

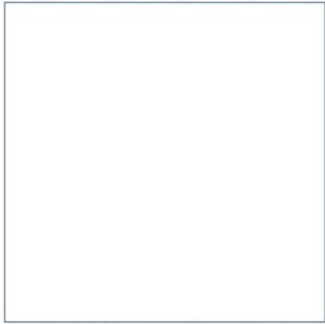
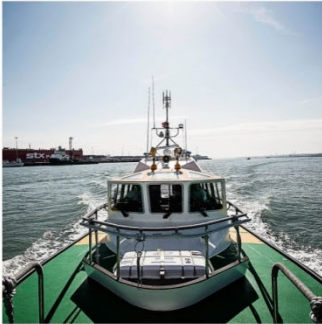
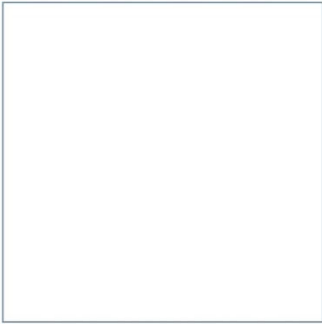
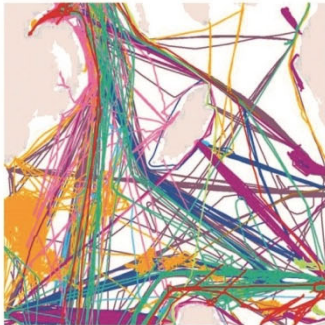
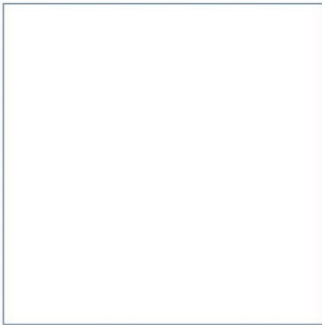
Port of Mostyn

Mostyn Energy Park Extension

Environmental Statement

Appendix 12.1 Marine Archaeology Desk-based Assessment

December 2022



Innovative Thinking - Sustainable Solutions

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Mostyn Energy Park Extension Project

Marine Archaeology Desk-based Assessment

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November 2022



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Summary

Wessex Archaeology was commissioned by ABPmer on behalf of the Port of Mostyn to prepare a marine archaeology desk-based assessment in relation to the marine archaeological environment for the proposed Mostyn Energy Park Extension (MEPE) Project. The proposed development study area is located at the Port of Mostyn, on the Dee Estuary in North Wales, consisting of the reclamation area, the capital dredge area, the potential relocation of the existing dolphins, the potential construction of a RoRo pontoon linkspan and the maintenance dredge area. This desk-based assessment supports the Cultural Heritage and Marine Archaeology Environment Statement (ES) Chapter (Chapter 12).

The aim of this desk-based assessment was to assess the known and potential marine archaeological resource within the study area and the wider Dee Estuary archaeological search area. The assessment has established that there are the following marine archaeological assets:

- potential for prehistoric archaeological material;
- two known wreck sites within the study area;
- potential for additional currently unknown maritime and aviation seabed features to exist; and
- the Historic Seascape Character of the area comprises areas of constantly shifting sandbanks with changing depths; hazards marked by numerous buoys, lights and fog horns; an extensive network of offshore sandbanks and flats; and a long standing importance for trade, defence and occupation.

There is potential for the proposed activities to impact as yet unknown archaeological sites related to palaeogeography, shipwrecks and aircraft crash sites. The need for, scale, scope and nature of any further assessment and / or archaeological works should be agreed through consultation with the statutory authorities.



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This project was commissioned by ABPmer on behalf of The Port of Mostyn and Wessex Archaeology is grateful to staff for their assistance.

Data was provided by the United Kingdom Hydrographic Office (UKHO), the National Record of the Historic Environment (NRHE), local Historic Environment Records (HER), and Clwyd-Powys Archaeological Trust (CPAT). Wessex Archaeology is grateful to the staff of all the above organisations for their cooperation during the project.

The report was researched and compiled by Stephanie Said. Kitty Foster prepared the illustrations. Dr Andrew Bicket managed the project on behalf of Wessex Archaeology.



Mostyn Energy Park Extension Project

Marine Archaeology Desk-based Assessment

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by ABPmer on behalf of the Port of Mostyn to prepare a marine archaeology desk-based assessment including a high-level Environmental Appraisal for the Mostyn Energy Park Extension (MEPE) Project. The assessment has in turn inform the Environment Statement (ES).

1.1.2 The MEPE Project is located at the Port of Mostyn, on the Dee Estuary in North Wales.

1.2 Development Proposal

1.2.1 The proposed development is to extend the Marine Energy Park so that the Port can continue to support and service current and anticipated future offshore wind development. The proposed development will involve marine works and associated landside works.

1.2.2 The proposed marine works will comprise:

- the construction of 360 m length of new quay wall;
- the capital dredge to create a new berth pocket alongside the 360 m section of new quay wall;
- potential relocation of four existing dolphins (piles) to create a berth for Service Operation Vessels (SOVs) to provide OMS requirements for the offshore wind sector;
- potential construction of a RoRo pontoon linkspan; and
- the maintenance dredging for the new berth, navigational channel and harbour area.

1.2.3 The capital dredged material is proposed to be reused as fill material for the reclamation of landside works. Once the quay is operational, a maintenance dredging and disposal program for the new berth will be put in place, and there will be ongoing maintenance dredging of the navigational channel and harbour area. Material recovered from maintenance dredging will be disposed of at the existing marine disposal sites and/or reused.

1.2.4 The maintenance dredge area comprises a polygon that shows where maintenance dredging of the navigation channel may take place in response to the natural movement of the Salisbury and Mostyn channels. In reality, any dredging that is required will be limited to one main channel that is dominant at any given time and will not take place across the entire area of the polygon. This will minimise the volume of dredging that is required and therefore the environmental and cost implications.



1.2.5 The proposed landside works will comprise an infill (reclamation) behind the newly created quay wall. This reclaimed area will comprise hardstanding that will be used as a storage/laydown area. There is no requirement for any other associated landside infrastructure.

1.2.6 The majority of the proposed development will take place below Mean High Water Springs (MHWS) and a marine licence is required from the marine licencing authority, Natural Resources Wales (NRW), under the Marine and Coastal Act 2009.

1.3 Scope of Document

1.3.1 The purpose of this assessment is to determine, as far as is possible from existing information, the nature, extent and significance of the known and potential marine archaeological resource within the boundary of the proposed development.

1.3.2 Planning Policy Wales (PPW) (Welsh Government 2021b) states that *'the historic environment comprises all the surviving elements of previous human activity and illustrates how past generations have shaped the world around us. It is central to Wales's culture and its character, whilst contributing to our sense of place and identity. It enhances our quality of life, adds to regional and local distinctiveness and is an important economic and social asset.'*

1.3.3 PPW (Welsh Government 2021b) notes that *'the historic environment is made up of individual historic features which are collectively known as historic assets'* including listed buildings, historic landscapes and archaeological remains.

1.3.4 Technical Advice Note 24: The Historic Environment (2017) provides guidance on how the planning system considers the historic environment during development plan preparation and decision making on planning and Listed Building applications. The policy defines the historic environment as *'all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed'* (2017: 6).

1.4 Aims

1.4.1 The specific aim of this marine archaeology desk-based assessment is to characterise the known and potential archaeological baseline within the project area to subsequently inform the Environment Impact Assessment (EIA) and production of the ES.

1.4.2 The objectives of the assessment are as follows:

- to provide details of relevant legislation, national and local planning policy, and best practice guidance;
- to outline the known and potential marine archaeological resource within the study area based on a review of existing information;
- to summarise the Historic Seascape Character for the area that the project truncates;
- to assess the significance of the known and potential marine archaeological resource through weighted consideration of their valued components; and



- to recommend mitigation measures for any potential archaeological or cultural heritage assets newly identified within the project area, including the addition of new Archaeological Exclusion Zones where necessary within the proposed development.

1.5 Copyright

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2 LEGISLATION, GUIDANCE AND POLICY

2.1 Introduction

- 2.1.1 Cadw is responsible for the archaeological resource within Wales's territorial waters, to the 12 nautical miles (nm) limit, while the main source of information on underwater heritage in Wales is the marine database of the National Monument Record compiled by the Royal Commission on Ancient and Historical Monuments in Wales (RCAHMW). NRW is responsible for licencing, regulating and planning marine activities in the seas around Wales to ensure they are carried out in a sustainable way.
- 2.1.2 The Historic Environment (Wales) Act 2016 is the fundamental statutory framework for the protection and management of the Welsh historic environment, along with the Ancient Monuments and Archaeological Areas Act 1970, the Planning Act 1990 and the Protection of Wrecks Act 1973.
- 2.1.3 The Welsh National Marine Plan identifies opportunities for the sustainable development of Wales's seas (Welsh Government 2019) by guiding new development and related decisions both inshore and offshore. Development plans and the Marine Plan should work together and support integrated decision making and collaboration across marine and terrestrial interfaces and boundaries (Welsh Government 2021b).
- 2.1.4 The following section provides a summary of the national, regional and local planning and legislative framework which governs the treatment of the marine historic environment in the planning process. More comprehensive details are provided in Appendix 3.

2.2 Marine Legislation

Jurisdiction

- 2.2.1 The proposed development is located in Welsh territorial waters (up to 12 nm from the coast). The following legislation applies:

Protection of Wrecks Act 1973: Section One and Two:

- 2.2.2 It is an offence to carry out certain activities in a defined area surrounding a wreck that has been designated, unless a licence for those activities has been obtained from the Government. There are no protected wrecks within the footprint of the proposed development;

Ancient Monuments and Archaeological Areas Act 1979 (as amended):

- 2.2.3 It is a criminal offence to carry out any works on, or near to, a Scheduled Monument without Scheduled Monument Consent. Both terrestrial and maritime sites, including wrecks, may



be designated under this Act. There are no scheduled ancient monuments within the footprint of the proposed development;

Protection of Military Remains Act 1986:

- 2.2.4 This Act provides protection for the wreckage of military aircraft and designated military vessels. The Act provides for two types of protection: 'protected places' and 'controlled sites'. Military aircraft are automatically protected, although vessels have to be specifically designated. The primary reason for designation is to protect as a 'war grave' the last resting place of servicemen; however, the Act does not require the loss of the vessel to have occurred during the war. There are no protected places or controlled sites within the footprint of the proposed development; and

Merchant Shipping Act 1995:

- 2.2.5 All wreck material recovered from UK waters must be declared to the Receiver of Wreck who acts to settle questions of ownership and salvage. 'Wreck' refers to all items of flotsam, jetsam, derelict, and lagan found in or on the shores of the sea or any tidal water.

2.3 International Conventions

- 2.3.1 The United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention was concluded in 2001 and is a comprehensive attempt to codify the law internationally, with regards to underwater cultural heritage. The UK abstained in the vote on the final draft of the Convention, however it has stated that it has adopted the Annex of the Convention, which governs the conduct of archaeological investigations, as best practice for archaeology. Although the UK is not a signatory, the Convention entered into force on 02 January 2009 having been signed or ratified by 20 member states. It has since been ratified or accepted by an additional 60 member states.

2.4 Planning Policy Wales

- 2.4.1 Planning Policy Wales (PPW) (Welsh Government 2021b) sets out the land use planning policies of the Welsh Government. It describes the planning system as managing the use of land in the public interest, and states that the system '*must reconcile the needs of development and conservation [...] and protecting, promoting, conserving and enhancing the built and historic environment*'. The importance of the historic environment in Welsh planning policy is interwoven throughout the document.
- 2.4.2 The section on 'Distinctive & Natural Places' states that '*The historic environment is a finite, non-renewable and shared resource and a vital and integral part of the historical and cultural identity of Wales [...] The historic environment can only be maintained as a resource for future generations if the individual historic assets are protected and conserved.*'
- 2.4.3 The Welsh Government's specific objectives for the historic environment include conserving archaeological remains, both for their own sake and for their role in education, leisure and the economy.
- 2.4.4 The Planning Policy notes that the conservation and enhancement of historic assets is most effective when considered at the earliest stage of plan preparation or when designing new proposals.
- 2.4.5 It also states that '*any decisions made through the planning system must fully consider the impact on the historic environment and on the significance and heritage values of individual historic assets and their contribution to the character of place.*'



2.5 Welsh National Marine Plan

2.5.1 The Welsh National Marine Plan (2019) is the first marine plan for Wales and is intended to guide the sustainable development of the marine area by setting out how proposals will be considered by decision makers.

- SOC_04 Welsh language and culture – proposals that contribute to the promotion and facilitation of the use of the Welsh language and culture are encouraged. This policy seeks to ensure that all developers consider their impact on Welsh Culture, including heritage and the historic environment;
- SOC_05: Historic assets – proposals should demonstrate how potential impacts on historic assets and their setting have been taken into consideration and should, in order of preference:
 - Avoid adverse impacts on historic assets and their settings; and/or
 - Minimise impacts where they cannot be avoided; and/or
 - Mitigate impacts where they cannot be minimised.
 - If significant adverse impacts cannot be avoided, minimised or mitigated proposals must present a clear and convincing case for proceeding.

2.6 Future Wales - The National Plan 2040

2.6.1 Future Wales – The National Plan 2040 (2021a) sets out the national development framework. It provides a development plan with a strategy for addressing key national priorities through the planning system. It recognises that landscape and heritage are key motivators for people to visit Wales.

2.7 Marine Policy

2.7.1 The Marine and Coastal Access Act (MCAA) 2009 received Royal Assent on 12 November 2009. It introduced new planning and management systems for overseeing the marine environment, most notably through the requirement to obtain marine licences for works at sea (including the deposition or removal of any substance or object from the sea below Mean High Water). It created a strategic marine planning system that seeks to promote the efficient, sustainable use and protection of the marine environment, guided by the Marine Policy Statement and a series of Marine Plans.

2.7.2 The MCAA provides the framework for a marine licencing system, which is administered by NRW in Wales, a statutory consultee within the Development Consent Order application process. The Act also amended certain provisions of the Planning Act 2008.

2.8 Marine Guidance

2.8.1 This assessment was carried out in a manner consistent with available guidance as described below:

- Cadw, *Caring for Coastal Heritage* (1999);
- Cadw, *Caring for Military Sites of the Twentieth Century* (2009);



- Cadw, *Conservation Principles for the Sustainable Management of the Historic Environment in Wales* (2011);
- Cadw, *Setting of Historic Assets in Wales* (2017);
- Cadw, *Managing the Marine Historic Environment of Wales* (2020);
- *The Code of Practice for Seabed Development* (Joint Nautical Archaeology Policy Committee and The Crown Estate 2006);
- *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy* (Oxford Archaeology 2008);
- *Our Seas – A shared resource: High level marine objectives* (Defra 2009);
- *Dredging and Port Construction: Interaction with Features of Archaeological or Heritage Interest* (PIANC, 2014);
- *Protocol for Archaeological Discoveries: Offshore Renewables Projects* ('ORPAD') (The Crown Estate 2014);
- *Managing the Marine Historic Environment of Wales* (Annex B – Draft) (Natural Resources Wales in conjunction with Cadw & Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW, March 2019);
- *The Assessment and Management of Marine Archaeology in Port and Harbour Development* (Historic England 2016); and
- Marine Character Areas (MCA 01 Dee Estuary (Wales)).

3 METHODOLOGY

3.1 Study Area

3.1.1 The area assessed in this report is defined by the development extents of MEPE Project up to Mean High Water Springs (MHWS) (Figure 1) with additional context from the Dee Estuary, as requested by RCAHMW during the previous Scoping phase.

Search area

3.1.2 A search area consisting of the wider Dee Estuary was used for obtaining records from relevant archive databases. This wider search area allows for a greater understanding of the wider archaeological baseline environment, with the dual purpose of enabling any archaeological trends within the region to be recognised and to allow any marine archaeology and cultural heritage assets identified to be represented in a broader archaeological context.

3.2 Archaeological desk-based assessment

Key themes

3.2.1 The methodology follows the best practice professional guidance outlined by the Chartered Institute for Archaeologists' (CIfA) *Standard and Guidance for Historic Environment Desk-Based Assessment* (2014, updated 2020).



3.2.2 The marine themes relevant to marine archaeological baseline as assessed in this report are:

- Palaeogeography (for example, palaeochannels and other features that contain prehistoric sediment, and derived Palaeolithic artefacts e.g. handaxes), including setting;
- Seabed features, including maritime sites (such as shipwrecks and associated material including cargo, obstructions and fishermen's fasteners) and aviation sites (aircraft crash sites and associated debris), including their setting;
- Intertidal heritage assets; and
- Historic seascape character.

Data sources

3.2.3 Baseline conditions have been established by undertaking a desktop review of published information and through consultation with relevant organisations. Data sources and material utilised in the ES prepared in 2013 in support of the original MEP development were also consulted. The data sources used to inform the baseline description and assessment include:

- United Kingdom Hydrographic Office (UKHO) data for charted wrecks and obstructions;
- National Heritage List maintained by Cadw comprising data of designated heritage assets including sites protected under the PMRA 1986 and the PWA 1973;
- National Monuments Record of Wales (NMRW) maintained by Coflein and derived from information by Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), comprising data for terrestrial and marine archaeological sites, find spots and archaeological events;
- Lle Geo-Portal;
- the relevant Historic Environment Record(s) (HER) particularly from Clwyd-Powys Archaeological Trust (CPAT);
- relevant mapping including Admiralty Charts, historic maps and Ordnance Survey;
- a wide range of secondary sources, including those providing an overview of the historical and archaeological resources of the waters around the coast;
- relevant documentary sources and grey literature held by Wessex Archaeology, and those available through the Archaeological Data Service and other websites; and
- Welsh Research Frameworks.

Data structure

3.2.4 In order to compile the marine archaeological baseline as presented in this report, where possible, the sources were incorporated into a project Geographic Information System (GIS) using ArcGIS 10.8, enabling the data to be spatially analysed.



- 3.2.5 The NMRW and HER records have been discriminated between records for which there is known material on the seabed and 'recorded losses' (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). The records with known material on the seabed are included in the 'wrecks and obstructions' gazetteer along with data from the UKHO (Appendix 4). The recorded losses are in a separate gazetteer and have been used to assess the potential for further discoveries (Appendix 5 and 6).
- 3.2.6 For the purposes of this report, the gazetteers are compiled and illustrated in British National Grid (BNG). Information relating to the archaeological and cultural heritage that did not include location or positional information were used to inform the marine archaeological baseline assessment where relevant.
- 3.2.7 For archaeological sites that were recorded in the UKHO, RCAHMW and CPAT datasets, the co-ordinates from the UKHO are the ones used in the gazetteer and GIS. As these relate to survey co-ordinates, they have been assessed as likely to be more accurate.

Chronology

- 3.2.8 Archaeological material is generally studied within a framework of 'periods' or 'ages' that reflect the activities and cultural changes taking place over time. All dates are referred to as BCE (Before Common Era), BP (Before Present) or AD (Anno Domini) within the text. BCE refers to calibrated radiocarbon chronology that can be considered equivalent to calendar years. BP dates are used for periods of time older than circa 10,000 years ago.
- 3.2.9 A list of the main archaeological periods in Britain referred to in the text, along with their broadly defined dates are presented in Appendix 2.

Seabed prehistory

- 3.2.10 The baseline assessment for palaeogeography was based on a range of secondary sources, including academic papers, monographs, geological information (e.g. BGS mapping), and previous work undertaken by Wessex Archaeology within the Irish Sea area and the wider region. This baseline for the palaeogeographic assessment aids in producing a stratigraphy for the study area, assigning archaeological potential to identified units, and informing future sampling strategies.

Seabed features: maritime and aviation sites

- 3.2.11 The baseline summary for maritime and aviation archaeology was assessed by means of accessing any records of sites, findspots, wrecks, casualties and seabed features obtained from the UKHO, RCAHMW and HERs within the study area. 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.
- 3.2.12 The data obtained were reviewed and those located within the study area were extracted and compiled to form a gazetteer of the known seabed features. These records were each given a unique identifier beginning with 2001 and continuing sequentially (Appendix 4) and were added to the project GIS.
- 3.2.13 Data relating to Recorded Losses were also extracted from the RCAHMW and HER data sources. Recorded Losses are records for ships or aircraft that are known to have wrecked or crashed offshore, but for which the exact locations are not known. The positional data of

these records is unreliable and serves only to provide an indication of the types of vessels that passed through the area and the wrecking incidents that are known to have occurred in the general region. Whilst the remains of these vessels and aircraft are expected to exist somewhere on the seafloor, their location is unknown. As such, they signify the potential maritime and aviation resource.

- 3.2.14 Details regarding Recorded Losses, whose Named Location happens to be located within the study area, are presented in a gazetteer format (Appendix 5 and 6). These records have retained their original identification assigned by the RCAHMW and HER for ease of cross-referencing. The gazetteer does not include positional data due to the inherent inaccuracies therein.

Intertidal archaeology

- 3.2.15 The baseline summary for intertidal archaeology was assessed by means of accessing any records of sites and findspots obtained from the UKHO, RCAHMW and CPAT within the study area.

Historic seascape characterisation

- 3.2.16 The baseline summary for character of the historic seascape within the study area was assessed using the results of National Seascape Assessment for Wales 2015. In particular, the assessment focussed on the Marine Character Areas for Dee Estuary (MCA 01) using the report and data sheets assessing Welsh seascapes and their sensitivity to offshore developments (Natural Resources Wales 2015c).

3.3 Assessment of Setting

- 3.3.1 PPW (2021b) states that *“It is important that the planning system looks to protect, conserve and enhance the significance of historic assets. This will include consideration of the setting of an historic asset which might extend beyond its curtilage. Any change that impacts on an historic asset or its setting should be managed in a sensitive and sustainable way. It is the responsibility of all those with an interest in the planning system, including planning authorities, applicants, developers and communities, to appropriately care for the historic environment in their area. The protection, conservation and enhancement of historic assets is most effective when it is considered at the earliest stage of plan preparation or when designing new proposals.”*
- 3.3.2 Currently, there is no specific guidance regarding the assessment of setting for offshore archaeological and cultural heritage assets. However, Cadw’s *Setting of Historic Assets in Wales* (2017) provides general guidance, largely applicable to terrestrial sites, and notes that the importance of setting *‘lies in what it contributes to the significance of a historic asset’* (Cadw, 2017: 3). With regards to significance for heritage policy, the National Planning Policy Framework (NPPF) notes that the interest of a heritage asset *‘may be archaeological, architectural, artistic or historic’* (DCLG, 2012).
- 3.3.3 Cadw states that *‘The setting of a historic asset includes the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive, negative or neutral contribution to the significance of an asset.’* (Cadw, 2017: 2).
- 3.3.4 The setting of a historic asset can include physical elements of its surroundings as well as less tangible elements. Although views to and from a historic asset are often the most obvious factors, other sensory elements can also affect setting (ibid.). Reference in the

guidance is also made to the setting associated with buried heritage assets which may not be readily appreciated by a casual observer, but retains a presence in the landscape such as, for example, wreck sites that are periodically, partly or wholly submerged (ibid.: 2).

- 3.3.5 Cadw's *Managing the Marine Historic Environment of Wales* (2020) states that '*Development and use of the marine environment can, however, affect historic assets both directly and indirectly, including: loss of, or damage to, historic material; alteration to the setting of historic assets which can positively or negatively affect the ability to understand and appreciate them or through burial or exposure.*'
- 3.3.6 Policy SOC_05 in the Welsh National Marine Plan (2019) states that "*Proposals should demonstrate how potential impacts on historic assets and their settings have been taken into consideration and should, in order of preference:*
- a) *avoid adverse impacts on historic assets and their settings; and/or*
 - b) *minimise impacts where they cannot be avoided; and/or*
 - c) *mitigate impacts where they cannot be minimised.*
- 3.3.7 In order to assess whether, how and to what degree setting makes a contribution to the significance of heritage assets, the following must be considered: the physical surroundings of the asset including its relationship with other heritage assets; the way the asset is appreciated, and the asset's associations and patterns of use.
- 3.3.8 The assessment of setting in this document follows the guidance discussed in the paragraphs above, and draws on the results from the archaeological assessment of the marine heritage assets located within the study area. This 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.
- 3.3.9 It should be noted that for heritage assets offshore, sites 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. In addition, unlike many terrestrial sites, the position of the asset on the seabed has not been deliberately chosen, and although some sites may have reached their position through military action (e.g. wartime losses and losses from mine-laying activity) (Natural Resources Wales 2015c) or have been lost due to a particular navigational hazard (e.g. hitting a harbour wall or being stranded on a particular sandbank for instance Mostyn Bank), many positions are entirely arbitrary, and even with military sinking events, an attack on the surface could lead to a wreck being deposited on the seabed miles from where the event took place. 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.

- 3.3.10 It is not possible to ascertain the setting of currently unidentified marine heritage assets, where limited information is known, for example unknown wrecks or wrecks that have not been characterised to determine their period of build, use or loss. Similarly, setting cannot be assessed for potential sites that have not yet been discovered.

3.4 Determining value and sensitivity

- 3.4.1 This report will ultimately inform an EIA for the proposed development that will be presented within the ES. In order to assess the potential impacts of a development upon the marine environment, EIAs typically adopt the conceptual approach known as the 'source-pathway-receptor' model. This approach is based on the identification of the source (i.e. the origin of a potential impact), the pathway (i.e. the means by which the effect of the activity could impact a receptor) and the receptor that may be impacted (e.g. known/ potential heritage assets). In order for the significance of any given impact to be fully understood, the sensitivity of any receptors that may be impacted need to be considered. This section outlines the means by which the sensitivity of marine heritage assets is ascertained.

- 3.4.2 The capability 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.

- 3.4.3 Marine heritage assets cannot typically adapt, tolerate or recover from physical impacts resulting in material damage or loss caused by project activities. Consequently, the sensitivity of each asset is predominantly quantified only by its value.

3.5 Value of an Asset

- 3.5.1 Within this chapter, significance is weighed by consideration of the potential for the asset to demonstrate the following value criteria:

- Evidential value - deriving from the potential of a place to yield evidence about past human activity;
- Historical value - deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative;
- Aesthetic value - deriving from the ways in which people draw sensory and intellectual stimulation from a place; and

- Communal value - deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have additional and specific aspects.

3.5.2 With regards to appraising the value of shipwrecks, the following criteria listed in English Heritage's *Ships and Boats: Prehistory to Present - Designation Selection Guide* (English Heritage (now Historic England), 2012) can be used to assess an asset in terms of its value:

- Period;
- Rarity;
- Documentation;
- Group value;
- Survival/condition; and
- Potential.

3.5.3 These aspects help to characterise each asset whilst also comparing them to other similar assets. The criteria also enable the potential to contribute to knowledge, understanding and outreach to be assessed.

3.5.4 The value of known archaeological and cultural heritage assets were assessed on a four-point scale using professional judgement informed by criteria provided in Table 1.

Table 1 Criteria to assess the archaeological value of marine assets

Value	Definition
High	Best known, only example or above average example and / or significant or high potential to contribute to knowledge and understanding and / or outreach. Assets with a demonstrable international or national dimension to their importance are likely to fall within this category; <ul style="list-style-type: none"> • 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; and • known submerged prehistoric sites and landscapes with the confirmed presence of largely in situ artefactual material or palaeogeographic features with demonstrable potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape.
Medium	Average example and / or moderate potential to contribute to knowledge and understanding and / or outreach; <ul style="list-style-type: none"> • 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; and • 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 outreach; <ul style="list-style-type: none"> • 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; and • 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 outreach. Assets with little or no surviving archaeological interest.

- 3.5.5 Furthermore, *On the Importance of Shipwrecks* (Wessex Archaeology, 2006) suggests importance can be assessed through the 'BULSI' system, incorporating the following criteria: build, use, loss, survival and investigation. This represents all phases of a ships 'career' and tries to examine the shipwreck through its build and use, the manner in which it was lost and how it has survived and been investigated over time.
- 3.5.6 To further supplement this approach, the Aggregate Levy Sustainability Fund (ALSF) funded *Marine Class Description and principles of selection for aggregate producing areas project* (ALSF 5383), undertaken by Wessex Archaeology (Wessex Archaeology, 2008b), proposed a composite timeline that considers wrecks in five distinct date ranges. The timeline considers the broad chronology of shipbuilding, thus drawing out generalisations regarding the age and special value of sites. The timeline is summarised as follows:
- Pre- 1500 AD: this covers the period from the earliest Prehistoric evidence for human maritime activity to the end of the medieval period, c. 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 to 1815: this encompasses the Tudor period in England and the Stuart periods in Scotland and Britain, the Wars of the Three Kingdoms, 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 to 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 to 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.
- 3.5.7 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.
- 3.5.8 Wrecks dating from 1816 to the present day are more plentiful amongst known wrecks. The Marine Class Description and Principles of Selection project (Wessex Archaeology, 2008) further revealed that a total of 96% of known and dated wrecks were lost in the period between 1860 and 1950. Due to their predominance in the known marine archaeological record, the special value of wrecks of this period thus depends upon their ability to exhibit both integral and relative factors based on attributes relating to the Wessex Archaeology 'BULSI' system of wreck assessment. The ALSF-funded project *Assessing Boats and Ships 1860-1950* (Wessex Archaeology, 2011a-c) explored this further by providing a national stock-take of known wrecks in territorial waters off England and review it in the light of the

framework for assessing special interest prepared in the *Marine Class Description and Principles of Selection project* (Wessex Archaeology, 2008) and historical thematic studies.

- 3.5.9 The *Early Ships and Boats Prehistory to 1840* provided further information about earlier vessels (Wessex Archaeology, 2013). Through undertaking a national stock-take of wrecks dating to this period within English territorial waters, this project provides supplementary guidance on the key themes and interests represented by such wrecks, in order to inform decisions regarding importance and mitigation. These are summarised thus:
- does it illustrate a key narrative of the period;
 - does it represent a distinct and tangible link to significant persons or events;
 - is it representative of significant loss of life or related responses in seafaring safety;
 - does it make a distinct cultural contribution; and
 - does it have current relevance or parallels.
- 3.5.10 The perceived value of each marine archaeological asset is generally assessed and assigned on a site-by-site basis, depending on the criteria listed in Table 1. The UK Marine Policy Statement (Defra, 2011, p. 90) describes a heritage asset as holding a degree of significance. Significance relates to the heritage interest of an asset that may be archaeological, architectural, artistic or historic.
- 3.5.11 Furthermore, the nature of the archaeological resource is such that there is a high level of uncertainty concerning the distribution of potential, unknown archaeological remains on the seabed. It is often the case that data concerning the nature and extent of sites is out of date, extremely limited or entirely lacking. As a precautionary measure, unknown potential cultural heritage receptors are therefore considered to be of high sensitivity and high value.

3.6 Assumptions and limitations

Archaeological data

- 3.6.1 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 reasonably accurate.
- 3.6.2 The records held by the UKHO, RCAHMW, HERs 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 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.

4 MARINE ARCHAEOLOGICAL ASSESSMENT: PALAEOGEOGRAPHY

4.1 Geological baseline and archaeological potential

- 4.1.1 The following is an overview of the Quaternary geological and archaeological history of the wider region from the Pleistocene to the Holocene marine transgression. This is based on a range of secondary sources, including academic papers, monographs, geological information (e.g. BGS mapping), and previous work undertaken by Wessex Archaeology



within the Irish Sea area and the wider region (Bicket and Tizzard 2015). This serves as a baseline for the palaeogeographic assessment, and aids in producing a stratigraphy for the study area, assigning archaeological potential to identified units, and informing future sampling strategies.

- 4.1.2 The study area is located within the Dee Estuary, in the Welsh Platform area of the Irish Sea. The basement geology of this area of the Irish Sea comprises sandstones and mudstones dating from the Permian through to the Triassic, with some potential Carboniferous deposits in the nearshore, all which are extensively folded and faulted. (Jackson et al. 1995, Mellett et al. 2015).
- 4.1.3 The upper surface of the bedrock represents a significant unconformity, and the bedrock units are directly overlain by Quaternary sediments within the study area (Jackson et al. 1995, Mellett et al. 2015). The Quaternary history of the Irish Sea, as with most of the UK, is complex and has been dominated by recent glacial/interglacial cycles, which have been recorded within the regional geology.
- Pre-Anglian to Ipswichian (>478 ka¹ – 115 ka; >Marine Isotope Stage (MIS) 12 – 5e)*
- 4.1.4 As a shallow shelf area at a relatively high latitude, the eastern Irish Sea has experienced at least three glacial advances and retreats since the Anglian period. These advances and retreats are recorded as repeated phases of major incisions, lodgement/ablation tills, and associated interglacial deposits identified at different levels within the Irish Sea stratigraphy (Jackson et al. 1995, Mellett et al. 2015).
- 4.1.5 The phases of formation and ablation of ice sheets affected local (and global) relative sea levels, fluctuations in which likely resulted in the eastern Irish Sea being periodically sub-aerially exposed. Although the region was directly covered by ice during multiple glacial advances, periods of time may have existed between marine regression and glacial advance (and vice versa) where the landscape was free of both water and ice.
- 4.1.6 From an archaeological perspective, evidence for human occupation in excess of 700,000 years has previously been recorded at sites around the UK, particularly in the East Anglia region (Parfitt et al. 2005, Parfitt et al. 2010). Periods of sub-aerial exposure of the shallow shelf areas around the UK will have permitted the movement of Pleistocene animals, and may have facilitated occupation and exploitation of this landscape by early hominins. Direct evidence of hominin occupation of the shallow shelf areas of the UK has previously been identified off the coast of Suffolk, when numerous lithic artefacts dating from the Early Middle Palaeolithic (c. 350 ka – 180 ka BP) were recovered from the seabed during aggregate dredging (Wessex Archaeology 2011d, Tizzard et al. 2014).
- 4.1.7 The presence of Palaeolithic cave sites along the North Wales coast indicates that similar occupation of the region during times of low relative sea level may have been possible, circa MIS 8 and 7 (Bicket and Tizzard, 2015). In particular, early Neanderthal remains discovered in Pontnewydd Cave near St Asaph, Denbighshire, dating from c. 225 ka before present (BP), record hominin presence in the area during the Early Middle Palaeolithic, prior to the late glacial maximum (LGM) (Lynch et al. 2000, Flemming 2005). However, the area will have been uninhabitable during the heights of the Anglian and Saalian glaciations. As such, any habitation in the area was potentially sporadic and punctuated by extended periods of absence.

¹ Thousand years ago



4.1.8 Due to the highly erosive effect glaciations have upon the underlying landscape, subsequent glaciations tend to remove most evidence of the preceding pre-glacial/interglacial landscapes. Similarly, any archaeological material deposited offshore during earlier ice-free periods is likely to have been removed by subsequent glaciations, with the exception of some coastal cave sites (Flemming 2005).

Devensian to LGM (c. 115 ka – 18 ka; MIS 5d -2)

4.1.9 The Devensian glaciation was the last, although not the most extensive, glacial advance experienced by the UK, during which the Irish Sea was again likely to have been entirely covered by ice. Relict terrestrial features still visible on the seabed, such as drumlins, moraines, eskers, and periglacial patterned ground, are all evidence of the advance and retreat of the Devensian ice sheet and its effect on the underlying landscape (Jackson et al. 1995, Van Landeghem et al. 2009, Van Landeghem and Chiverrell 2011, Mellett. et al. 2015).

4.1.10 Archaeologically, it is known that Wales was occupied at least during the earlier Devensian, with Neanderthal finds dating from 50 ka BP identified from Coygan Cave near Tenby, and modern human remains dating from 26 ka BP discovered in Paviland Cave on the Gower Peninsular, both in South Wales (Lynch et al. 2000, Flemming 2005).

4.1.11 Within the Irish Sea, palaeoenvironmental analysis of borehole samples acquired for the Walney OWF recovered pollen sequences relating to the Upper Palaeolithic (ca. 34 ka BP), suggesting isolated pockets of material from the earlier, pre-glacial advance of the Devensian period may have survived further offshore (Wessex Archaeology 2010). However, as with the previous glacial advances, the area would again have been uninhabitable and abandoned by the Last Glacial Maximum.

Post-LGM and early Holocene (18,000 – 6,000 BP; MIS 2-1)

4.1.12 The history of the Irish Sea basin since the LGM is complex and unclear, and the relative sea level curve for the region is complicated due to complex interactions between global sea level rise and isostatic readjustment (Flemming 2005, Shennan et al. 2011).

4.1.13 The correct model of glacial retreat has significant consequences for the post-LGM archaeological potential of the Irish Sea; a fully inundated landscape has low potential for the deposition of artefacts, and vice versa. However, the discovery of Late Upper Palaeolithic material dating from around 10 ka BP in Kendrick's Cave on the Great Orme Peninsular (Flemming 2005, Lynch et al. 2000), just south of the study area, indicates that, were the Irish Sea a terrestrial environment post-LGM, then it is likely that human communities had a presence within the landscape.

4.1.14 Assuming a terrestrial followed by marine transgression model, gradual sea level rise would have probably placed much of the Irish Sea either on the coastline or just offshore by the Mesolithic period (c. 10 ka – 6 ka BP) (Shennan and Horton 2002 & Shennan *et al.* 2018). Past identification of submerged peat deposits and drowned forests around the Welsh coastline and the edges of the Irish Sea suggests coastlines in the area were stable for periods of time during marine transgression (Steers 1948, Flemming 2005, Wessex Archaeology 2009).

4.1.15 The Mesolithic record of the British Isles suggests a strong relationship between human activity and coasts, wetlands, rivers and streams, and evidence of human occupation of the river Mersey, which drains into the eastern Irish Sea, has previously been discovered (Cowell and Innes 1994). These areas provide rich sources of food and resources for these hunter/gatherer groups, as well as important transport routes inland or between islands.



Any surviving sedimentary deposits from this period could potentially contain both in-situ and derived artefacts from a time when these coastal and littoral landscapes, now submerged by the sea, were utilised intensively by human populations.

- 4.1.16 In addition to these submerged coastal landscapes, the Mesolithic archaeological record potentially contains examples of coastal or sea going craft made from dugout logs or hide covered wooden frames as well as worked flint and chert artefacts.
- 4.1.17 By the end of the Mesolithic, the Irish Sea would have been completely submerged, with coastlines approximately close to their present day positions, and archaeological evidence from the Neolithic onwards will be of an increasingly maritime nature. However, continued use of the intertidal zone surrounding the Irish Sea has been found in the form of preserved human footprints on the foreshore at Formby Point, Merseyside, dating from the Neolithic/Bronze Age (Roberts et al. 1996). Further offshore, any artefacts from this period not related to maritime activity are likely to be derived and re-deposited after introduction to the area by fluvial processes or coastal erosion.
- 4.1.18 Post the Holocene marine transgression, the archaeological potential of the study area shifts to the maritime history of the UK, which is presented in section 5.

Setting

- 4.1.19 The setting of seabed prehistory features is integral to their value and importance. Although there are no views to the features nor ways they can be experienced on the seabed, their position is critical to how palaeolandscapes were experienced by past peoples, and their non-visual setting includes international research into the Palaeolithic and Mesolithic periods across Europe. If further relevant information regarding these features becomes available in the future, then an assessment of their setting may be undertaken.

5 MARINE ARCHAEOLOGICAL ASSESSMENT: MARITIME AND AVIATION SITES

5.1 Introduction

- 5.1.1 The following assessment of the maritime and aviation marine archaeological baseline resource is based on records of known shipwrecks, aircraft crash sites and obstructions.

5.2 Designated Maritime and Aviation Sites

- 5.2.1 There are currently no sites within the study area that are subject to statutory protection from the Protection of Wreck Act 1973, the Protection of Military Remains Act 1986 or the Ancient Monument and Archaeological Areas Act 1979.

5.3 Known Maritime Sites

- 5.3.1 A search of records in the UKHO, RCAHMW and HER datasets revealed 23 sites (Figure 2), two of which are located within the boundaries of the MEP Extension Project, specifically the maintenance dredge area, whilst the remaining 21 sites fall within the wider Dee Estuary. Full details of these records are provided in Appendix 4.
- 5.3.2 The UKHO record 8159 (2008) is that of a tractor that was used as a mussel digger which became embedded in the sand bank. In 1989 this was removed, and the record amended to 'Lifted'.
- 5.3.3 UKHO record 66854 (2009) is that of the British sailing vessel *Ant*. This wooden vessel was a Mersey flat (jigger sail) built in 1863. At the time of loss, in February 1907, the vessel was owned by Clare's Lighterage Co, Lancashire, carrying roofing slate from Port Dinorwic to

Sankey Bridge. The *Ant* was sheltering from a westerly force 7 gale when it collided with the Liverpool registered steamship *Jane*. The *Ant* subsequently foundered in the Wild Roads, River Dee. In 2019 the grounding position of the wreck was observed as within Mostyn Church, covered by sand and marked with a buoy. The wreck is currently buried in sand and the marker buoy withdrawn, with the position left for filing only.

Value

- 5.3.4 The present assessment of the value of known and potential archaeology within the study areas is based on data from the UKHO, NMRW and HER. This assessment is based on the criteria for assessing archaeological value, as set out in Table 1, and based on available guidance (Cadw 2020; Wessex Archaeology 2011a, b, c).
- 5.3.5 Each wreck should be assessed on a case-by-case basis, in order to take into account the full range of criteria for assessing value (such as period, rarity, documentation, group value, survival/ condition, potential, build, use, loss, and investigation), however, it is also possible to provide a broad assessment of the sites, based on date categories defined by the Marine Class Description and principles of selection (Wessex Archaeology, 2008).
- 5.3.6 Of the two sites identified within the study area, the wreck of the *Ant* (2009) has the potential for remains to still be buried within the sand, unlike wreck 2008 which was lifted in 1989.
- 5.3.7 The *Ant* was a ketch-rigged sailing flat, transporting slate from Port Dinorwic to Sankey Bridges. North Wales was a major area for the exportation of slate between Welsh ports and the rest of Britain. Cargoes of slate would have been transported on vessels that often originated from Cheshire and Lancashire; the *Ant* being owned by Clare's Ligherage Co, Lancashire. The *Ant* had a crew of two at the time of its last voyage, Captain John Waterworth of Runcorn and mate Richard Wainwright of Widnes, both of whom were saved by SS *Jane* and landed at Llanerch y Mor (Wrecks in the Dee Estuary, Accessed May 2022).
- 5.3.8 This vessel belongs to a period when there were great changes being made to the way in which vessels were built and used, and although examples of vessels from this period are generally more numerous in the archaeological record, those that contribute to an understanding of these changes would be considered as having increased value. As this vessel represents an important part of Wales' slate heritage, it is believed to have a high value.

5.4 Known Aviation Sites

- 5.4.1 There are no known aircraft crash sites located within the study area.
- 5.4.2 The potential for the discovery of previously unknown shipwreck sites and aircraft crash sites and material is discussed below (summarised in Table 2).

5.5 Maritime Archaeological Potential

- 5.5.1 Many vessels were lost without a record being made, and sometimes even the records that were created have since been lost (Cant 2013). Examining the recorded losses discussed above provides an indication to the potential for further discoveries, as do the factors discussed below.
- 5.5.2 The exploitation of the marine environment is thought to have begun in the Mesolithic, at the earliest time of inundation of the coast, when people would have started to use boats to access the available resources and maintain links with other communities. It is thought that during the Mesolithic period major transgressions inundated the low-lying area between

Rhyl and Prestatyn, but that areas of elevated boulder clay remained above sea level and were occupied as the most seaward habitable land. This may account for the distribution of shell beds and Mesolithic finds reported around Rhyl (Davidson 2002). An antler mattock was also discovered in Rhyl dated to 6560 +/- 80 BP (OxA-1009) (Bonsall and Smith 1990).

- 5.5.3 Maritime traffic was being undertaken during the Neolithic, with the importation of domesticated animals and other goods from the Continent. The remains of an ancient submerged forest in Formby, Rhyl and Abergele (*The Lost Lands of Our Ancestors*, accessed May 2022) is a reminder of a landscape that was once utilised by human and animals that has the potential to yield archaeological remains.
- 5.5.4 There has been relatively little direct study of aspects of maritime and coastal activity from the later prehistoric periods in Wales. Studies of long-distance trade and exchange of cultures traditionally focus on stone and flint tools and their geological provenance, rather than maritime networks. Evidence for seafaring is usually inferred from the identification of Mesolithic sites on islands, which must have required some form of craft to complete the sea crossing. Skinboats may have been used, but logboats are certainly known from mainland Europe during this period.
- 5.5.5 Continuing into the Bronze and Iron Ages, there is a long period which is marked only by a few significant maritime/coastal artefact and boat finds, whilst dramatic changes in society, technology and economy are well attested in terrestrial monuments and material culture. An assemblage of over 70 artefacts mostly of Neolithic and Bronze Age date were recovered from the peat shelf at Rhyl and include polished stone axes (Manley 1989). Finds from peat deposits, such as the two bronze axes and a bronze dagger from the peat shelf off Llandudno, Conwy, and a bronze spearhead and a bronze axe found on the peat shelf at Rhyl, Denbighshire, are more likely to be an indication of Bronze Age exploitation of coastal environments which were later inundated (Manley 1989). The mines within the Great Orme in Llandudno are thought to be the earliest metal workings in the UK and are nationally important Bronze Age copper workings (National Resources Wales 2015b).
- 5.5.6 The Roman occupation of Britain was by necessity accomplished by 'maritime' means, with the *classis Britannica* operating both for exploration and like a state haulage company in the first centuries of occupation. Apart from the Barland's Farm boat, no other vessels from the Roman period have been discovered in Wales, even though an inscribed stone found to the west of Chester apparently confirms the age old navigation dangers of the Dee estuary - 'OPTONIS AD SPEM ORDINUS C LVCILI INGENVI QVI NAVFRAGIO PERIT S E' or 'Optio in the century of Lucilius Inegneus, awaiting promotion to centurion, who died in a shipwreck, is buried' (Wynne-Jones, 2001, 9). The results of recent geophysical survey work and excavation at Caerlon have reinforced the importance of the Roman port supporting the Roman legion and its network. The Dee Estuary, with the South Hoyle Channel and Inner Passage, provided the approaches to Roman port of Chester. A Roman era industrial site was also discovered near Flint and surveyed by Cadw and the CPAT (Wales Online, accessed May 2022).
- 5.5.7 The Great Orme, Llandudno was named by the Vikings who passed it on their seafaring voyages as the Scandinavian word "örmr" means snake (RCAHMW 2019, 94) in reference to the headland protruding out of the water like a monster. In 1165, Henry II hired a Viking squadron from Dublin to raid the coasts of Gwynedd after recognising Wales' vulnerability to naval blockade (RCAHMW 2019, 101). Therefore, it is possible for the remains of ships dating to the Viking period being in the vicinity.

- 5.5.8 Into the early medieval period, there is much more evidence for coastal settlement where maritime communities shared cultural contact around the Irish Sea basin, and into the Western Approaches with contact with continental Europe. From the 6th to 7th century onwards, it has been suggested that proto-harbours began to emerge from sheltered beaches along with specialist seafaring traders – often associated with princely strongholds such as Dinas Powys, Hen Gastell, Tenby and Deganwy (Rees et al 2017).
- 5.5.9 The recently published volume *Maritime Wales in the Middle Ages: 1039- 1542* (Gruffydd 2016) highlights that the maritime medieval archaeological record is sparse – including only the twelfth century logboat of Llyn Padarn, the thirteenth century clinker-built vessel carrying iron ore from Magor Pill, and the fifteenth century Newport Ship. The 13th century Flint Castle is a Grade I Listed Building located further south of the proposed development within the Dee Estuary. The location of the castle was situated in a prime defensive shoreline position, built by Edward I in 1277. This enables access to supplies by sea and was instrumental in the final collapse of organised Welsh resistance to the English Crown, as it acted as a launching point for the final invasion of Gwynedd in 1282.
- 5.5.10 Post-medieval and modern wrecks, as they were generally made of more substantial material, are more likely to have been discovered through surveys undertaken by the UKHO and others, and thus recorded in the archaeological record. However, there is still potential for discovery of previously unrecorded wreck sites, particularly of wooden wrecks, broken up wrecks or partially buried wrecks that are more difficult to detect through geophysical survey.
- 5.5.11 The range of seafaring and seascape related research topics expands exponentially from the medieval period into the modern day. Much of the presently available research is related to the expansion in trade in various Welsh commodities such as copper, coal, slate and other stone trades, and associated port developments. The Welsh slate industry, while having a mainly 19th and 20th century focus, has a history which stretches back as far as the Roman period at least. The extraction of slate can be seen as a consistent exploitation of an available resource throughout Wales' entire historic period. The impacts of the industry highlight its importance to the cultural heritage of Wales. It changed the landscape of North Wales, resulting in its development and a marked change in its demographics in the 19th century. It preserved communities in that area sustaining their populations while many rural areas throughout the rest of the UK were being abandoned in favour of cities (Wessex Archaeology 2009).

5.6 Aviation Archaeological Potential

- 5.6.1 The two World Wars provide two historical periods when the sea lanes became theatres of war. The relationships between defence of the sea lanes and Welsh airfields provides another potential research area.
- 5.6.2 During the Second World War, aircraft activity increased drastically and the highest potential for aircraft material on the seafloor is from this period. By the Second World War, aircraft were more heavily built and therefore material from their crash sites is more likely to survive in the archaeological record.
- 5.6.3 *The Aircraft Crash Sites at Sea* project (Wessex Archaeology, 2008b) considered a selection of sources which may be considered to indicate the potential for aircraft remains of this period. One of the most complete sources of information was provided by published aviation researcher Ross McNeill, who identified 11,090 RAF aircraft losses in the North Atlantic, North Sea, English Channel, Irish Sea and Biscay areas between 1939 and 1990,

the majority of which occurred during the Second World War (Wessex Archaeology, 2008b: 18).

- 5.6.4 After the Second World War, there is still potential for aircraft to have been lost in the area, however any military losses during this period are more likely to have been lost due to training accidents rather than combat operations (Wessex Archaeology, 2008b: 166), and civilian losses are likely to have been reported and recorded.

Table 2 Summary of maritime potential by period

Period	Summary
Pre - 1500	Potential for material associated with prehistoric maritime activities, including coastal travel, fishing and the exploitation of other marine and coastal resources. Vessels of this period include rafts, hide covered watercraft and log boats. The discovery of small finds in the intertidal zone highlights the potential for early maritime activity.
	Potential for material associated with later prehistoric maritime activities, including seaworthy watercraft suitable for overseas voyages to facilitate trade and the exploitation of deep-water resources. Such remains are likely to comprise larger boat types, including those representing new technologies such as the Bronze Age sewn plank boats. Early Neolithic house structures have previously been excavated in North Wales and therefore, maritime activity could have been taking place during this period.
	The study area is very close to the major settlement and trading port of Chester, which remained important until the eighteenth century. An inscribed stone found to the west of Chester apparently confirms the age old navigation dangers of the Dee Estuary, therefore, there is particular potential for discoveries. In addition, there is considerable potential for material of Romano-British date, associated with the expansion and diversification of trade with the Continent. Watercraft of this period, where present, may be representative of a distinct shipbuilding tradition known as 'Romano-Celtic' shipbuilding. The port only went into decline when it failed to compete with Liverpool, therefore there is potential for several types of watercraft to be in the vicinity.
	In addition, there is potential for material associated with coastal and seafaring activity in the 'Dark Ages', associated with the renewed expansion of trade routes and Germanic and Norse invasion and migration. Vessels of this period may be representative of new shipbuilding traditions including changes in technique.
	Potential for material associated with medieval maritime activity, including that associated with increasing trade between the UK and Europe, the development of established ports around the southern North Sea and the expansion of fishing fleets and the herring industry. Vessels of this period are representative of a shipbuilding industry which encompassed a wide range of vessel types (comprising both larger ships and vernacular boats). Such wrecks may also be representative of new technologies (e.g. the use of flush-laid strakes in construction), developments in propulsion, the development of reliable navigation techniques and the use of ordnance. The Dee Estuary was navigable until the eighteenth century.
1501 to 1815	Vessels of this period continued to variously represent both the clinker techniques and construction utilising the flush-laid strakes technique. There is increasing potential for post-medieval shipwrecks associated with the expansion of transoceanic communications and the opening up of the New World. There is increasing potential for post-medieval shipwrecks associated with continuing local trade and marine exploitation. The Welsh slate industry has a history which stretches back as far as the Roman period. The extraction of slate can be seen as a consistent exploitation of an available resource throughout Wales' entire historic period. The impacts of the industry highlight its importance to the cultural heritage of Wales (Wessex Archaeology 2009a).
1816 to 1913	Increasing potential for the discovery of shipwrecks associated with the introduction of iron and later steel in shipbuilding techniques. Such vessels may also be representative of other fundamental changes associated with the industrial revolution, particularly with regards to propulsion and the emergence of steam propulsion and the increasing use of paddle and screw propelled vessels. Potential for the discovery of shipwrecks demonstrating a diverse array of vernacular boat types evolved for use in specific environments. Potential for wrecks associated with large scale worldwide trade, the fishing industry or coastal maritime activity including marine exploitation. Also, potential for vessels associated with leisure activities and travel to seaside resorts as Rhyl was a famous British seaside destination.
1914 to 1945	Potential for the discovery of shipwrecks associated with the First and Second World Wars, including both naval vessels and merchant ships. Wrecks of this period may also be associated



	with the increased shipping responding to the demand to fulfil military requirements. A large number of vessels dating to this period were lost as a result of enemy action.
Post - 1946	Potential for wrecks associated with a wide range of maritime activities, including military, commerce, fishing and leisure. Although ships and boats of this period are more numerous, losses declined due to increased safety coupled with the absence of any major hostilities. Vessels dating this period are predominantly lost as a result of any number of isolated or interrelated factors including human error, adverse weather conditions, collision with other vessels or navigational hazards or mechanical faults.

5.6.5 The River Dee saw a number of military aircraft losses during the Second World War, including a number of Spitfires which crashed into the River Dee near Hawarden. During the Second World War, Rhyl Flats provided the last coastal fix for aircraft operating out of Hawarden and Sealand (Natural Resources Wales 2015a).

5.7 Navigational Hazards

5.7.1 The navigational chart for the approaches to the River Dee shows a number of navigational aids, including the former Point of Ayre lighthouse, Mostyn Deep buoys.

5.7.2 There are constantly shifting sandbanks recorded as being in the area with changing depths (Natural Resources Wales 2015c). The hazards are marked by numerous buoys, lights and fog horns, however these could have posed a serious threat in earlier times. The West Hoyle Bank is considered to be the greatest navigational hazard in Welsh waters and has been the cause of numerous shipping losses over the centuries (Natural Resources Wales 2015c).

5.8 Recorded Losses

5.8.1 As discussed in section 3.2, Recorded Losses are records for ships or aircraft that are known to have wrecked or crashed offshore, but for which the exact locations are not known. Recorded Losses are often grouped together by their general area of loss into Maritime Named Locations (displayed spatially as polygons or centre points of polygons, often associated with NMRW data, for example Dee Estuary Maritime Named Location), however many records are given co-ordinates (displayed spatially as points), although these are similarly unsubstantiated.

5.8.2 Recorded Losses can be considered as an indication of the potential for archaeological maritime remains to exist within the study area and the type and number of wrecks that could be present. These records relate to vessels reportedly lost or for which no physical wreck remains have ever been identified.

5.8.3 The UKHO, RCAHMW and HER datasets have 48 records of recorded losses, located within the search area. These are records for which although a vessel (or vessels) is known to have been lost in the general area, no material has been encountered on the seabed at the recorded location. Details regarding these losses are presented in Appendix 5 and Appendix 6.

5.8.4 No losses are recorded prior to the beginning of the post-medieval period, and while this to some extent could represent a significant increase in shipping during the post medieval period, it could also reflect the fact that record keeping, and the maintenance of those records, has improved significantly (Table 3).

Table 3 Recorded Losses – summary by date

Date	Number of records of ships	Number of records of aircraft
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Post-medieval	3	N/A
19th Century	30	1
Modern	13	10
Unknown	2	N/A
Total	48	11

Ship Recorded Losses

- 5.8.5 The recorded losses all date from between the late post-medieval to the modern period and cover a wide range of vessel types. Some provide information about the causes of loss.
- 5.8.6 Of the 48 records of vessels that were lost, all have a recorded vessel type. These include: cutter, ketch, Mersey flat, sailing vessel, schooner, sloop, steamship, wooden flat built, wooden sailing packet. The types of vessels highlight the wide range of maritime activities in the study area over time. Some of the vessels have their journey listed and the cargo being transported on their final voyage (Table 4).

Table 4 Recorded Losses – lost cargo and journey

Cargo	Journey
Iron ore	Whitehaven to Saltney
Sulphur	Mostyn to Pentre
Bricks and tiles	Connah's Quay to Belfast
Salt	Flint to Widnes
Cast iron ingots	Carthegena to Mostyn
Salt	Flint to Newcastle-upon-Tyne
Coal	Point of Ayr to Flint
Coal	Point of Ayr to Caernarfon
Coal	Mostyn to Flint
Pyrites	Chantenay to Mostyn
Iron bar and pipe	Connah's Quay to Liverpool
Manganese ore	Poti to Mostyn
Salt	Runcorn to Howth

- 5.8.7 Although now in serious decline, the coal industry was fundamental in shaping the development of modern Wales, particularly in the south. For a brief period of time in the late 19th and early 20th centuries it was arguably also Britain's greatest single export and Welsh 'steam coal' powered the industrial and transport revolutions taking place across the world. The coal industry bestrode Wales like a behemoth. Most of the coal was exported and therefore the coal trade was by necessity largely a maritime trade (Wessex Archaeology 2009b) therefore any leads on the location of the remains of coal carrying vessel could be of significant archaeological value.

Aircraft Recorded Losses

- 5.8.8 There are 11 aircraft recorded losses within the search area.
- 5.8.9 Six of the records consist of Spitfires: Supermarine Spitfire VB BM113, I N3276, I K9981, I K9995, I R6989, and F22 PK385. The former five aircraft were lost between 1844 and 1942, and either crashed or had to force land in the Dee Estuary. The Supermarine Spitfire F22 PK385 flew into a sandbank 3 miles east of the Point of Ayr during aerobatics practice/display.



- 5.8.10 Miles Master I N7944 (NPRN 515633) was built by Philip & Powis, Woodley, and was assigned to 5 FTS (flying Training School). The aircraft was abandoned in a spin in cloud and crashed into the River Dee on 24 September 1940.
- 5.8.11 Blackburn Botha I L6237 (NPRN 515600) was built by Blackburn, Brough, and, at time of loss, was assigned to 11 RS (Radio School). The aircraft ditched into the River Dee off Bagillt, Flintshire, in bad weather on 8 January 1943.
- 5.8.12 Miles Martinet I HP242 (NPRN 515822) was built by Phillips & Powis, Woodley and assigned to 41 OTU. The aircraft flew into the sea off Llanerch-y-mor on 17 July 1944.
- 5.8.13 Avro Anson I EG186 (NPRN 515801) was built by Avro at Yeadon. Its service life included assignments to 3 OAFU, 5 PAFU and 1 Group CS. The aircraft ditched into the Dee Estuary off Llanerch-y-mor on 15 March 1945.
- 5.8.14 De Havilland Chipmuck T10 WB747 (NPRN 515684) was one of an order of 200 (contract 6/Acft/2508) and was delivered in November 1950. Its service life included assignments to 14 RFS, 9 RFS, and 63 Group CF. The aircraft crashed in a flat spin into Bagillt sandbank in the Dee Estuary 1 mile northwest of Flint on 20 July 1954.

6 MARINE ARCHAEOLOGICAL ASSESSMENT: INTERTIDAL HERITAGE ASSETS

6.1 Data assessment

- 6.1.1 There are no sites listed by the UKHO, RCAHMW and HER datasets that fall within the intertidal zone of the study area.
- 6.1.2 One site (2020), already referred to in section 5.3, consisting of the remains of a small timber vessel now sits on the landside of the proposed development, to the north-east side of Mostyn Docks.
- 6.1.3 Two modern pillboxes are located due west of Mostyn Docks (NPRN 270404 and NPRN 270405), outside of the study area.
- 6.1.4 NPRN 270404 consists of a concrete hexagonal pillbox on the end of an old quay. Date inside is 1940 and survives intact although painted white.
- 6.1.5 NPRN 270405 consists of a concrete hexagonal pillbox located midway along breakwater. Date inside is 1940 and survives intact with slight internal damage.

7 ASSESSMENT OF HISTORIC SEASCAPE CHARACTER

7.1 Introduction

- 7.1.1 Working on behalf of the Welsh Government, NRW carried out a study to identify the character of Wales's seascapes at a broad scale (Natural Resources Wales 2015c). Seascapes, like landscapes, reflect the relationship between people and place; marine character areas highlight the key natural, cultural and perceptual influences that make the character of each seascape distinct and unique. Seascapes are about linking people and their cultures, and places and their natural resources. This is important as it allows us to understand and appreciate sense of place and local distinctiveness. There are 29 marine character areas in Welsh territorial waters and there is spatial information and a description for each of them. This forms part of the information underpinning the Welsh National Marine

Plan. Marine character areas and the effects of development on them should be considered when drawing up and assessing project proposals (Cadw 2020).

7.2 Historic Seascape Characterisation

7.2.1 The study area spans across Marine Character Areas 01: Dee Estuary and Marine Character Areas 04: North Wales Open Waters (Natural Resources Wales 2015a - b) (Table 5). The below information highlights sandbanks. Sandbanks can provide archaeological potential as there could be buried material in the sandbanks that cannot be detected by geophysical survey. The great changes that have occurred in the configuration of navigation channels at the mouth the estuaries of the Conway, Dee and the Burry inlet are also noteworthy (RCAHMW 2019, 62).

Table 5 Marine Character Areas 01 Key Characteristics

The Dee Estuary forms a natural border between Wales and England, backed by the rising foothills of the Clwydian Range AONB.
Estuary internationally and nationally designated for biodiversity, the expansive intertidal sand, mudflats and saltmarsh supports thousands of wetland birds including shelducks, teals, godwits, waders and tern.
Constantly shifting sandbanks with changing depths; hazards marked by numerous buoys, lights and fog horns, including the former Point of Ayre lighthouse. Main entry channel to the Dee maintained by dredging.
Flat, open topography and low water stand means the area can be quickly inundated during high tide. A small bore can develop on a particularly high spring tide.
Long-standing importance for trade, defence and occupation, including the nationally important remains of Flint Castle and Basignwerk Abbey – the latter exploiting the rich natural resources of the coast and surrounding farmland.
The Dee provided the maritime approaches to the Roman port of Chester. Signs of past industry are visible along the length, including abandoned industrial waste heaps.
The remains of historic ships foundering on the sand banks include an emigrant vessel en-route from Liverpool to America in 1801 with 300 passengers (all rescued).
Nationally important industries continue to dominate, including processing plants for Irish Sea gas and servicing plants for the nearby offshore wind farms from the Port of Mostyn.
Waters commercially and recreationally fished, including shrimp trawling and the traditional hand gathering of cockles and mussels.
MCA valued as an important recreational space providing access to the coast for nearby urban populations, including via the Wales Coast Path. RSPB reserves provide opportunities for bird watching.
The sand dunes at the bar of the estuary contain inland views and urban/industrial influence, creating a contrasting maritime character with expansive views along the coast and out to the Irish Sea (with its offshore wind farms).
The sounds and sights of thousands of birds and the expansive intertidal habitats with ever-changing tidal character provide a contrast to nearby human activities and noise.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1.1 Archaeological assets relating to seabed prehistory, maritime and aviation archaeology have been identified within the study area, as has the potential for further assets to be discovered. The proposed development has, in principle, the potential to physically impact potential archaeological receptors within the dredging footprint; and known and potential receptors in the wider area as a result of indirect physical effects such as changes in seabed sediment regimes, scour etc.

8.1.2 Typically, adequate and appropriate mitigation is required to ensure that the archaeological value of the baseline environment described within this report is maintained. Recommendations for appropriate mitigation are set out below.



8.2 Recommendations

Avoidance

- 8.2.1 The primary mitigation for the protection of known archaeological assets is avoidance. This is achieved through the implementation and monitoring of Archaeological Exclusion Zones (AEZs), which are proposed for identified high value seabed features of anthropogenic origin (i.e., A1 classified geophysical anomalies).
- 8.2.2 The mitigation will establish appropriately sized AEZs around assets which have been considered to be of high archaeological potential, in consultation with the Archaeological Curator. These areas would be out of bounds to construction activities and to anchoring. Monitoring of any AEZs to ensure there is no disturbance to them will be part of this mitigation.
- 8.2.3 One historic record (2009) of possible archaeological interest with no corresponding geophysical anomaly has been identified. As a record of potential archaeological interest, a precautionary AEZ of 100 m is recommended on the UKHO position of the site (Figure 3). This will ensure that the site is avoided if there is the potential for it to be impacted by any development. Further work may be necessary to ascertain the archaeological potential of this feature should avoidance prove unfeasible.

Reduction

- 8.2.4 Reduction of impact can be achieved by means of appropriate mitigation identified through potential opportunities for further investigation of assets (e.g., during UXO survey and clearance). 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) which includes a Protocol for Archaeological Discoveries.

Remedying and offsetting

- 8.2.5 In cases where avoidance is either inappropriate or impossible, the damage to archaeological assets should be offset. This could include re-stabilising sites after they have been disturbed or archaeologically recording sites that cannot be preserved. In the case of seabed prehistoric features, this could be achieved by undertaking a palaeoenvironmental assessment of deposits with high geoarchaeological potential, principally peat deposits. Pollen and macrofossil assessment, supported by radiocarbon dating, will provide information on age and vegetation history of the terrestrial environment, providing a landscape context to any prehistoric activity within the area. Recovery of artefacts and/or other archaeological assets should be a final resort, when all other mitigation has failed. Any recovery should be completed under the supervision of an appropriately qualified and experienced marine archaeologist. Recovery methods are identified through the WSI. Due to the vast differences in practice and implementation between these methods, each will be covered by a specific Method Statement, approved by the Archaeological Curator, should they be implemented.



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APPENDICES

Appendix 1: Terminology Glossary

AD	Anno Domini
ALSF	Aggregate Levy Sustainability Fund
BCE	Before Common Era
BGS	British Geological Survey
BH	Borehole
BP	Before Present
BULSI	Build, Use, Loss, Survival and Investigation
CifA	Chartered Institute for Archaeologists
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DCLG	Department for Communities and Local Government
ECC	Export Cable Corridor
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ES	Environmental Statement
GIS	Geographic Information System
HER	Historic Environment Record
HSC	Historic Seascape Characterisation
JNAPC	Joint Nautical Archaeology Policy Committee
LGM	Last Glacial Maximum
MCAA	Marine and Coastal Access Act 2009
MHWS	Mean High Water Springs
MPS	Marine Policy Statement
N/A	Not applicable (not included in dataset)
NM	Nautical Miles
NRHE	National Record of the Historic Environment
NRW	Natural Resources Wales
PEIR	Preliminary Environmental Information Report
UKHO	United Kingdom Hydrographic Office
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UTM	Universal Transverse Mercator



Appendix 2: Chronology

Where referred to in the text, the main archaeological periods are broadly defined by the following date ranges:

Prehistoric	
Palaeolithic	970,000 – 9500 BCE
Lower Palaeolithic	970,000 – 300,000 BCE
Pre-Anglian to Ipswichian	>478 ka – 115 ka; >Marine Isotope Stage (MIS) 12 – 5e
Middle Palaeolithic	300,000 – 40,000 BCE
Devensian to LGM	c. 115 ka – 18 ka; MIS 5d -2
Upper Palaeolithic	40,000 – 10,000 BCE
Post-LGM and early Holocene	18,000 – 6,000 BP; MIS 2-1
Late Upper Palaeolithic	12,000 – 9500 BCE
Early Post-glacial	9500 – 8500 BCE
Mesolithic	8500 – 4000 BCE
Neolithic	4000 – 2400 BCE
Bronze Age	2400 – 700 BCE
Iron Age	700 BCE – AD 43

Historic	
Romano-British	AD 43 – 410
Saxon	AD 410 – 1066
Medieval	AD 1066 – 1500
Post-medieval	AD 1500 – 1800
19th Century	AD 1800 – 1899
Modern	1900 – present day



Appendix 3: Legislative, Policy and Guidance

Designation	Associated Legislation or Policy	Overview
	<i>Marine and Coastal Areas Act 2009 - Marine Policy Statement (MPS), 2011</i>	Marine licensing and marine planning made the responsibility of the MMO. England's inshore and offshore waters have been divided into 11 plan areas.
Protected Wreck Sites	<i>Protection of Wrecks Act 1973</i>	The <i>Protection of Wrecks Act 1973</i> allows the Secretary of State to designate a restricted area around a wreck to prevent uncontrolled interference. These statutorily protected areas are likely to contain the remains of a vessel, or its contents, which are of historical, artistic or archaeological importance.
Protected Places and Controlled Sites	<i>Protection of Military Remains Act 1986</i>	The <i>Protection of Military Remains Act 1986</i> provides protection for designated military vessels and for all aircraft that crashed while in military service. The Act provides two types of protection: 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 – covers wrecks within the last 200 years). It is illegal to disturb sites or remove anything from sites. Protected Places can be visited by divers, but the rule is look but don't touch. For Controlled Sites it is illegal to conduct any operations (including diving or excavation) within the Controlled Site unless licensed to do so by the Ministry of Defence.
	<i>Merchant Shipping Act 1995</i>	This Act sets out the procedures for determining the ownership of underwater finds that turn out to be 'wreck', defined as any flotsam, jetsam, derelict and lagan found in or on the shores of the sea or any tidal water. It includes ship, aircraft, hovercraft, parts of these, their cargo or equipment. If any such finds are brought ashore, the salvor is required to give notice to the Receiver of Wreck. This Act is administered by the Maritime and Coastguard Agency.
	<i>Marine and Coastal Areas Act 2009 (Marine Policy Statement 2011)</i>	Marine licensing and marine planning made the responsibility of the Marine Management Organisation (MMO). England's inshore and offshore waters have been divided into 11 plan areas, for which marine plans are being produced by the MMO.
	<i>Revised Draft National Policy Statement for Energy (EN-1) DECC 2010)</i>	This National Policy Statement (NPS) sets out the national policy for energy infrastructure, and the importance of archaeological assessment in the development process.



Designation	Associated Legislation or Policy	Overview
	<i>Revised Draft National Policy Statement for Renewable Energy (EN-3) DECC 2010)</i>	This NPS, taken together with EN-1, provides the primary basis for the decisions by the Planning Inspectorate on renewable energy infrastructure development applications. It sets out the importance of the historic environment and the ways it can be impacted by development, outlines guidance for application assessments, Planning Inspectorate decision making, and mitigation measures.
	<i>UNESCO Convention on the Protection of the Underwater Cultural Heritage</i>	The UNESCO Convention was concluded in 2001 and is a comprehensive attempt to codify the law internationally, with regards to underwater cultural heritage. The UK abstained in the vote on the final draft of the Convention, however it has stated that it has adopted the Annex of the Convention, which governs the conduct of archaeological investigations, as best practice for archaeology. Although the UK is not a signatory, the Convention entered into force on 2nd January 2009, having been signed or ratified by 20 member states. It has since been ratified or accepted by an additional 60 member states.



Appendix 4: Known Maritime Sites

WA ID	External References	Type	Description	Easting	Northing	Location
2001	UKHO 64813; NPRN 506939	Obstruction	A seabed obstruction, possibly a timber wreck. The obstruction was reported in September 2004 and the Dee Conservancy subsequently issued a Notice to Mariner (NM 14/04).	314542.7224	384834.9146	Outwith MEP development
2002	UKHO 8148; NPRN 271387	Obstruction	An obstruction was noted on aerial photographs dating to August 1983. The SUPERB was a Mersey flat built in 1827. At time of loss, the vessel was owned by J Armitage of Greenfield. High winds caused the flat to break free from its mooring and be driven ashore at Llannerch-y-mor.	317918.6653	379502.9298	Outwith MEP development
2003	UKHO 8145	Obstruction	Listed as an obstruction in 10.11.1986, possibly part of an old outfall. Position provided by aerial photography.	320221.1105	386510.9127	Outwith MEP development
2004	UKHO 8147; NPRN 506946	Obstruction	Listed as an obstruction in 10.11.1986, position provided by aerial photography. The Duke of Lancaster is reported to rest on two concrete barges - one a standard World War II lighter and the other older and larger (1000 tons), dating from the first World War and built by the Concrete Seacraft Company at Fiddler's Ferry. Both barges were towed around from Birkenhead Docks and scuttled to prepare the foreshore.	317827.1927	379566.3239	Outwith MEP development
2005	UKHO 8146	Obstruction	Listed as an obstruction in 10.11.1986, possibly part of an old outfall. Position provided by aerial photography.	320051.6529	386328.3144	Outwith MEP development
2006	UKHO 91554	Possible Wreck	UKHO lists this position as that of a possible dangerous wreck at a depth of 11.8 m. Position was examined in 2019 showing the remains to measure 16.1 m long, 7.9m wide, with a height of 1.9 m.	317889.2125	387665.4841	Outwith MEP development
2007	UKHO 91553	Possible Wreck	UKHO lists this position as that of a possible dangerous wreck, first identified in 2019 at a depth of 12 m. It was examined again in late 2019 and found to measure 21.1 m long, 7.3 m wide with a height of 0.6 m. The appearance and dimensions resemble a degraded wreck with some linear and unnaturally-shaped structures visible.	317916.3569	387767.212	Outwith MEP development



WA ID	External References	Type	Description	Easting	Northing	Location
2008	UKHO 8159	Vehicle: Lifted	UKHO lists this position as that of a tractor that was used for cockling/mussel digger and became embedded in the sand bank. In 1989 this was removed and had been amended to Lifted.	315200.7741	381775.8875	MEP Extension Project: Maintenance Dredge Area
2009	UKHO 66854; NPRN 271037	Wreck	UKHO lists this position as that of a British wooden sailing vessel, <i>Ant</i> . The <i>Ant</i> is described as a 47nt wooden Mersey flat (jigger flat) built in 1863. At time of loss on 19 February 1907, the vessel was owned by Clare's Lighterage Co, Lancashire, and was carrying roofing slate from Port Dinorwic to Sankey Bridge under the command of master J Waterworth. The <i>Ant</i> was sheltering from a westerly force 7 gale when it collided with the Liverpool registered steamship <i>Jane</i> . The <i>Ant</i> subsequently foundered in the Wild Roads, River Dee. In 2019 the position of the wreck was observed as within Mostyn Church, covered in sand and marked with a buoy. The wreck is now buried in sand and the marker buoy withdrawn; position is for filing only.	316752.9888	381655.7331	MEP Extension Project: Maintenance Dredge Area
2010	UKHO 7512	Wreck	First observed in 1971 during a survey and listed as a dangerous wreck by the UKHO in 1974 located at a depth of 8.9 m. In 1987 site was swept clear (wire-drag) at 8 m. Traces of a plate lying on a slope was observed.	318271.7901	387130.1589	Outwith MEP development
2011	UKHO 7517	Wreck	UKHO lists this position as that of a British barge, Thomas. Location was examined in 2017 with a portion of hull or superstructure visible due to shifting sand bank. In 2019 this was located at a general depth of 2.36 m and measured 7.3 m long, 6.4 m wide, with a height of 1.4 m.	318660.7215	388571.0069	Outwith MEP development
2012	UKHO 8130; NPRN 506943	Wreck	UKHO lists this a 'Stranded wreck, shape of wreck in firm outline, always shows' in 1984. Position obtained from aerial photography. Likely to be that of the Duke of Lancaster beached at Llanerch-y-Mor Wharf. Completed in 1956 by Harland and Wolff at Belfast for British Railways/Sealink, the DUKE OF LANCASTER was designed to be both a ferry and a cruise ship. It had two sister ships, the DUKE OF	317761.8859	379536.5409	Outwith MEP development



WA ID	External References	Type	Description	Easting	Northing	Location
			<p>ROTHESAY (built by Dennys at Dumbarton) and the DUKE OF ARGYLL (built at Harland and Wolff at Belfast). The vessel had accommodation for 600 first class and 1200 second class passengers. The vessel undertook cruises to the Scottish islands, Belgium, Denmark, Netherlands, Norway and Spain until 1966. In 1970, it was partially converted to a car ferry (entry door in the stern) and worked between Heysham and Belfast. At that time, the vessel had space for 1200 passengers, 105 cars and cabin accommodation for 400. The three vessels continued on the Heysham-Belfast route until the service was withdrawn in April 1975. The DUKE OF LANCASTER was briefly used on the Fishguard-Rosslaire route becoming the relief vessel until November 1978. The vessel was then laid up at Barrow-in-Furness. It was sold out of service in 1979 to a Liverpool based company called Empirewise Ltd, who intended the vessel to be used as a static lesiure centre and market. The vessel was beached at Llanerch-y-Mor Wharf (nprn 409786) on 10 August 1979 and for a while it was possible to visit the engine room and bridge. A proposal to convert the vessel into a 300-room hotel did not go beyond a first planning stage. Latterly the vessel has been used as a warehouse by a clothing company. The vessel continues to sit adjacent to the Llannerch-y-Mor wharf with a sunken barge hard against its eastern side (see NPRN 506944).</p>			
2013	UKHO 8131; NPRN 506944	Wreck	<p>Position obtained from aerial photography showing a sunken lighter, measuring some 25m length x 7m wide, lying with its keel orientated 150/330 degrees against the side of the DUKE OF LANCASTER (NPRN 506943). Wreck observed in 1984.</p>	317817.4106	379535.5804	Outwith MEP development
2014	UKHO 8149; NPRN 506942	Wreck	<p>A wreck was recorded in the intertidal from aerial photographs dating to August 1978. The character and extent of archaeological remains associated with the loss of this vessel is presently unknown.</p>	320770.2375	377322.1578	Outwith MEP development



WA ID	External References	Type	Description	Easting	Northing	Location
2015	UKHO 8262	Wreck	UKHO lists this position as a wreck buoy in 1991. No further details provided.	326073.5769	374177.3729	Outwith MEP development
2016	UKHO 8127	Wreck	UKHO lists this position as that of Heron 2, a cabin cruiser which presumably sunk at the approximate position. The vessel was observed in 1983 as having a 6ft mast on top of cabin.	317830.9268	379782.6031	Outwith MEP development
2017	UKHO 8155; NPRN 506940	Wreck	The wreck was reported by the Mersey Docks and Harbour Board in January 1987 and swept clear (wire-drag) at 0.4. The wreck was described as being dangerous and lying on the side of a bank. The wreck is eroding out of the bank and has a length of 25m, breadth or 8m and lies with its keel orientated 000/180 degrees.	314402.059	384664.9673	Outwith MEP development
2018	NPRN 506945	Wreck	A small motor fishing vessel has been stripped and abandoned in the Llannerch-y-Mor drain to the south-southwest of the DUKE OF LANCASTER ferry. The bow has begun to split open under the weight of the silt in the interior.	317700	379390	Outwith MEP development
2019	HER 106396	Wreck	Remains of a wooden hulk, buried in the dock at Flint. Timbers and mast protrude from the dumped material on the west side of the dock. The majority of the vessel is now buried due to the levelling operations. Presumed to be a modern vessel now largely broken up (CPAT 2006).	324400	373600	Outwith MEP development
2020	HER 26577	Wreck	Remains of a small timber vessel (Mostyn Docks Wreck) lying in the silt on the NE side of Mostyn Docks, adjacent to site of former Isolation Hospital. Not recorded due to problems regarding access.	315640	381220	Outwith MEP development: Intertidal
2021	UKHO 7505; NPRN 506937	Wreck: Dead	UKHO lists this a 'Stranded wreck, any part of hull or superstructure showing at chart datum' in 1951, but has not been detected in aerial photographs or during visual inspection since and amended to Dead.	318096.5811	382312.3409	Outwith MEP development
2022	UKHO 66853	Wreck: Dead	UKHO lists this position as that of Baron Hill, as 'Stranded wreck, any part of hull or superstructure showing at chart datum' with light on mast in 1956. In 1983 this was not shown on aerial photoplot and amended to Dead.	325087.6337	376294.2961	Outwith MEP development



WA ID	External References	Type	Description	Easting	Northing	Location
2023	UKHO 7499	Wreck: Dead	Same as UKHO 66853. UKHO lists this position as that of Baron Hill, as 'Stranded wreck, any part of hull or superstructure showing at chart datum' with light on mast in 1956. In 1983 this was not shown on aerial photoplot and deleted. Wreck buoy was discontinued in 2002 and amended to Dead.	325087.6337	376294.2961	Outwith MEP development



Appendix 5: Maritime Recorded Losses

NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 271083	-	SOUTHAMPTON SALLY	26/04/1757	The SOUTHAMPTON SALLY was a wooden sailing vessel on passage from Southampton to Chester. The report printed in Lloyds List on 26 April 1757 noted the master's name as White and that the vessel was ashore near Chester.
NPRN 271051	-	MODESTY	17/03/1789	The MODESTY was a wooden sloop on passage from Newry to Chester. The report printed in Lloyds List on 17 March 1789 noted that the master's name as Shields and that the vessel was onshore in the river Dee.
NPRN 271138	-	PEGGY	9/09/1790	The PEGGY was a wooden sailing vessel on passage from St Petersburg to Chester. The report printed in Lloyds List on 14 September 1790 noted the master's name as Shaw and that the vessel had sunk on 9 September in the Chester River in a hard gale.
NPRN 271091	-	KING GEORGE	14/09/1806	The KING GEORGE was a wooden sailing packet which had originally been built as a privateer and which was later used as the Harwich packet. The KING GEORGE was undertaking only its second voyage from Parkgate to Dublin on 14 September 1806. As the packet left Parkgate the wind was in the south. It was also foggy and drizzling with rain. The packet ran onto the Salisbury Bank in the River Dee estuary. On a falling tide, the packet remained aground for four hours, and appeared to have received no damage. As the tide rose and the wind went round to the west, the packet commenced to fill rapidly, and when the pumps choked, the hundred or so Irish labourers in the hold were forced to fight their way to the upper deck. The KING GEORGE then parted its anchor cable, swung round bow to wind and tide, and fell over on one side. One boat was launched and ten of the crew, including the captain and an Irish gentleman got away, but later returned to the vessel. By now, a great many of the passengers were in the rigging, including one woman with a child on her back, many of them screaming and in a state of great distress. Shortly after both masts broke, throwing the occupants into the sea. Only four seamen who had remained in the boat, one woman passenger and a boy were saved, some 106 others being lost.
NPRN 240060	-	ELIZABETH	12/1821	The ELIZABETH was a wooden sailing vessel belonging to the port of Beaumaris. During a storm in early December 1821, which took the roofs off house on Anglesey and



NMRW ID	HER ID	Name	Date of Loss	Description
				blew down Lynnon windmill, the vessel was wrecked near Hoylake in the Dee Estuary. The crew were drowned.
NPRN 271201	-	ROCKINGHAM	7/12/1822	The ROCKINGHAM was a wooden sailing vessel on passage from New York to Liverpool which went ashore at the Point of Ayr on 7 December 1822. The reports printed in Lloyds List on 10 and 20 December 1833 noted that master's name as Coffin and that the vessel was eventually condemned. The ship's stores and the cargo were recovered.
NPRN 271215	-	SWIFT	31/08/1833	The SWIFT was a wooden sailing vessel on passage from Strangford to Liverpool which was lost in the Dee Estuary on 31 August 1833
NPRN 271018	-	PENKETH	28/04/1836	The PENKETH was a wooden sailing on passage from Caernarfon to Liverpool. The report printed in Lloyds List on 6 May 1836 noted the master's name da Atherton and that the vessel had been sunk near the entrance to the Chester River on 28 April 1836.
NPRN 544259	-	THREE SISTERS	1838	The THREE SISTERS was a wooden sloop built at Cardigan in 1784. Technical and configuration specifications are given as 29 1177/3500 ton burthen; 1 deck, 1 mast, length 38.1ft, breadth taken at midships 13.3ft, depth in hold at midships 7ft. Sloop rigged with a running bowsprit, square stern, carvel built. At time of loss, the vessel was owned by John Evans of Cardigan, merchant, and the nominated master was Evans Evans. The sloop's Port of Cardigan Shipping Register entry (4 in 1838) was closed with the annotation 'Lost in 1838 near Chester and Register delivered up and cancelled'.
NPRN 518561	-	MERSEY	1839	The MERSEY was a wooden flat built by Thomas Wright at Runcorn in 1815. Technical and configuration specifications are given as 41 tons burthen; 59.2ft length x 13.1ft breadth x 5.5ft depth; 1 deck, 1 mast, flat rigged with lifting bowsprit, square sterned, carvel built. At time of loss, the vessel was owned by William Appleton of Chester, ship carpenter, and William Thompson of Chester, coal merchant. The flat's port of Chester shipping register entry (57 in 1856) was closed with the annotation 'Lost in Wild Roads in 1839'.
NPRN 518559	-	DEE	1839	The DEE was a wooden flat built at Liverpool in 1823. Technical and configuration specifications are given as 43 tons burthen; 49.8ft length x 15.1ft breadth x 6.1ft depth; 1 deck, 1 mast, flat rigged with lifting bowsprit, round sterned, carvel built. At time of loss,



NMRW ID	HER ID	Name	Date of Loss	Description
				the vessel was owned by George Roskill of Flint; William Williamson of Holywell; John Blakeney Tipton of Liverpool trading as George Roskell & Co, merchants. The vessel's port of Chester registry is closed with the annotation 'Lost at Mostyn 1839'.
NPRN 518560	-	DEE	1839	The DEE was a wooden flat built at Runcorn in 1815 and formerly used on the inland navigation system. Technical and configuration specifications are given as 43 tons burthen; 62ft length x 12.8ft breadth x 5.9ft depth; 1 deck, 1 mast, flat rigged with lifting bowsprit, square sterned, carvel built. The vessel was owned by Joseph Ferdinand Mops of Chester, merchant. The vessel's port of Chester registry was closed of the annotation 'Lost of Mostyn 1839'.
NPRN 271175	-	PHEASANT	8/01/1839	The PHEASANT was a wooden sailing vessel. The report printed in Lloyds List on 12 January 1839 noted the master's name as Ellis and that the vessel was sunk at the mouth of the River Dee on 8 January.
NPRN 271436	1001857	CENTURION	26/01/1842	The CENTURION was a wooden schooner either belonging to the port of Amlwch or on passage from Amlwch. The report printed in Lloyds List on 29 January 1842 noted the master's name as Jones and that the vessel had gone ashore at Greenfield during a gale on 26 January 1842. The master, mate and one other crewmember had been drowned. The vessel was expected to become a total wreck.
NPRN 524885	-	JANET	6/02/1850	The JANET was a wooden sloop built at Towyn in 1823. Technical and configuration specifications are given as 26 tons burthen; 36.8ft length x 13.8ft breadth x 7.1ft depth in hold; 1 deck, 1 mast, Sloop rigged with a running bowsprit, square sterned, carvel built. At time of loss, the vessel was owned by a consortium of mariners, farmers, wainwright, slate merchants, shipbuilders, shopkeepers and labourers - the largest share owners being Richard Owen of Llangwynjan (?), farmer (12); Hugh Roberts of Festiniog, labourer (8); William Hughes of Porthmadoc, mariner (8); Hugh Jones of Porthmadoc, shipbuilder (16); and William Lloyd of Porthmadoc, shopkeeper (4); Griffith Jones of Conway, slate merchant (2); and James Jones of Llanegrwn, mariner (4). The nominated master was Henry Owens (owne of 2 shares). The sloop's port of Caernarvon Shipping Register entry was closed with the annotation 'Vessel wrecked near Mostyn 6 February 1850'.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 525167	-	JOHN AND MARY	17/12/1851	The JOHN AND MARY was a wooden sloop built at Chester in 1819. Technical and configuration specifications 18 tons burthen; 34.2ft length x 11.1ft breadth x 5.6ft depth in hold; 1 deck, 1 mast; sloop rigged with a running bowsprit, is square sterned, carvel built. The JOHN AND MARY was owned by Nicholas Trweek of Amlwch, merchant (56 shares); and William George Treweek of Amlwch, Assayer (8 shares). It's Port of Beaumaris Shipping Register entry is closed with the annotation 'Vessel lost in Chester River in 1851. Certificate delivered up and cancelled 17 December 1851.'
NPRN 271176	-	ABBEY	28/03/1852	The ABBEY was a 50nt, 89gt wooden schooner built in 1838 by O & P. At time of loss the vessel was owned by Drinkwater and registered at Liverpool. On 28 March 1852 the schooner was carrying iron ore from Whitehaven to Saltney under the command of master Briarcliff. It was anchored in the Mouth of Mostyn Gutter on the River Dee when a careless crew member struck a light, which caused a fire to break out in the forecastle. The ABBEY burnt to the water's edge and subsequently foundered.
NPRN 271116	-	WILLIAM	11/01/1853	The WILLIAM was a wooden flat built at Chester in 1811. Technical and configuration specifications are given as 38.73 tons burthen; 63.9ft length x 13ft breadth x 4.8ft depth in hold; 1 deck, 1 mast, flat rigged with standing bowsprit, square sterned, carvel built. It was owbed by William Roberts of Nephra, Flint, master marinern. It was carrying a cargo of stone which was lost near Hilbre Island, River Dee, on 11 January 1853.
NPRN 271564	-	ELLEN GLYNNE	26/02/1853	The ELLEN GLYNNE was a wooden sloop registered at Caernarfon. The vessel was at anchor in the River Dee when it was caught in a northerly force 11 gale on 26 February 1853. It dragged its anchor for a mile before hitting a rock and heeling over. The sloop became a total wreck, but the crew were saved.
NPRN 518562	-	RUNCORN	1857	The RUNCORN was a wooden flat built at Ulveston in 1813. Technical and configuration specifications are given as 58.66 tons burthen; 53.8ft length x 16.1ft breadth x 8ft depth; 1 deck, 1 mast, flat rigged with standing bowsprit, square sterned, carvel built. At time of loss, the vessel was owned by John Leatham, master mariner (32 shares) and Joseph Leatham, yeoman of Connah's Quay, and William Hayes of Frosham, merchant (16). The flat's port of Chester shipping register entry (6 in 1841, formerly 16 in 1836) was closed with the annotation 'Lost in Wild Roads in 1857'.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 525306	-	FAME	26/10/1859	The FAME was a 18ton wooden sloop built in 1827. It is noted as having been steam powered. The vessel foundered off Mostyn as the winds of the Royal Charter Gale, 25-26 October 1859, reached force 10. One member of the two-man crew was also drowned.
NPRN 271371	-	DISPATCH	28/10/1866	The DISPATCH was a wooden schooner or wherry (sources differ) built and completed by Edward Eyton at Mostyn on 16 December 1843. Technical and configuration specifications are given as -27.46 tons burthen; 54ft length x 13.4ft breadth x 4ft depth in hold, 1 deck, 2 masts, standing bowsprit, square stern, carvel built; official number 13580. It was placed on the Port of Chester Shipping Register in December 1843 by four members of the Eyton family - John Rhys Eyton of Kinsale, merchant (28); Edward Eyton of Pentrefynon, merchant (12); Robert Eyton of Flint, merchant (12); and James Eyton of Flint, solicitor (12). On the death of Robert in 1850, his shares were passed to Edward and James Eyton. After the deaths of the remaining Eytons in 1852 and 1856, the vessel eventually passed into the ownership of James Timothy of Flint, ship's carpenter, in July 1858. On 28 October 1866, the wherry was carrying Sulphur from Mostyn to Pentre when it foundered a mile off Mostyn, with the loss of 1 of its 2 crewmembers.
NPRN 515257	-	MAYFLOWER	3/12/1867	The MAYFLOWER was a wooden smack built at Baltimore, Co Cork, 1787. Technical and configuration specifications are given as 26.27gt; Length 46ft; main breadth 13.5ft; depth in hold 7.9ft; 1 deck, 1 mast, smack rigged, round stern, carvel built, framework wood; official number 4182. At time of loss, the vessel was owned by John Jones of Bangor, diver. The smack's Port of Beaumaris Shipping Register entry was closed with the annotation ' Vessel lost and a total wreck near Mostyn, Chester River, as per letter from owner dated Dec 3 1867'
NPRN 524860	-	MARY ANNE	31/12/1867	The MARY ANNE was a wooden sloop built at Derwenlas in 1829. Technical and configuration specifications are given as 20 tons burthen; 37.3ft length x 11.8ft breadth x 6ft depth in hold; 1 deck, 1 mast, Sloop rigged with a running bowsprit, is square sterned, carvel built, framework and planking are of wood; official number 1892. At time of loss, the vessel was owned by Hugh Jones of Nevin, mariner and the sloop's master. The MARY ANNE's port of Caernarvon Shipping Register entry was closed on 31 December 1867 with the annotation 'Vessel lost near Mostyn with crew and papers'.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 524804	-	BETSEY	17/05/1875	The BETSEY was a wooden sloop (barge?) built at Frodsham Bridge in 1805. Technical and configuration specifications are given as 42.48gt/rt; 64.4ft length x 15.5ft breadth x 6.2ft depth in hold; 1 deck, 1 mast, rigging sloop, stern square, built carvel, framework wood, official number 16404. During its service life, it was associated with a consortium who had interests in several vessels working out of the Dee - James Shore of Queen's Ferry, joiner and Josphe Shore of Duckington, Minsiter; William Coppack of Connah's Quay, master mariner; William Thom of Hawarden, gentleman; James Reney of Connah's Quay, sailmaker, and Thomas Hanover of 26 Canning Place, Liverpool, secretary of Sailor's Home. However, at time of loss, it was owned by Thomas Green of Chester. Its last Port of Chester Shipping Register entry is closed with the anotation 'Lost near Connah's Quay Embankment on 17 May 1875.'
NPRN 271168	-	ELFIN	25/02/1880	The ELFIN was a built in 1869 at Plymouth. Technical and configuration specifications are given as auxiliary sail fitted with a compound engine producing 7hp. At time of loss, the vessel was owned by R U P Fitzgerald, Cork. The yacht was hired to tow the prototype submarine RESURGAM (see NPRN from Rhyl to Portsmouth, where her inventor, the Reverend George Garrett was to demonstrate her to the Royal Navy. Both vessels left Rhyl at 10 pm on 24 February 1880, but off Great Ormes Head, the Captain of the ELFIN had to ask the crew of the submarine to help him due to heavy seas. A boat was sent to bring them aboard, and George Price, the engineer of the submarine went below to assist in mending the bilge pumps. The tow resumed, but the gale got worse through the night. At about 10 am next day the hawser parted, and the RESURGAM sank. The ELFIN turned back for the River Dee and anchored off Mostyn, but then the wind changed and she parted her anchor cables and went adrift. The tug IRON KING went to the yacht's rescue but in difficult conditions rammed the yacht. The yacht sank and became a total loss.
NPRN 271557	-	TALLY HO	28/12/1884	The TALLY HO was a 57nt wooden Mersey flat, built in 1840. At time of loss on 28 December 1884, the vessel was carrying a cargo of iron ore but was being used as a temporary light vessel in the Mostyn Roads. The TALLY HO foundered after developing a leak.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 271331	-	MARGARET	7/11/1890	The MARGARET was a 69nt wooden schooner built in 1848. At time of loss 7 November 1890, the vessel was owned by J G Roberts of Connah's Quay and was registered at Chester. The schooner was on passage from Connah's Quay to Belfast with a cargo of bricks and tiles when it was caught in the Mostyn Roads by a northwesterly force 9 gale. The schooner went aground to become a total loss.
NPRN 271373	-	CHANCE	24/10/1894	The CHANCE was a 60nt wooden flat built in 1854 and registered at Liverpool. At time of loss on 24 October 1894, the vessel was owned by T Robinson of Liverpool and under the command of J Jones. The flat was carrying a cargo of salt from Flint to Widnes but became stranded and was lost in the Baglit Gutter.
NPRN 524794	-	ADELPHIA	23/09/1896	The ADELPHI was a wooden sloop built at Northwich in 1801. Technical and configuration specifications are given as 46.65gt; 62ft length x 16.4ft breadth x 7.4ft depth in hold; 1 deck, 1 mast, rigging sloop, stern square, built carvel, framework wood; official number 12382, signal LBPK. The sloop was placed on the Port of Chester Shipping Register by John Neale Lomax of Liverpool, merchant (64 shares), also appointed managing owner. The sloop was sold to Thomas Williams of Baglitt, master mariner on 17 October 1878. The sloop's register entry is closed with the annotation 'Foundered in the River Dee on 23 September 1896 as per deposition of master'.
NPRN 271375	-	TREKIEVE	31/07/1897	The TREKEIVE was an iron-hulled steamship built by J Redhead & Co at South Shields in 1883. Technical and configuration specifications are given as 1489gt, 939nt; 259ft x 36ft 1in x 17ft 6in; screw propulsion powered by 2 steam boilers linked to a compound engine. At time of loss on 31 July 1897, the vessel was owned by E Hain & Sons Ltd of St Ives. The ship was carrying cast iron ingots from Carthegena to Mostyn under the command of S Gregory when it stranded in the Mostyn gutter. The ship became a total loss after it broke its back.
NPRN 271376	-	BARRON HILL	25/03/1898	The BARRON HILL was a wooden schooner built by William Thomas & Sons at Amlwch in 1876. Technical and configuration specifications are given as 224gt, 198nt; 119ft length x 25ft breadth x 13ft 4in depth; 1 deck, 3 x masts, partially fastened with iron bolts. The BARRON HILL was the 6th vessel to be completed at William Thomas's New Yard (east side of Amlwch harbour). The vessel was launched on 3 June 1876 and named after the family seat of the Bulkeley family at Beaumaris. The schooner was almost



NMRW ID	HER ID	Name	Date of Loss	Description
				identical to the 230ton schooner CUMBERLAND LASS, which had been completed for William Postlethwaite just 2 years earlier in March 1874. William Postlethwaite was the secretary of the Hodbarrow Mining Company, for whom Thomas had contracted to carry 500tons of haematite a week in 1870. Thomas, Postlethwaite and Nathaniel Caine were also partners in the shipyard that was built at Millom to support the growing fleet of vessels engaged in the haematite trade. The majority of the shares in the BARON HILL remained with William Thomas, although the ship was managed by Postlethwaite. At time of loss on 25 March 1898, the vessel was carrying salt from Flint to Newcastle-upon-Tyne under the command of master L Hughes. The vessel was caught in an east-north easterly force 6 as it proceeded down river causing it to become stranded 2 miles below Flint.
NPRN271377	-	LYDIA	28/09/1898	The LYDIA was a 47nt Mersey flat built in 1847. At time of loss on 28 September 1898, the vessel was owned by W Roberts of Mostyn and under the command of T Hools. The flat was carrying coal from the Point of Ayr to Flint when it ran onto the Mostyn Bank and stranded in westerly force 6 gale.
NPRN 271024	-	THOMAS	27/01/1901	The THOMAS was a 65nt wooden schooner built in 1806. At time of loss on 27 January 1901, the vessel was owned by W Thomas of Amlwch. The THOMAS was on passage from Point of Ayr to Caernarfon under the command of R Jones with a cargo of coal. The schooner was caught by a northwesterly force 10 gale and blown onto the Sailisbury Bank.
NPRN 271380	-	STAR	08/05/1903	The STAR was a wooden flat built at Runcorn in 1858. Technical and configuration specifications are given as: 36.89gt; 61ft length x 15.7ft breadth x 5.6ft depth in hold; 1 mast, rigging flat, stern round, built carvel, framework wood; official number 58208. It was placed on the Port of Chester Shipping Register in November 1868 by Charles Davison of Celiya, Tellet Davison of Harwarden, and James Davison of Lleyn Offer. On the deaths of Charles Davison and Tellet Davison, the surviving Davison took a new partner Henry Burlbutt of Connah's Quay. Subsequent owners include Roberts of Mostyn, shipwright and John Coppack of Connah's Quay, ship broker. At time of loss on 8 May 1903 however, the vessel was owned by T B Bennett of Connah's Quay. The



NMRW ID	HER ID	Name	Date of Loss	Description
				STAR was carrying coal from Point of Ayr to Flint under the command of J Piercy when it ran aground and became stranded.
NPRN 271382	-	MARK	03/11/1903	The MARK was a wooden flat built by Ricahrd Letter at St Helens in 1800. it was used on inland navigation waterways until September 1940 when it was transfered to the Port of Chester Shipping register (11 in 1840). At that time, technical and configuration specifications were given as 52 56/100tons butthen; 62ft length x 1`3.7ft breadth x 6.4ft depth; 1 deck, 1 mast, flat rigged with lifting bowsprit, square sterned, carvel built; official number 10851. At time of loss 3 November 1903, the vessel was owned by R H Prince of Liverpool and under the command of master J Ward. The MARK was carrying a cargo of coal from Mostyn to Flint when it stranded at the entrance to the Flint Gutter. The vessel's shipping register entry is closed with the annotation ' Vessel totally wrecked off Flint 4 November 1902'.
NPRN 271626	-	CALIBAN	21/11/1903	The CALIBAN was a Mersey flat built in 1840. At time of loss on 21 November 1903, the vessel was owned by T Perry of Liverpool and under the command of E Edwards. The flat was caught at moorings in Greenfield Dock by a north-north westerly force 10 gale, stranded and became a total loss.
NPRN 271385		CHARLAW	05/08/1905	The CHARLAW was an iron-hulled steamship built by R Thompson Jnr at Sunderland in 1871. Technical and configuration specifications are given as 890gt; 557nt; 212ft 7in length x 29ft breadth x 16ft 5in depth; 1 deck (weatherdeck), 3 bulkheads; screw propulsion powered by a single steam boiler linked to a compound engine producing 90hp. At time of loss on 5 August 1905, the vessel was owned by W Stone & Combs of Llanelli but registered in London. The CHARLAW was carrying pyrites from Chantenay to Mostyn under the command of master R Edwards when it stranded on the bank of the Mostyn Gutter.
NPRN 271060	-	ANNIE	05/11/1911	Cutter, of wood construction, and registered in Chester, United Kingdom, carrying ballast. Dimensions unknown. Vessel not armed. Lost at moorings, Parkgate. Lost 05/11/1911, River Dee, Parkgate. No lives lost. Captain: unknown; owner: unknown; ship builders: unknown. Larn and Larn shipwreck database 2002



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 271388	-	VOLUNTEER	10/11/1912	The VOLUNTEER was a wooden cutter built in 1882 and registered at Chester. The cutter broke from its moorings on 10 November 1912 in heavy winds and was washed onto the Billy Rock.
NPRN 271137	-	ALICE LINDA	25/01/1913	The ALICE LINDA was a Mersey flat built by Annis Maria Janusson at Widnes in 1879. The flat was transferred to the Port of Chester Shipping Register in November 1912 (formerly 41 in 1882 at Liverpool). Technical and configuration specifications are given as 85.05gt, 66.89rt; 72.7ft length x 19.9ft breadth x 8.45ft depth in hold; 1 deck, 1 mast, rigging flat, stern elliptic, built carvel, framework wood; official number 86165. The subscribing owner was Thomas Coppack of St Marks Villa, 18 Church Street, Connah's Quay. He subsequently transferred 28 shares to John Garratt of Shotton, master mariner, and a share each to John William Coppack (appointed managing owner) and Thomas Coppack Junior, then working as commercial clerks for their father. At time of loss on 25 January 1913, the vessel was carrying a cargo of iron bar and pipe from Connah's Quay to Liverpool. The flat foundered in Mostyn Deeps with the loss of one crewmember.
NPRN 271389	-	BRILLIANT STAR	07/12/1913	The BRILLIANT STAR was a Mersey flat built in 1878. On 7 December 1913, the flat was lightering a cargo of iron ore when it was in collision with the Chester registered schooner VIOLA. The BRILLIANT STAR subsequently foundered in the Mostyn Deeps.
NPRN 271390	-	ALEXANDRIA	16/04/1914	The ALEXANDRIA was a steel-hulled steamship built by J Laing & Co at Sunderland in 1890. Technical and configuration specifications are given as 3501gt; 2194nt; 365ft x 42ft 2in x 19ft; 1 deck, passenger deck 42ft, boat deck 82ft, forecastle 37ft; screw propulsion powered by 3 steam boilers link to triple expansion engines producing 387hp; machinery by G Clark Ltd., Sunderland. At time of loss 16 April 1914, the vessel was owned by Ellerman Lines Ltd. The company had been incorporated in 1892 by John Reeves Ellerman, Christopher Furness and Henry O'Hagan, who purchased 22 ships from the Liverpool based shipping firm Frederick Leyland and Co Ltd. The company operated on numerous routes between the United Kingdom, South Africa, and North America, but developed to have a particular dominance in trade to the Mediterranean and Near East. At time of loss on 16 April 1914, ALEXANDRIA was carrying manganese ore from Poti to Mostyn when it stranded on the Middle Salisbury Bank.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 271067	-	JOHN AND WILLIAM	01/01/1916	The JOHN AND WILLIAM was a wooden Mersey flat built in 1870. At time of foundering in the Mostyn Deep on 1 January 1916, the vessel was carrying manganese ore.
NPRN 271149	-	KATANDIN	24/10/1917	The KATAHDIN was a 1380gt steel-hulled steamship of USA registry which was lost 'off Chester' on 24 October 1917.
NPRN 271391	-	HELEN AND ERNEST	15/10/1918	The HELEN AND ERNEST was a 38nt wooden ketch built in 1876 and registered at Wexford. At time of loss 15 October 1918, the vessel was on passage from Runcorn to Howth with a cargo of salt. The ketch stranded at the Point of Ayr.



Appendix 6: Aviation Recorded Losses

NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 515479	130241	SUPERMARINE SPITFIRE VB BM113	24/07/1844	This Spitfire was built by Vickers Armstrong of Castle Bromwich. Its service life included assignments to 602, 65, 453, 65, 312, 441 squadrons, 58 OTU and 61 OTU. The aircraft hit a drogue during flying practice and dived into the Dee Estuary southwest of Kirby on 24 July 1844.
NPRN 515613	130260	SUPERMARINE SPITFIRE I N3276	15/08/1940	At time of loss, this Spitfire was assigned to 58 OTU (Operational Training Unit). The aircraft stalled and crashed into the River Dee near Hawarden on 15 August 1940.
NPRN 515843	130293	SUPERMARINE SPITFIRE I K9981	12/09/1940	This Spitfire was one of the first 310 production batch and was delivered to 611 Squadron on 19 May 1999. Its service life includes the following assignments and events - damaged stern frame and sent to AST on 11 March 1940; assigned 9 MU from 18 April 1940; assigned 611 Squadron from 4 June 1940; and lastly assigned 7 OTU on 21 August 1940. The aircraft crashed during a forced landing at the mouth of River Dee near Flint on 12 September 1940. It stricken off as being was damaged beyond repair.
NPRN 515633	130269	MILES MASTER I N7944	24/09/1940	This Master was built by Philip & Powis, Woodley, and was assigned to 5 FTS (flying Training School). The aircraft was abandoned in a spin in cloud and crashed into the River Dee on 24 September 1940.
NPRN 515852	130295	SUPERMARINE SPITFIRE I K9995	21/09/1941	This Spitfire was one of the first 310 production batch and was delivered to 6 MU on 5 June 1939. Its service life included following events and assignments - 504 Squadron from 2 November 1939; 603 Squadron from 6 November 1939; damaged by return fire from Ju88 18 July 1940; 1 CRU from 20 July 1940; 12 MU from 11 August 1940; 602 Squadron from 19 August 1940; 65 Squadron from 27 August 1940; damaged 17 August 1940; OCOA from 2 September 1940; AST from 7 February 1941; 39 MU from 13 March 1941; 57 OTU from 7 August 1941; ROS from 5 September 1941; and lastly 57 OTU from 6 September 1941. The aircraft hit the mudflats whilst low flying over the Dee Estuary on 21 September 1941.
NPRN 515587	-	SUPERMARINE SPITFIRE I R6989	15/08/1942	This Spitfire was built by Supermarine at Eastleigh and first flown on 20 July 1940. At time of loss, it was assigned to 57 Operational Training Unit (OTU). The aircraft crashed during a forced landing near Holywell on 15 August 1942. The pilot was killed.



NMRW ID	HER ID	Name	Date of Loss	Description
NPRN 515600	-	BLACKBURN BOTH A I L6237	08/01/1943	This Botha was built by Blackburn, Brough, and, at time of loss, was assigned to 11 RS (Radio School). The aircraft ditched into the River Dee off Bagillt, Flinshire, in bad weather on 8 January 1943.
NPRN 515822	130289	MILES MARTINET I HP242	17/07/1944	This Martinet was built by Phillips & Powis, Woodley and assigned to 41 OTU. The aircraft flew into the sea off Llanerch-y-mor on 17 July 1944.
NPRN 515801	130287	AVRO ANSON I EG186	15/03/1945	This Anson was built by Avro at Yeadon. Its service life included assignments to 3 OAFU, 5 PAFU and 1 Group CS. The aircraft ditched into the Dee Estuary off Llanerch-y-mor on 15 March 1945.
NPRN 506982	130192	SUPERMARINE SPITFIRE F22 PK385	21/05/1950	This Spitfire was built by Vickers-Armstrong at Castle Bromwich and was assigned to 610 Squadron. On 21 May 1950, it flew into a sandbank 3 miles east of the Point of Ayr during aerobatics practice/display.
NPRN 515684	130278	DE HAVILLAND CHIPMUCK T10 WB747	20/07/1954	This Chipmuck was one of an order of 200 (contract 6/Acft/2508) and was delivered in November 1950. Its service life included assignments to 14 RFS, 9 RFS, and 63 Group CF. The aircraft crashed in a flat spin into Bagillt sandbank in the Dee Estuary 1 mile northwest of Flint on 20 July 1954.



Appendix 7: OASIS Record Form

OASIS ID	wessexar1-507585
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Activity Type	
Project identifier	263120
Activity type	Desk Based Assessment
Reason for investigation	Planning: Pre application
Development type	Infrastructure > Port development
Planning reference	N/A

Location	
Site name	Mostyn Energy Park Extension Project
Site code	263120
Land use	Marine

Reviewers / Admin Area	
Historic Environment Record(s)	RCAHMW Archaeology Data Service
Archive type	Digital Archive
Museum/archive	Archives: no repository
National organisation	Royal Commission on the Ancient and Historical Monuments of Wales
HER identifiers	N/A
National organisation identifiers	NHLE/NRHE 271037

Work Undertaken		
Title	Mostyn Energy Park Extension Project, Marine Archaeology Desk-based Assessment	
Description / Methodology	<p>Wessex Archaeology was commissioned by ABPmer on behalf of the Port of Mostyn to prepare a marine archaeology desk-based assessment in relation to the marine archaeological environment for the proposed Mostyn Energy Park (MEP) Extension Project. The proposed development study area is located at the Port of Mostyn, on the Dee Estuary in North Wales, consisting of the reclamation area, the capital dredge area, the potential relocation of the existing dolphins and the maintenance dredge area. This desk-based assessment supports the Marine Archaeology Environment Statement (ES) Chapter (Chapter 12).</p> <p>The assessment has established that there are the following marine archaeological assets:</p> <ul style="list-style-type: none">• potential for prehistoric archaeological material;• two known wreck sites within the study area;• potential for additional currently unknown maritime and aviation seabed features to exist; and• the Historic Seascape Character of the area comprises areas of constantly shifting sandbanks with changing depths; hazards marked by numerous buoys, lights and fog horns; an extensive network of offshore sandbanks and flats; and a long standing importance for trade, defence and occupation.	
Previous / Future work	No	No known



Start Date / End date	01 April 2022	30 June 2022
Scientific dating	No	
Environmental sampling	No	
Associated identifiers	UKHO 8159 UKHO 66854	

Report Details	
Title	Mostyn Energy Park Extension Project, Marine Archaeology Desk-based Assessment
Author	Stephanie Said
Publication date	2022
Publisher or Producer	Wessex Archaeology
Place of publication or production	Edinburgh
Other bibliographic Information – report number	263120.01
Report release delay	At least three months
Choose File	Upload report

People	
Organisation	Wessex Archaeology
Project Manager	Andrew Bicket
Expert/Project Officer	Stephanie Said
Funder	Other utilities or infrastructure company > Port Authority

Keywords	
Significant monuments or artefacts	Yes
Keyword	Wreck
Period	19 th Century

Results	
Description - outcomes	The assessment has established that there are the following marine archaeological assets: <ul style="list-style-type: none">• potential for prehistoric archaeological material;• two known wreck sites within the study area;• potential for additional currently unknown maritime and aviation seabed features to exist; and• the Historic Seascape Character of the area comprises areas of constantly shifting sandbanks with changing depths; hazards marked by numerous buoys, lights and fog horns; an extensive network of offshore sandbanks and flats; and a long standing importance for trade, defence and occupation.
Research framework sections	N/A

Archives

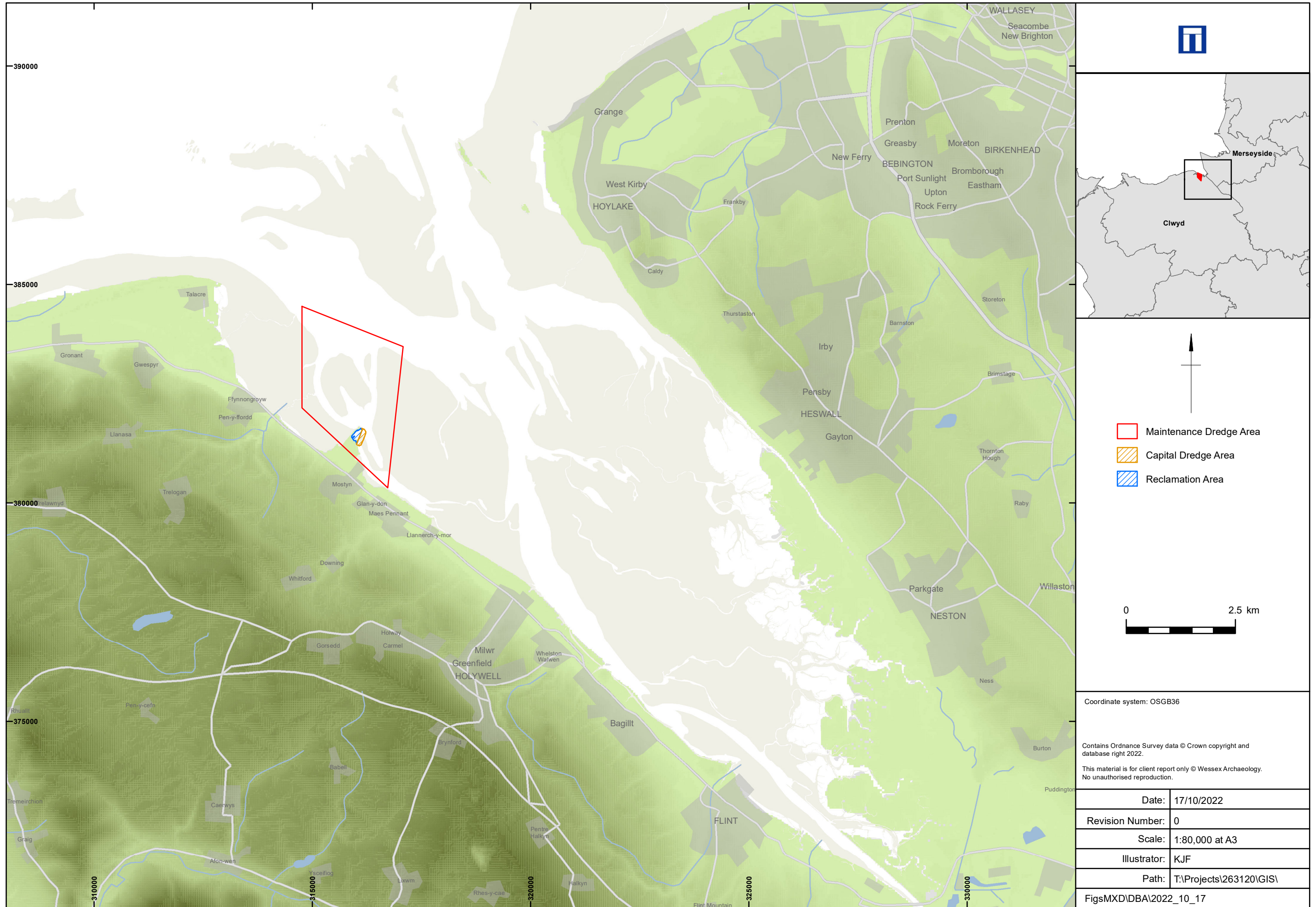


Physical archive / Documentary archive / Digital Archive	No physical / documentary archive Digital Archive	
	Title	Mostyn Energy Park Extension Project, Marine Archaeology Desk-based Assessment
	Location before deposition	Wessex Archaeology
	Expected deposition date	N/A
	Accession ID	N/A
Additional Information		
Project website	N/A	
Large area scheme	N/A	
Related OASIS projects	N/A	



Figures

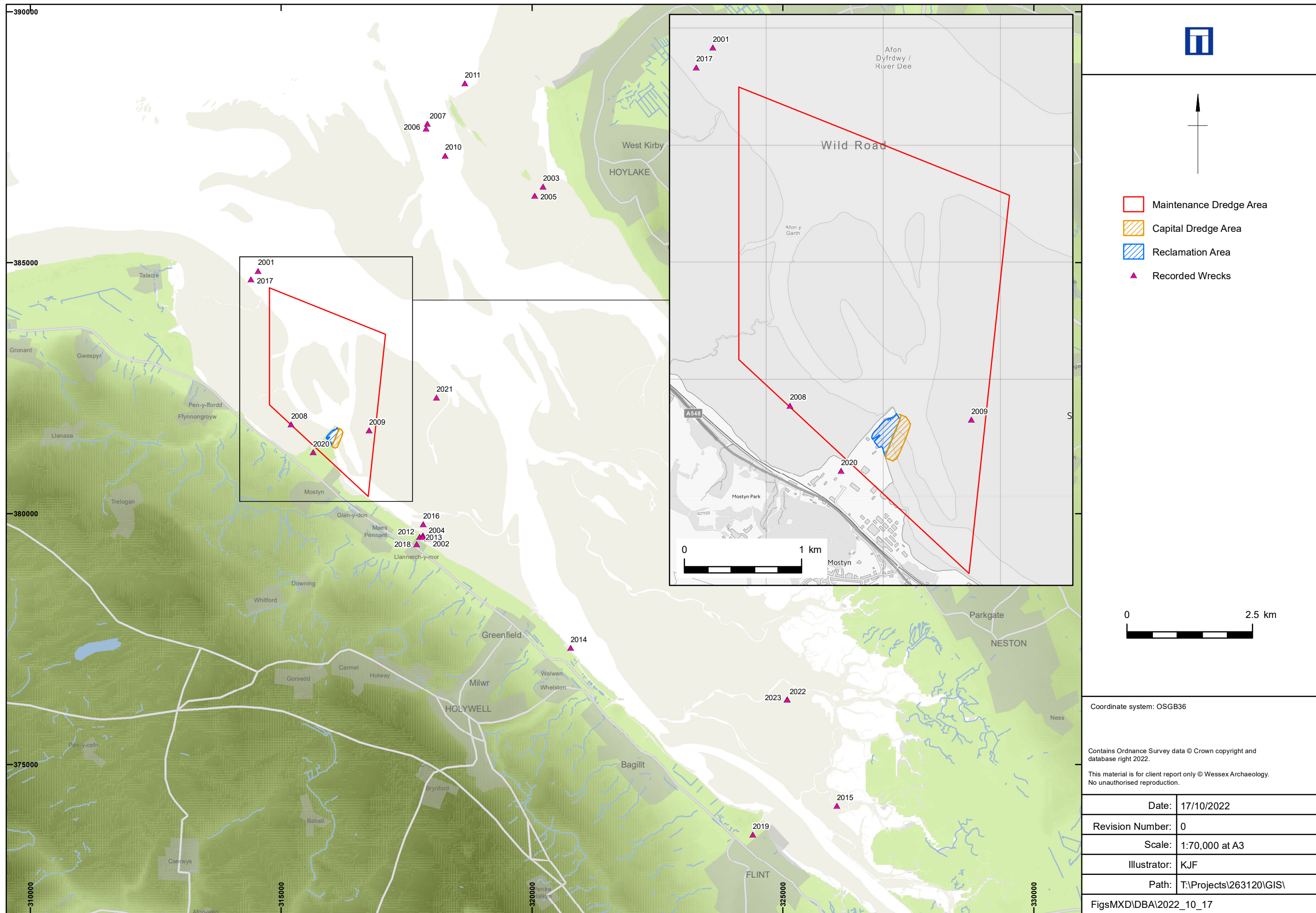
- Figure 1** Location of Mostyn Energy Park Extension Project within the Dee Estuary search area
- Figure 2** Known Maritime Sites
- Figure 3** Recommended Archaeological Exclusion Zone (AEZ)



Site Location and Dee Estuary Search Area

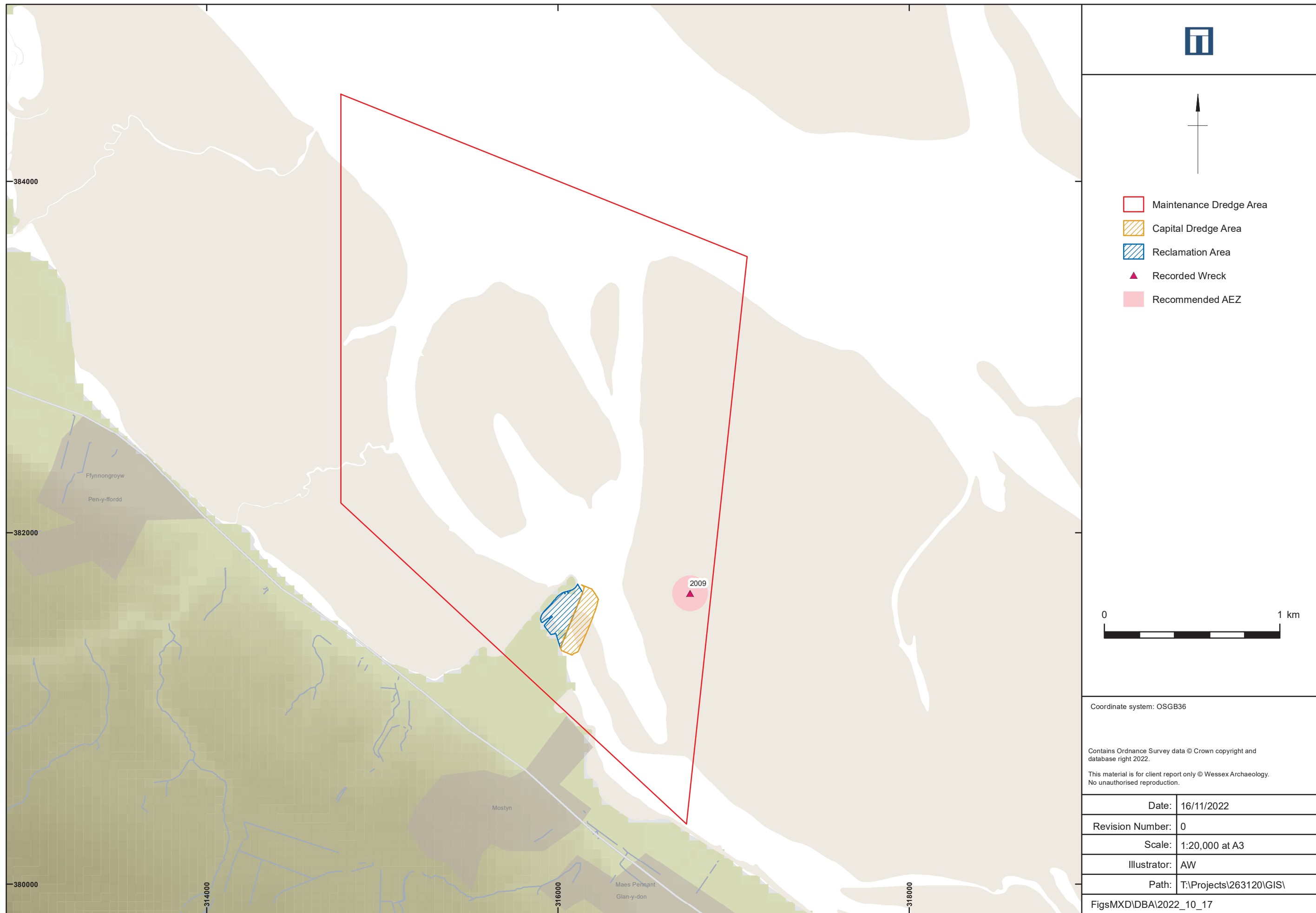
Figure 1

Coordinate system: OSGB36	
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Date:	17/10/2022
Revision Number:	0
Scale:	1:80,000 at A3
Illustrator:	KJF
Path:	T:\Projects\263120\GIS\FigsMXD\DBA\2022_10_17



Known Maritime Sites

Figure 2



Recommended Archaeology Exclusion Zone (AEZ)

Figure 3



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