects has been described as short, medium or long-term, in accordance with the criteria set out in Table 11-5.

Table 11-5: Duration of Effects Criteria

Duration	Criteria
Short	Up to 5 years
Medium	5-10 years
Long term	10 years or more, or permanent duration due to non-reversibility.

Nature of Effect Criteria

11.6.19 The nature of the effect is in accordance with Chapter 2: EIA Process and Methodology and has been described as either adverse, neutral or beneficial.

11.7 Assumptions and Limitations

Archaeological data

11.7.1 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 study. The assumption is made that the data, as well as that derived from other secondary sources, are accurate.

11.7.2 The records held by the UKHO, NMHR 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 within the seabed and intertidal zone.

11.8 Baseline Conditions

Existing Baseline

11.8.1 The following paragraphs are a summary of the baseline assessment. A full description of the baseline resource of marine archaeology, which includes known wrecks and obstructions, identified geophysical and geoarchaeological receptors, the potential for further maritime and aviation archaeological receptors, potential seabed prehistory and intertidal heritage receptors are presented in Technical Appendix 11.1 Marine Archaeological Technical Report (Wessex Archaeology 2024a) and Technical Appendix 11.2. Geoarchaeological Assessment (Wessex Archaeology 2024b).

11.8.2 The palaeogeography baseline for the study area demonstrated that Pleistocene and Holocene deposits with archaeological and geoarchaeological potential occur within the site. These consist of peat deposits of Holocene age within the area of the Docks Basin east of the Western Wharf and Head deposits of probable Pleistocene age both to the north and east of the Northern Arm and within the Docks Basin. This baseline included the assessment of SBP data which identified two features of potential archaeological importance. Channel 7001 is a broad palaeochannel in the south-east of the area surveyed and feature 7002 is a peat bed that overlies the southern flank of this channel, possibly representing evidence of an estuarine wetland environment. The baseline assessment demonstrated the likely extensive amount of previous dredging within the remainder of the site. The locations of the geotechnical boreholes and the palaeolandscape features are presented on

11.8.3 Figure 11-1: Palaeographic receptors within the Study Area

11.8.4 .

11.8.5 There are currently no sites within the study area that are subject to statutory protection from the Protection of Wrecks Act 1973, the Protection of Military Remains Act 1986 or the Ancient Monuments and Archaeological Areas Act 1979; the three legislative acts that could be used to protect marine archaeological sites.

11.8.6 There are four known wrecks from the records held by the UKHO, HER and NMHR within the study area, two of which (features 2002 and 2003) are listed as 'Live', one (feature 2001) as 'Dead' and one (feature 2000) which is likely to have been lifted. Despite the listing of 'dead' or 'lifted' there may still be material relating to these wrecks on the seabed. An additional wreck (feature 2006) was identified close to the two known 'Live' wrecks from a multibeam echosounder (MBES) survey of the wrecks. Ground-truthing of geophysical anomalies as part of the Falmouth Cruise Project in 2007/8 identified an anchor and length of chain (feature 2007) north of the Northern Arm (Cornwall Council 2008) outside of the dredging footprint for the proposed development.

11.8.7 Two known obstructions are present within the study area, which relate to the former King's and Empire Jetties (features 2004 and 2005), demolished in 2008. These were originally built in the 1930s and were in use throughout the 20th century. The walkover survey also identified two anchors (feature 1005) within the intertidal zone to the west of the Western Wharf, while the other features relate to now removed or covered military infrastructure from the Second World War (features 1001 - 1003) and a record of peat (feature 1004) within the seabed east of the Northern Arm.

11.8.8 The above receptors are presented on Figure 11-2.

11.8.9 The HSC of the region comprising the Study Area can be described as having the following character types, as defined by the South West Peninsula HSC (Cornwall Council 2014):

- Coastal infrastructure comprising flood and erosion defence (sea defence);
- Industry comprising shipping industry (shipyard);
- Ports and docks (wet dock);
- Navigation comprising navigation features (channel), navigation activities (anchorage and ferry crossing) and navigational hazards;
- Recreation (marina);
- Military Base;
- Cultural topography (inter-tidal); and
- Tourism.

Sensitive Receptors

11.8.10 The receptors identified as sensitive to the proposed development and which have been 'scoped-in' to the assessment are summarised in Table 11-6.

Table 11-6: Summary of Sensitive Receptors

Receptor	Sensitivity
Marine Archaeology, inclusive of known and unknown seabed prehistory, maritime archaeology and aviation archaeology, and intertidal archaeology	Any damage to known and/or potential marine archaeological sites or material is permanent and recovery for these receptors is limited to stabilisation or re-burial, limiting further impact. There is no potential for the recoverability of any archaeological seabed receptors if they are affected by direct or indirect physical impacts. All archaeological receptors have the potential to be damaged or destroyed if they are directly impacted during dredging activities. Consequently, all known and potential marine archaeology receptors and associated material should be regarded as having high sensitivity towards direct and indirect impacts of the project.
Historic seascape and setting of marine archaeology receptors	Impacts on historic seascape and setting during demolition and construction may be temporary or permanent depending on the nature of the activity. Where impacts are temporary then there should be full recovery once the construction stage is complete. Permanent changes are related to either the removal or reworking of port infrastructure, which is already part of the HSC and the setting of receptors and so the sensitivity of these receptors is considered low.

11.8.11 Based on the baseline characterisation, no receptors have been scoped out of the subsequent assessment.

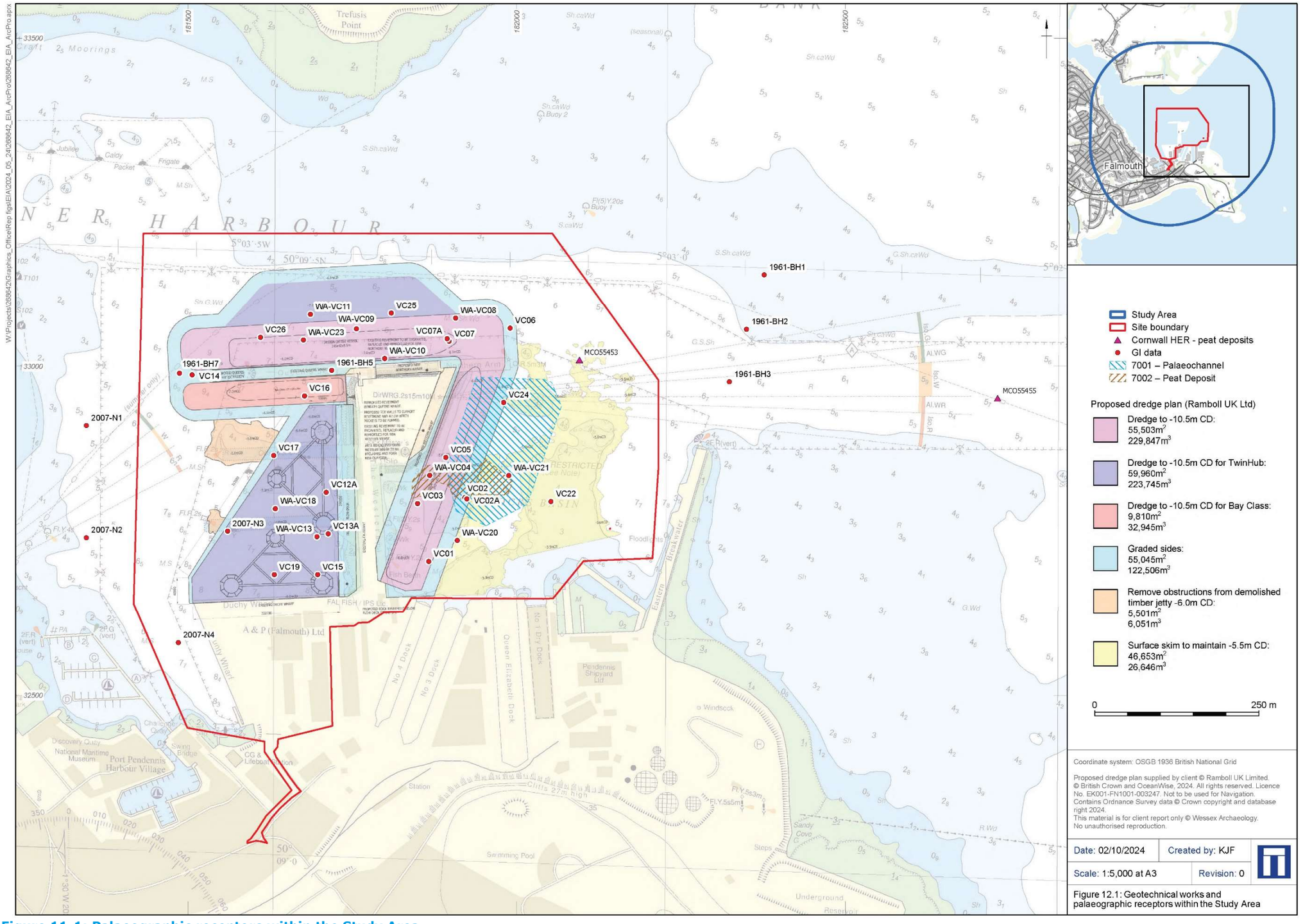


Figure 11-1: Palaeographic receptors within the Study Area

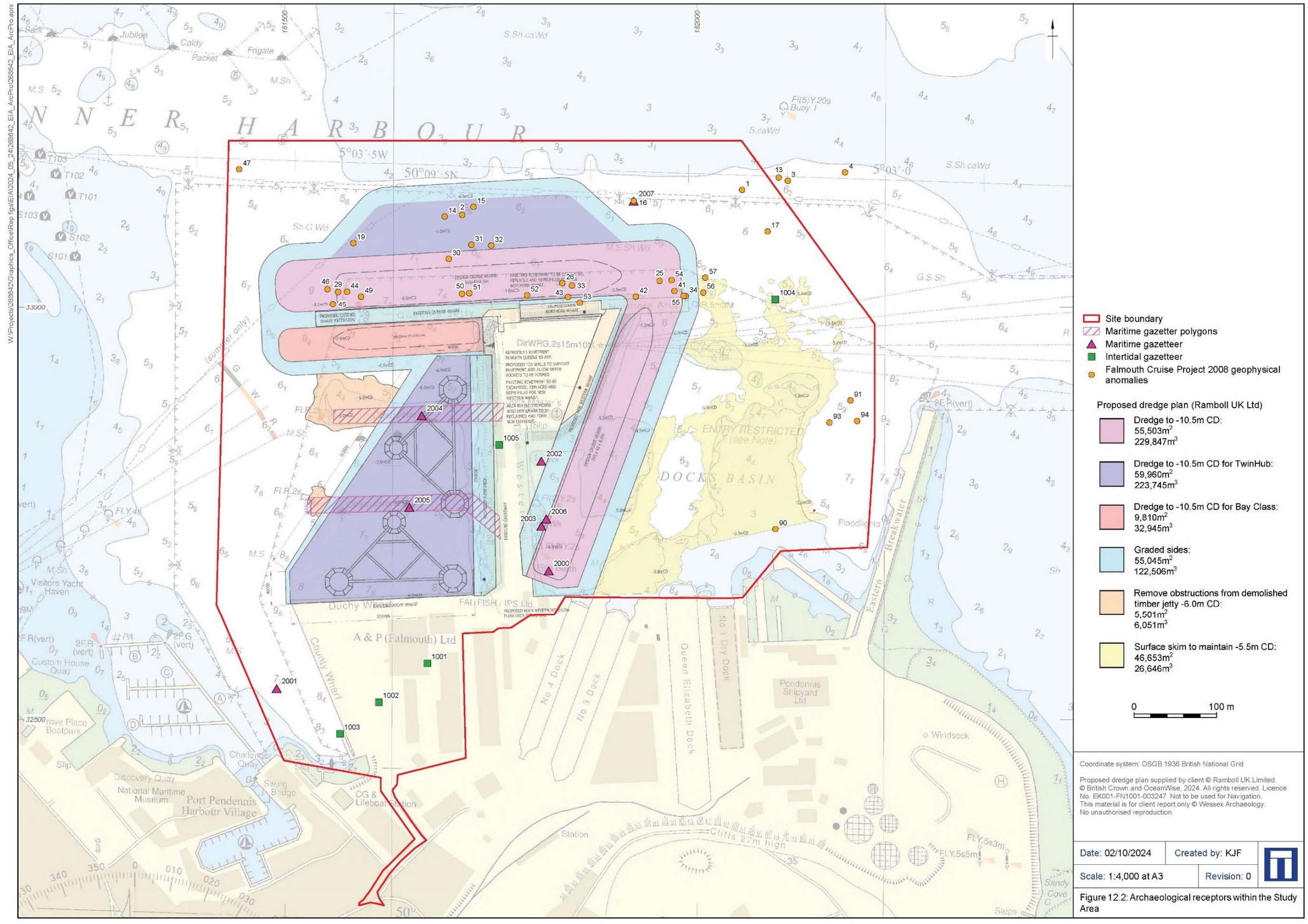


Figure 11-2: Archaeological receptors within the Study Area

11.9 Assessment of Effects

Demolition and Construction Effects

11.9.1 The following impact pathways have been assessed for the demolition and construction phase:

- Direct impacts on known and potential marine archaeology receptors from demolition and construction activities due to physical disturbance of the seabed and sub-seabed;
- Direct impacts on known and potential marine archaeology receptors from capital dredging into previously undisturbed sediments due to physical disturbance of the seabed and sub-seabed;
- Direct temporary impacts on the setting of a heritage receptor and historic seascape due to the dredging, demolition and construction works; and
- Indirect impacts to marine archaeology receptors due to changes to hydrodynamic and sedimentary processes.

Direct Impacts on Known and Potential Marine Archaeology Receptors from Demolition and Construction Activities

11.9.2 Should any direct impacts to marine archaeology receptors occur, these are most likely to take place during the demolition and construction phase of the proposed development. Impacts resulting in adverse effects upon archaeology receptors from demolition and construction works are generally those involving direct physical contact with the seabed. Marine archaeology receptors with height, such as shipwrecks like wreck **2006**, may also be impacted by activities that occur within the water column.

11.9.3 Construction activities that could have direct impacts will primarily consist of piling activity and the infilling of material behind the new Western Wharf. These could lead to physical damage of the underlying archaeological resource and deformation of the surrounding deposits. The use of jack-up barges with piling rig(s) may be used to undertake piling of new wharfs and jetties, which could also lead to physical damage of the underlying archaeological resource within their footprint on the seabed.

11.9.4 Any adverse effects upon marine archaeology receptors from direct impacts associated with construction activities would be permanent and irreversible. As such, the magnitude of direct impacts on known and potential maritime and aviation receptors and potential seabed prehistory receptors as a result of construction activities, if they were to occur, would be **high adverse**. As a result, if appropriate mitigation is not applied, both the high sensitivity and the high magnitude of direct impacts on such resources (if present) would result in **major adverse** effects that are considered to be **significant**.

Direct Impacts on Known and Potential Marine Archaeology Receptors from Capital Dredging

11.9.5 Any direct impacts to marine archaeology receptors (if present) are likely to occur during capital dredging activities into sediments not previously impacted by dredging during the late 19th and early 20th centuries. This may include known receptors such as the identified palaeolandscape features **7001** and **7002** and intertidal anchors **1005** or potential receptors within the footprints of Empire Wharf and King's Wharf. Impacts resulting in adverse effects upon archaeological receptors as part of dredging works are those involving contact with the seabed and/or the removal of seabed sediments.

11.9.6 It is anticipated that the capital dredging will be conducted using a backhoe dredger. A selected proportion of the suitable dredged material is proposed to be reused as engineering fill material for the reclamation, with the rest likely to be disposed of to a suitable disposal site at sea and on land.

11.9.7 Any adverse effects upon marine archaeology receptors from direct impacts associated with capital dredging would be permanent and irreversible. As such, the magnitude of direct impacts on potential marine heritage receptors as part of dredging activities, if they were to occur, would be **high**. As a result, if appropriate mitigation is not applied, both the **high** sensitivity and the **high adverse** magnitude of direct impacts on such resources would result in **major adverse** effects that are considered to be **significant** should they interact with the capital dredging activities.

Direct Temporary Impacts on the Setting of a Heritage Receptor and Historic Seascape

11.9.8 Direct impacts on setting of heritage receptors including wrecks such as feature **2006** and on the nature of the South West Peninsula HSC during the demolition and construction phases have been identified as temporary and are a result of the presence of construction/demolition vessels and vehicles, as well as the removal/replacement of harbour infrastructure. As the history of the proposed development is as an operational port with vessel movements including the use of dredgers and barges and with the continued export and import of goods, the nature of the works would be in keeping with the historic seascape of the proposed development and so the magnitude of change for these impacts would be **negligible adverse**, while the significance would be **low** due to the temporary nature of the impacts, resulting in a **negligible** effect which is assessed as **not significant**.

Indirect Impacts to Marine Archaeology Receptors Due to Changes to Hydrodynamic and Sedimentary Processes

11.9.9 The indirect effects upon the known and potential marine archaeology receptors are those which occur as a result of changes to hydrodynamic and sediment transport regimes, where these changes have occurred as a consequence of activities and structures associated with the construction and dredging activities. These impacts may occur through sediment dispersal or deposition from dredging activities or scour associated with the disturbance from construction activities and structures.

11.9.10 Indirect impacts may affect marine archaeological baseline conditions where they result in the increased exposure or burial of marine archaeological receptors (if present). The increased exposure of marine archaeological receptors has the potential to cause erosion and deterioration to the receptors. Conversely, should receptors be subject to increased sedimentation and burial, they may, in turn, benefit from conditions which afford higher levels of preservation.

11.9.11 The magnitude of change of indirect impacts to marine archaeology and cultural heritage during the construction phase is expected to be **negligible beneficial**. Results provided in Chapter 6: Coastal Processes and Sediment Regime , which characterise the local hydrodynamics and wave regime within and around the proposed dredge and disposal areas, show that the magnitude of change is assessed as **negligible adverse** and as a worst case in line with deposition levels occurring during a storm event. Sediment regime changes would be limited to increases in sedimentation which would provide greater coverage or burial depth for any seabed archaeological material, such as the anchor **2007** outside the dredge area. This impact will largely be limited to the extent of the dredge site itself and its immediate surrounds and, therefore, is temporary and localised.

11.9.12 The **high** sensitivity and the **negligible adverse** magnitude of indirect impacts on such resources would result in **negligible** effects that are assessed as **not significant**.

Operational Effects

11.9.13 The following impact pathways have been assessed for the operational stage:

- Direct permanent impacts on the setting of a heritage receptor due to the operational development; and
- Direct permanent impacts on the character of the historic seascape due to the operational development.

11.9.14 The direct impact of the operational development on the setting of individual heritage receptors within the marine environment largely relates to those receptors which would be either permanently removed or covered up by the works, which would lead to a total removal of their current setting and therefore a **high adverse** magnitude of change. All of the identified receptors were either wrecks or already damaged and so their setting had already seen extensive degradation. The identified wrecks are also all of **negligible** sensitivity due to their age (20th century), identified type and heritage as general purpose dock barges/pontoons, or due to their likely removal/lifting in the past. The resulting effect would therefore be **negligible adverse**, which is assessed as **not significant**.

11.9.15 Similarly, the potential changes to the South West Peninsula HSC as a result of the proposed development are minimal as the area is only seeing a redevelopment and reworking of the port infrastructure and so the area will keep the same overall characteristics of a working port environment. These changes could be reversible if the adaptions made to the development were removed at some point in the future. The magnitude of change is therefore **negligible adverse** and the significance of the impact is **low** resulting in a **negligible** effect, which is assessed as **not significant**.

11.10 Additional Mitigation

11.10.1 Mitigation measures will alter the risk of exposure and, hence, will require significance to be re-assessed and thus the residual impact (i.e. with mitigation) identified.

11.10.2 As discussed through pre-submission consultation with Historic England (see Table 11-1) mitigation measures will be secured through a Written Scheme of Investigation (WSI). The final WSI will need to take account of any relevant matters emerging through the ongoing detailed design process and any relevant matters emerging through the examination of the application.

11.10.3 The WSI will detail the agreed mitigation that will be in place during the construction and operation of the proposed development. The implementation of a WSI is the mitigation, rather than the document itself. The WSI will be developed in line with Historic Environment guidance for Port and Harbour development (Historic England 2016), which sets out agreed archaeological methodologies. The WSI will be set out based on the mitigation measures recommended in this chapter and will be subject to approval by the Archaeological Curators.

11.10.4 The following measures in Table 11-7 are designed to mitigate any predicted adverse effects upon seabed receptors from direct impacts. The mitigation measures are designed to either avoid, reduce or offset any damage/disturbance occurring as a result of the proposed development upon known receptors and to establish the presence of unknown sites. These measures will be further developed if required through ongoing consultation with statutory authorities as part of the marine licence application review period. These measures are detailed in the outline WSI included in the technical appendices within ES Volume 2. Method Statements detailing specific works whereby marine archaeology assets may be impacted will also be prepared to support the WSI throughout the lifetime of the proposed development and approved by the Archaeological Curator prior to any works commencing.

Demolition and Construction Stage

Table 11-7: Additional Mitigation for Demolition and Construction Stage

Mitigation type	Description
Archaeological Exclusion Zones	The primary mitigation for the protection of known archaeological receptors is avoidance. This is commonly achieved through the implementation and monitoring of Archaeological Exclusion Zones (AEZs), which are proposed for identified high value seabed receptors of anthropogenic origin. PIANC guidance document no. 124 Dredging and Port Construction: interactions with features of archaeological or heritage interest (2014) sets out the context for initiating AEZs or safety zones to facilitate the avoidance of sensitive heritage assets. The mitigation will establish appropriately sized AEZs around receptors which are considered to be of high archaeological potential, in consultation with the Archaeological Curators. These areas would be out of bounds to dredging and construction activities and to anchoring or jacking-up. Monitoring of any AEZs to ensure there is no disturbance to them would be part of this mitigation. Although AEZs are fixed, provision should be made for them to be refined or removed (with agreement of the Archaeological Curators) as the project progresses, subject to additional archaeological assessment of subsequent surveys that may be required. Surveys could include further geophysical, Remotely Operated Vehicle (ROV), or diver surveys. In addition, in order to maximise the potential benefits of any further surveys, archaeological advice should be sought during the planning stages. Any recommended AEZs all have the potential to be amended or removed at a later date, should further information become available that proves their associated features are not of archaeological potential or represent more widely dispersed sites. This report is intended to inform the decision-making process for confirming the final AEZs. Currently no AEZs are recommended, but should this change then their extents will be presented in the WSI.
Avoidance, remedying or offsetting	Reduction of impact can be achieved by means of appropriate mitigation identified through potential opportunities for further investigation of assets (e.g. during pre-installation surveys which may include visual survey methods and unexploded ordnance (UXO) assessment). Further investigations mean that anomalies can either have their archaeological value removed, if they prove to be of non-anthropogenic nature or modern, or their value as archaeological assets confirmed. If their value is confirmed, mitigation in the form of either avoidance (which may be enacted by the implementation of an AEZ) or through remedying or offsetting measures as identified through a Written Scheme of Investigation (WSI). In cases where avoidance is either inappropriate or impossible, the damage to archaeological assets should be offset. Any mitigation strategy will be identified through a WSI and any recommended methods will be covered by a specific Method Statement, approved by the Archaeological Curator, should they be implemented. The finalised WSI will include details of the areas of archaeological watching brief recommended in the geoarchaeological assessment (Appendix 11.1) and the marine archaeological technical report (Appendix 11.2), as well as the recording of the modern wreck **2006** along the eastern side of the Western Arm. It will also include details of the proposed recovery of the two anchors present in the intertidal zone west of the Western Wharf.
Protocol for Archaeological Discoveries (PAD)	If previously unknown sites or material are encountered during the different phases of the proposed development, measures will be taken to reduce the level of impact. In order to provide for these unexpected discoveries a PAD will be adopted. The PAD is a system for reporting and investigating unexpected archaeological discoveries encountered during installation activities, with a Retained Archaeologist providing guidance and advising industry staff on the implementation of the PAD. The PAD also makes provision for the implementation of temporary exclusion zones around areas of possible archaeological interest, for prompt archaeological advice, and if necessary, for archaeological inspection of important features prior to further activities in the vicinity. The PAD provides a mechanism to comply with the Merchant Shipping Act 1995, including notification to the Receiver of Wreck and accords with the Code of Practice for Seabed Developers (Joint Nautical Archaeology Policy Committee 2006).
Additional remedying and offsetting	In cases where avoidance is either inappropriate or impossible, the damage to archaeological receptors should be offset. In the case of seabed prehistoric receptors, this can be achieved by undertaking a staged palaeoenvironmental assessment of deposits with high geoarchaeological potential, principally peat deposits. The Stage 2 Geoarchaeological Assessment recommended that a series of radiocarbon dates be recovered from the peat deposits recovered in WA-VC04, whereby the aim would be to date the top and base of the peat deposits (Wessex Archaeology 2024b). This should be completed as part of a Stage 3 Geoarchaeological Assessment.

Table 11-7: Additional Mitigation for Demolition and Construction Stage	
Mitigation type	**Description**
	Recovery of artefacts and/or other archaeological receptors should be a final resort when all other mitigation has failed. Following consultation and approval from the Archaeological Curator, any recovery should be completed under the supervision of an appropriately qualified and experienced marine archaeologist. If required, recovery methods will be identified through a WSI and detailed in the site-specific Method Statement, as agreed by the Archaeological Curator. A final method would include the recording of sites that cannot be preserved. Due to the vast differences in practice and implementation between these methods, each will be covered by a specific Method Statement agreed in consultation with the Archaeological Curator.

Operational Stage

11.10.5 No significant adverse effects are predicted and consequently no additional mitigation is required.

11.11 Enhancement Measures

11.11.1 No enhancement measures are proposed or required in respect of marine archaeology beyond the identified additional mitigation measures.

11.12 Demolition and Construction Residual Effects

11.12.1 With additional mitigation in place, the residual demolition and construction effects would be as follows:

- The significance of the effect of direct impacts on known and potential marine archaeology receptors from demolition and construction activities would be considered **negligible adverse** and **not significant**; and
- The significance of the effect of direct impacts on known and potential marine archaeology receptors from capital dredging would be considered **negligible adverse** and **not significant**.

11.13 Operational Development Residual Effects

11.13.1 As no additional mitigation would be required, the residual operational development effects remain as reported in the assessment of effects section.

11.14 Summary of Significant Effects

11.14.1 Table 11-8 provides a tabulated summary of the outcomes of the marine archaeology assessment of the proposed development. It reports on the likely significant effects with respect to marine archaeology associated with the demolition and construction and operational phases of the proposed development.

11.14.2 As shown in Table 11-8, the assessment has identified two effects which are considered significant prior to mitigation. However, both of these can be mitigated to an extent that the residual effect is not significant. With the implementation of mitigation set out in Table 11-7, there are no significant residual effects.

Table 11-8: Summary of Marine Archaeology Effects

Receptor	Description of Effect	Pre-Additional Mitigation Effect: Scale/ Nature/ Significance*	Additional Mitigation	Post-Additional Mitigation Effect: Scale/ Nature/ Significance*	Details of Residual Effect			
					Direct/ Indirect	Permanent/ Temporary	Reversible/ Irreversible	Short-term/ Medium-term/ Long-term
Demolition and Construction								
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impact on marine archaeology receptors within seabed sediments due to demolition activities, construction activities including piling works and land reclamation and impacts from vessels associated with these works	Major/ Adverse / **Significant**	• WSI • AEZs if required • Archaeological recording of wreck • Protocol for Archaeological Discoveries • Additional remedying and offsetting	Negligible / Adverse/ Not Significant	Direct	Permanent	Irreversible	Long-term
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impact on marine archaeology receptors within seabed sediments due to capital dredging	Major/ Adverse / **Significant**	• WSI • AEZs if required • Watching Briefs • Recovery and recording of identified archaeological material (anchors) • Protocol for Archaeological Discoveries • Additional remedying and offsetting	Negligible/ Adverse/ Not Significant	Direct	Permanent	Irreversible	Long-term
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impacts on the setting of a heritage receptor due to the dredging, demolition and construction works	Negligible/ Adverse / Not Significant	Not required	Negligible/ Adverse / Not Significant	Direct	Temporary	Reversible	Short-term
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impacts on the character of the historic seascape due to the dredging, demolition and construction works	Negligible/ Adverse / Not Significant	Not required	Negligible/ Adverse / Not Significant	Direct	Temporary	Reversible	Short-term
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Indirect impacts to marine archaeology receptors due to altered sediment or hydrological processes.	Negligible/ Adverse / Not Significant	Not required	Negligible/ Adverse / Not Significant	Indirect	Permanent	Irreversible	Long-term
Operational Development								
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impacts on the setting of a heritage receptor due to the completed development	Negligible/ Adverse / Not Significant	Not required	Negligible/ Adverse / Not Significant	Direct	Permanent	Reversible	Long-term
Marine Archaeology, inclusive of seabed prehistory, maritime archaeology and aviation archaeology	Direct impacts on the character of the historic seascape due to the completed development	Negligible/ Adverse / Not Significant	Not required	Negligible/ Adverse / Not Significant	Direct	Permanent	Reversible	Long-term

Notes (refer to Chapter 2, section 2.8 for definitions):

* Negligible/Minor/Moderate/Major, Adverse/Beneficial, Significant/Not Significant

11.15 Cumulative Effects

Intra-Project Effects

11.15.1 No cumulative schemes have been identified as likely to have inter-project cumulative effects.

Intra-Project Effects

11.15.2 As explained in Chapter 2: EIA Process and Methodology, intra-project cumulative effects are discussed in Chapter 20: Cumulative Effects.