Partners in UK offshore wind

MONA OFFSHORE WIND PROJECT

Outline Offshore Written Scheme of Investigation and Protocol for Archaeological Discoveries

Document Number: MOCNS-J3303-RPS-10155

Document Reference: J18

APFP Regulations: 5(2)(q)

February 2024

F01

Image of an offshore wind farm

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Application	RPS	Mona Offshore Wind Ltd.	Mona Offshore Wind Ltd.	Feb 2024

Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

Contents

Tables

Figures

Appendices

Glossary

Term	Meaning
Ensonification	To fill with sound. For example, the mechanism of detection is to ensonify with an acoustic source and measure the intensity of the returning sound waves.
Gazetteer	A geographical index or dictionary.
Palaeochannel	A geological term describing a remnant of an inactive river or stream channel that has been filled or buried by younger sediment.
Palaeoenvironmental	An environment of a past geological age.
Vibrocoring	A technique for collecting core samples of the seabed sub-strata sediments, consists of a vibrating mechanism attached to a metallic core which is driven into the sediment by the force of gravity, enhanced by vibration energy

Acronyms

Acronym	Description
AC	Archaeological Curator
ADS	Archaeological Data Service
AEZ	Archaeological Exclusion Zone
AfL	Agreement for Lease
CoCP	Code of Construction Practice
EnBW	Energie Baden-Württemberg AG
GW	Gigawatts
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MS	Method Statement
NRW	Natural Resources Wales
OASIS	Online Access to the Index of Investigations
PAD	Protocol for Archaeological Discoveries
RA	Retained Archaeologist
RCAHMS	Royal Commission on the Ancient and Historic Monuments of Wales
ROV	Remotely Operated Vehicle
SI	Site investigation
SSC	Suspended sediment concentration
TAEZ	Temporary Archaeological Exclusion Zone
UXO	Unexploded Ordnance

Acronym	Description
WSI	Written Scheme of Investigation

Units

Unit	Description
%	Percentage
km^2	Square kilometres

1 Outline Offshore Written Scheme of Investigation

1.1 Introduction

1.1.1 Overview

1.1.1.1 This document forms an Outline Offshore Written Scheme of Investigation (WSI), produced to accompany the Volume 2, Chapter 9: Marine archaeology of the Environmental Statement in support of the Mona Offshore Wind Project. The Outline Offshore WSI sets out the basis for archaeological mitigation which will be confirmed through the development of a final Offshore WSI which will form the bases of the agreement between the application, contractors and regulators. The final Offshore WSI and adherence to it will be secured as a condition within the deemed marine license within schedule 14 of the Draft DCO and expected to be secured within the standalone Natural Resources Wales (NRW) marine license.

1.1.1.2 The purpose of the document is to set out of the marine archaeology mitigation proposed for the Mona Offshore Wind Project as detailed in section 1.6, and how this mitigation will be secured and delivered. The document also sets out further work related to marine archaeology which has been recommended within Volume 2, Chapter 9: Marine archaeology of the Environmental Statement.

1.1.1.3 This document has been produced in line with best practice guidance, in particular, Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects by The Crown Estate (2021).

1.1.1.4 This Outline WSI is prepared in relation to the offshore works of the Mona Offshore Wind Project only (to Mean Low Water Springs (MLWS). Onshore historic environmental assets are considered in detail in the Outline Onshore Written Scheme of Investigation. This Outline WSI details the principles to be implemented to ensure the protection of marine archaeological receptors through all three phases of the project (construction, operations and maintenance, and decommissioning).

1.1.1.5 The Outline WSI will be converted into a final Offshore WSI which will be monitored and updated throughout the lifetime of the Mona Offshore Wind Project to ensure that the document is appropriate for all activities associated with the project. More detailed method statements (MS) may be required for each phase of work and will be preapred by appropriately qualified archaeologists and submitted to the Archaeological Curator (AC). The WSI will continue to be developed in consultation with Cadw who are the lead marine archaeology stakeholder in relation to the Mona Offshore Wind Project, and will be submitted to NRW for approval in consultation with Cadw and the Royal Commission for Ancient and Historic Monuments Wales (RCAHMW) prior to construction.

1.1.1.6 The WSI is an ‘accompanying document’ to the Mona Offshore Wind Project Environmental Statement. It is therefore a standalone document which ensures that the archaeological baseline (presented in the Environmental Statement) that corresponds to the WSI is available to consultees.

1.1.2 Background

1.1.2.1 Mona Offshore Wind Limited (herafter ‘the Applicant’) is a joint venture between Energie Baden-Württemberg AG (EnBW) and bp. In accordance with the Offshore Wind Leasing Round 4 bid, the proposed capacity of the Mona Offshore Wind Project is 1.5 Gigawatts (GW).

1.1.2.2 The Mona Offshore Wind Project includes both the offshore and onshore infrastructure required to generate and transmit electricity from the offshore infrastructure to an onshore National Grid substation.

1.1.2.3 The Mona Array Area is the area within which the wind turbines, foundations, inter-array cables, interconnector cables, offshore export cables and Offshore Substation Platforms (OSPs) forming part of the Mona Offshore Wind Project will be located.

1.1.2.4 The Mona Offshore Cable Corridor is the corridor located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables will be located.

1.1.2.5 The Mona marine archaeology study area considered in Volume 2, Chapter 9: Marine archaeology of the Environmental Statement is shown in Figure 1.1 and consists of the Mona Array Area and the Mona Offshore Cable Corridor up to MLWS with an additional 2 km buffer. The Mona marine archaeology study area has been defined to better characterise the archaeological resource within the offshore parts of the Mona Offshore Wind Project (set out within Volume 2, Annex 9.1: Marine archaeology technical report of the Environmental Statement.)

1.1.2.6 The mitigation set out within this document (section 1.6) is focused on the Mona Array Area and Mona Offshore Cable Corridor. No direct impacts will occur within the wider Mona marine archaeology study area and therefore no mitigation measures are proposed outside of the Mona Array Area and Mona Offshore Cable Corridor.

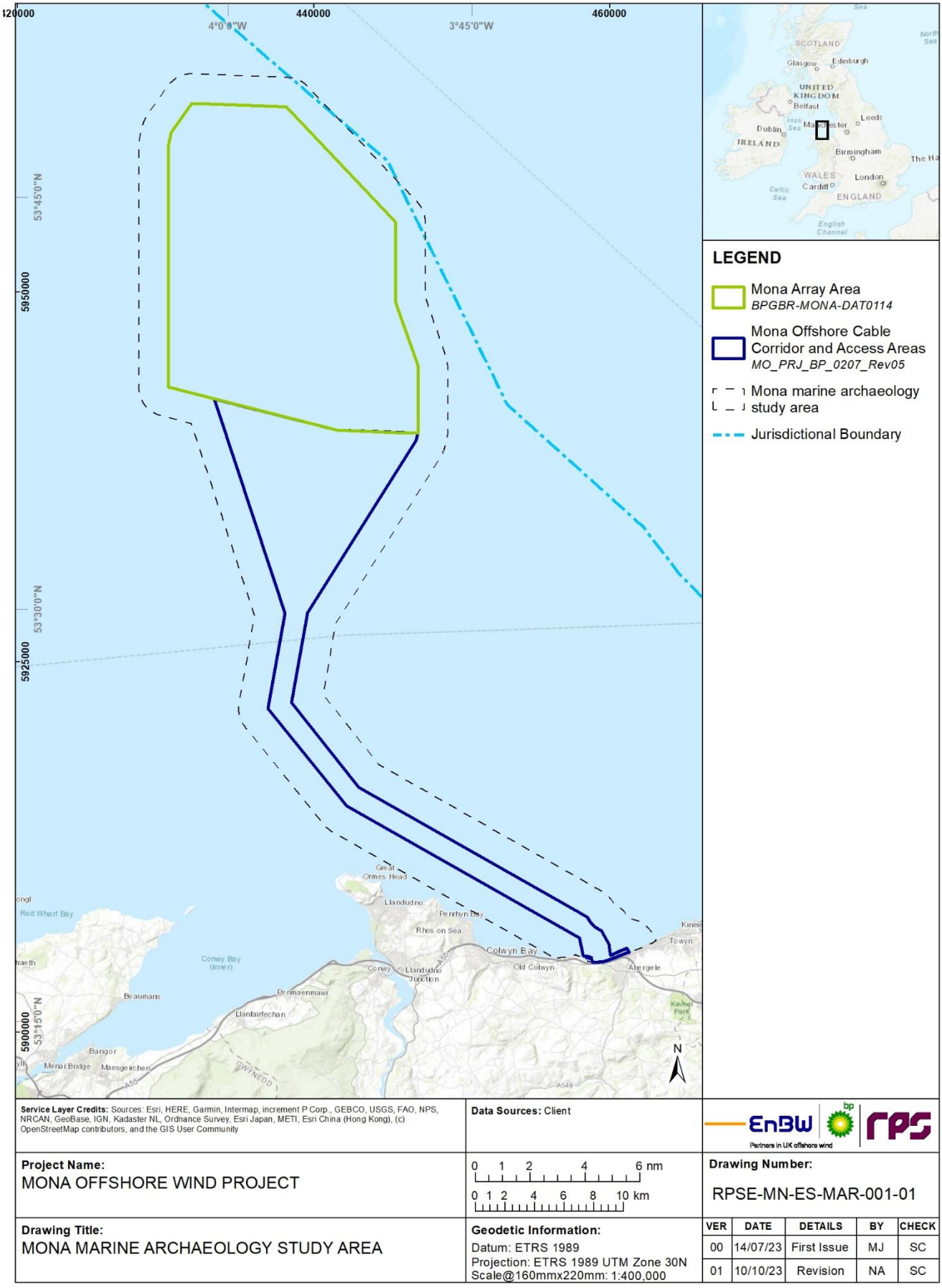

Figure 1.1: Mona Offshore Wind Project.

1.1.3 Aims and objectives

1.1.3.1 The aim of this Outline WSI is to present the archaeological mitigation measures to be undertaken by the Applicant prior to and throughout the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project. The Outline WSI is informed by pre-application consultation with Cadw and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) and the baseline review of known and potential archaeology within the Mona marine archaeology study area (Figure 1.1) as outlined in section 1.3 and presented within Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement.

1.1.3.2 The objectives of this Outline WSI are as follows:

- Set out the roles and respective responsibilities of the Applicant, contractors, and Retained Archaeologist (RA) and Archaeological Contractor(s) and formal lines of communication between these parties and the AC (section 1.2.1)
- Outline the known and potential archaeological receptors that could be impacted by Mona Offshore Wind Project (section 1.3)
- Outline the agreed measures adopted as part of the project and requirements for archaeological work to be undertaken in various circumstances (section 1.6)
- Set out the importance of consulting archaeological research frameworks for setting objectives that are met through the archaeological work undertaken by the Mona Offshore Wind Project (section 1.4.6)
- Provide methodologies for the required archaeological work, to be employed in the post-consent period (section 1.7).

Guidance

1.1.3.3 This Outline WSI has been produced in line with best practice guidance, including:

- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects by (The Crown Estate 2021)
- Planning Policy Wales Technical Advice Note 24: The Historic Environment
- Managing the Marine Historic Environment of Wales (Cadw/Welsh Government 2020)
- Historic England's (HE) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage (now Historic England) 2008)
- Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Cadw 2011)
- Code of Conduct (Chartered Institute for Archaeologists, 2014 (updated 2022))
- COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology 2007)
- Offshore Renewables Protocol for Archaeological Discoveries (The Crown Estate 2014)
- Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather 2011)

- Marine Geophysics Data Acquisition, Processing and Interpretation, Guidance Notes (English Heritage 2013)
- Identifying and Protecting Palaeolithic Remains (English Heritage 1998)
- Military Aircraft Crash Sites (English Heritage 2002)
- Aircraft Crash Sites at Sea (Wessex Archaeology 2008)
- Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee 2006).

1.2 Implementation of the Outline WSI

1.2.1 Roles and responsibilities

The Applicant

1.2.1.1 The Applicant will directly engage with the appointed construction contractor and the RA, as necessary. The responsibility for implementing the WSI rests with the Applicant and its appointed representatives. Following the grant of development consent, the Applicant will provide the RA with the programme of construction.

1.2.1.2 The Applicant or their representatives will submit the archaeological Method Statements (MS) or reports to the NRW in the first instance who will then forward to the AC (Cadw) for approval.

Retained Archaeologist

1.2.1.3 The Applicant shall employ the services of a suitably qualified and experienced marine archaeologist (the RA) to ensure the effective implementation of the WSI and other relevant commitments in relation to archaeology.

1.2.1.4 Prior to Project Application submission, RPS (supported by MSDS Marine) are acting in the role of the RA.

1.2.1.5 In relation to the implementation of the WSI, the RA will report to the Applicant or their named representative. Interaction with the Applicant's construction team will be administered by the Applicant or their appointed representative and advised by the RA.

1.2.1.6 The responsibilities of the RA will include:

- Maintaining, reviewing and updating the WSI as required
- Advising the Applicant's construction team on those elements of Mona Offshore Wind Project that require archaeological involvement
- Ensuring the scope of work specifications for Mona Offshore Wind Project to meet archaeological requirements
- Liaising with the Applicant's construction team or other construction contractors regarding timescales of completion of site investigations (SI) to ensure sufficient time is available to complete all archaeological work in accordance with the WSI
- Advising the Project Manager for Mona Offshore Wind Project on the micrositing of infrastructure
- Advising, preparing and issuing MS' to the AC for approval
- Implementing and monitoring of the PAD

- Providing advice to vessel staff/Unexploded Ordnance (UXO) specialists in the event of a discovery of high archaeological interest
- Monitoring the work of and liaising with the Archaeological Contractor(s) where this is not the RA
- Monitoring the preparation and submission of Archaeological Reports as appropriate and making them available to the AC for approval
- Preparing provisions for the management of Mona Offshore Wind Project archives in consultation with an appropriate museum
- Advising the Applicant and the AC on final arrangements for the analysis, archive deposition, publication and popular dissemination of the results of the archaeological works.

Archaeological contractors

1.2.1.7 Archaeological Contractors may be employed by the Applicant or the RA. Suitably qualified Archaeological Contractors may be contracted to provide a range of services relating to specialised archaeological provisions (e.g. divers, the piloting of Remotely Operated Vehicles (ROVs), geotechnical analysis etc.)

Construction contractors

1.2.1.8 All Construction Contractors engaged in the construction, operations and maintenance and decommissioning of Mona Offshore Wind Project shall:

- Familiarise themselves with the requirements of the WSI and make them available to their staff
- Obey legal obligations in respect of ‘wreck’ under the Merchant Shipping Act 1995
- Obey legal obligations in respect of ‘treasure’ under the Treasure Act 1996
- Respect constraint maps and AEZs
- Notify the RA prior to any diving/ROV investigation
- Notify the RA in advance of any construction works that warrant archaeological mitigation
- Assist and afford access to archaeologists employed by the Applicant
- Inform the RA of any environmental constraint or matter relating to health, safety and welfare of which they are aware that is relevant to the archaeologist’s activities
- Implement the PAD
- Suspend work in areas where objects have been identified as being of potential archaeological interest and contact the RA in the event of an archaeological discovery.

Archaeological Curator

1.2.1.9 Cadw is the AC for heritage matters offshore up to MHWS. Cadw are the public body responsible for the care and protection of Wales’s historic environment, which includes

marine archaeology within Welsh territorial waters. Contact with the AC will be through NRW as the Regulator.

1.2.1.10 MSs, assessment reports or other deliverables will be submitted by the Applicant to NRW who will forward on to the AC for approval. Their agreement/acceptance of the documents will be assumed if no contrary response is received within 30 working days of submission.

1.2.1.11 To encourage timely decisions relating to archaeological mitigation and avoid disruptions to the Mona Offshore Wind Project programme, NRW and Cadw will be consulted as soon as practicable on discoveries made during the programme of works and regarding the management and removal of AEZs or Temporary AEZs.

Contacts

1.2.1.12 The relevant contacts for the purposes of this WSI are given in Table 1.1 below.

Table 1.1: Key contacts for the WSI.

Contact	Address	Email	Phone
Cadw	Cadw Welsh Government Ty Afon Coed Bedwas Road Caerphilly CF83 8WT	cadwplanning@gov.wales	0300 025 6000
The Royal Commission on Archaeological and Historical Monuments of Wales (RCAHMW)	RCAHMW National Library of Wales Penglais Hill Aberystwyth Ceredigion SY23 3BU	nmr.wales@rcahmw.gov.uk	01970 621200
Wessex Archaeology (PAD Implementation Service)	Portway House Old Sarum Park Salisbury, Wiltshire SP4 6EB	protocol@wessexarch.co.uk	0203 817 2575
Receiver of Wreck (RoW)	The Maritime and Coastguard Agency Spring Place 105 Commercial Road Southampton SO15 1EG	row@mcga.gov.uk	0131 247 4120

1.2.2 Reviewing the WSI

1.2.2.1 Provision will be made for the WSI to be revised and MSs appended as appropriate should elements of Mona Offshore Wind Project change or particular archaeological issues be encountered. The WSI encompasses a wide range of development options and therefore the WSI will be reviewed and updated throughout the consent and post-consent process to ensure the WSI is appropriate for the final design. At each stage of the project, the RA will advise as to the potential requirements of the specific archaeological investigations as outlined in this document. Appropriate MSs will be prepared as required for each element, in line with the requirements of the WSI, and these will be submitted to the NRW for approval. Revisions will be prepared by the RA

and submitted to the Applicant who will ensure submission to and approval by NRW, in addition to other relevant licencing and consenting bodies in consultation with the AC. Approval by the AC will be assumed if no response is received within 30 working days of submission.

1.2.3 Compliance with the WSI

1.2.3.1 Compliance with this WSI will be ensured by regular meetings between the RA and the Applicant. The regularity of meetings may alter during different phases of Mona Offshore Wind Project. however, regular contact will be maintained to ensure compliance with the WSI. These meetings ensure compliance through agendas which include discussions of the construction programme and any upcoming work which may require archaeological input, as per the stipulations of this WSI. The RA also advises the Applicant of the scope of any necessary works and plans these works at the meetings and other meetings as required.

1.2.3.2 Following this advice, appropriate MSs will be prepared as required for each element of the Mona Offshore Wind Project which requires archaeological involvement, in line with the requirements of the WSI. These will be submitted to NRW and the AC for approval. Approval by the AC will be assumed if no response is received within 30 working days of submission. The RA will ensure compliance with these MSs during the subsequent works, thereby also ensuring compliance with the WSI.

1.2.3.3 The performance of the WSI will also be monitored through the provision of archaeological reports, prepared to inform on the results of various activities undertaken under its auspices. These include a review of new geophysical, geotechnical and environmental data; and the implementation of the PAD for reporting finds of archaeological interest during all works associated with Mona Offshore Wind Project. These reports will be submitted to the Applicant who will ensure their dissemination to the AC.

1.2.3.4 The responsibility for ensuring the implementation of the PAD for reporting finds of archaeological interest rests with the Applicant, who will ensure that its agents and contractors are contractually bound to implement the PAD.

1.2.3.5 During any site evaluation/investigation or construction work that has the potential to affect any archaeological receptors, the RA will advise the Applicant who will liaise directly with the AC with regard to site monitoring and reporting. The Applicant will be kept informed of any contact between the RA and the AC. A programme of monitoring visits (if deemed appropriate) by the AC and the Applicant will be agreed in advance of the commencement of work on site.

1.2.4 Health and safety

1.2.4.1 The RA will ensure that any MSs prepared to meet the requirements of the WSI are compliant with the requirements of the Applicant’s Health and Safety Plans for Mona Offshore Wind Project.

1.2.4.2 Health and Safety considerations will be of paramount importance in conducting all fieldwork. Safe working practices will override archaeological considerations at all times.

1.2.4.3 All work will be carried out in accordance with the Health and Safety at Work etc. Act 1974, the Management of Health and Safety at Work Regulations 1999, the SCAUM (Standing Conference of Archaeological Unit Managers) health and safety manual

Health and Safety in Field Archaeology (SCAUM, 2007) and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

1.3 Mona Offshore Wind Project details

1.3.1.1 The Mona Offshore Wind Project will be located in the east Irish Sea, with a landfall on the North Wales coastline and a connection to the existing Bodelwyddan National Grid substation.

1.3.1.2 The Mona Offshore Wind Project will consist of up to 96 wind turbines. The proposed capacity of the Mona Offshore Wind Project is over 350 MW, therefore it is within the Planning Act 2008 thresholds for Welsh offshore schemes. The final capacity of the Mona Offshore Wind Project will be determined based on available technology and constrained by the design envelope of the wind turbines presented in this chapter. The offshore infrastructure will also include up to 360 km of offshore export cables, 50 km of interconnector cables and 325 km of inter-array cables.

1.3.1.3 The key components of the Mona Offshore Wind Project are shown in Figure 1.2 and the key parameters are presented in Table 1.2.

1.3.1.4 The Applicant intends to commence construction of the Mona Offshore Wind Project in 2026 and for it to be fully operational by 2030, in order to help meet UK and Welsh Government renewable energy targets.

Table 1.2: Key parameters for the Mona Offshore Wind Project.

Parameter	Value
Mona Array Area (km^2)	300
Average water depth (m LAT)	-39.39
Maximum number of wind turbines	96
Maximum blade tip height above LAT (m)	364
Maximum number of OSPs	4
Maximum number of offshore export cables	4
Maximum length of inter-array cables (km)	325
Maximum length of interconnector cables (km)	50
Maximum length of offshore export cables (km)	360

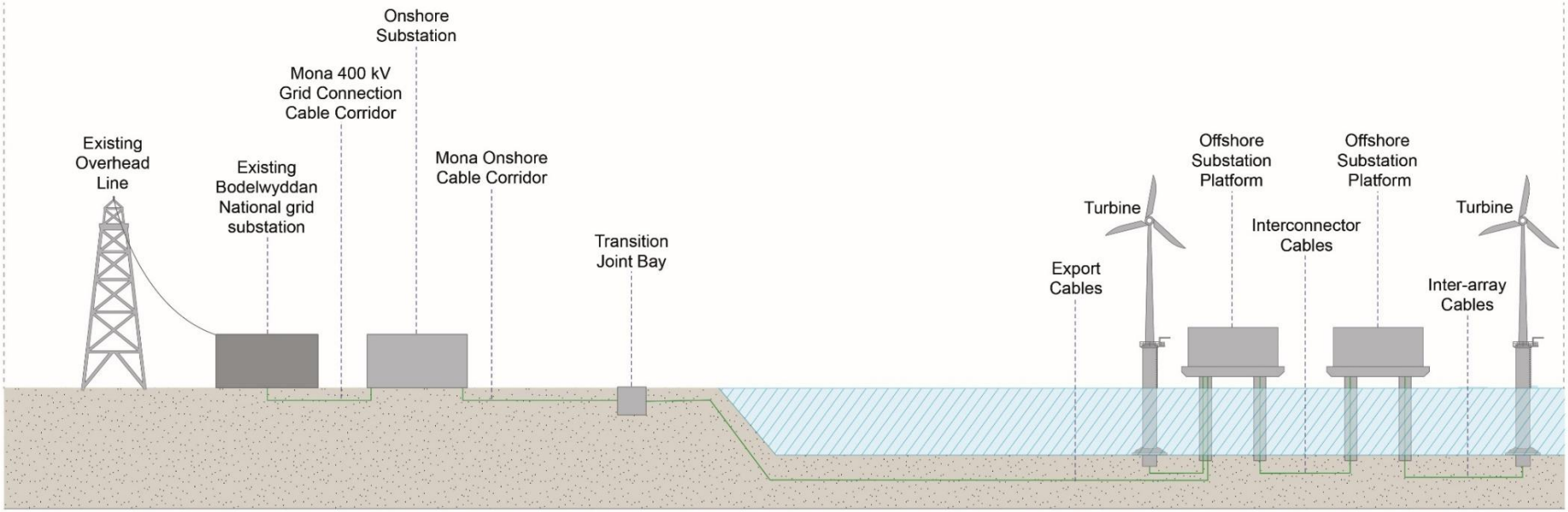

Figure 1.2 Overview of the Mona Offshore Wind Project infrastructure.

1.4 Archaeological baseline

1.4.1 Overview

1.4.1.1 A baseline assessment including desktop study and archaeological assessment of geophysical and geotechnical survey data has been undertaken in support of the Environmental Statement. The methodology and results of this assessment are set out in detail within Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement. This section presents a summary of this assessment.

1.4.2 Submerged prehistoric archaeology

1.4.2.1 The prehistoric archaeological record of the British Isles covers the period from the earliest hominin occupation more than 780,000 Before Present (BP) to the Roman invasion of Britain in 43 AD. During this long span of time, sea level fluctuations caused by three major glaciations (the Anglian, Wolstonian and the Devensian) have shaped the submerged prehistoric landscape within the Mona marine archaeology study area. The changes in sea level have at times exposed the seabed floor creating a terrestrial and potentially habitable environment, suitable for hominin occupation and exploitation. The submerged prehistoric archaeological potential of the Mona marine archaeology study area is summarised below and further information is presented in Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement.

1.4.2.2 Geological periods referred to in this section are defined by the date ranges presented in Table 1.3.

Table 1.3: Geological periods.

Period	Date Range	Notes
Holocene	10,000 BP to Present Day	Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Medieval, Post Medieval and Modern periods. The Holocene is the current time period within the larger geological time scale known as the Quaternary Period.
Devensian from Post Late Glacial Maximum to Late Glacial Interstadial	18,000 to 10,000 BP	Coincides with the Late Upper Palaeolithic and the early Mesolithic.
Devensian up to Late Glacial Maximum	c. 73,000 to 18,000 BP	Arrival in the UK of Late Middle Palaeolithic Neanderthals, who were followed approximately 31,000 BP by Early Upper Palaeolithic, anatomically modern humans (Homo sapiens).
Ipswichian (interglacial)	c. 130,000 to c. 115,000 BP	Last interglacial period in the UK. Overlaps with the Late Middle Palaeolithic.
Wolstonian	c. 374,000 to c. 130,000 BP	Predominantly Pleistocene glaciation. Incorporates the earliest period of the Late Middle Palaeolithic.

Late Middle Palaeolithic (186,000- 45,000 BP, 184,000–43,000 BC)

1.4.2.3 Evidence in the form of the presence of deposits representing the Wolstonian Glaciation indicate that the marine archaeology study area would have been subglacial during the Late Middle Palaeolithic. The analysis of seismic data from within the Mona Array Area, Stage One Geotechnical analysis and evidence from the wider area suggests that deposits representing environments favourable for human occupation dating to this period are not likely to be present within the Mona marine archaeology study area (COARS, 2023; Jackson *et al*., 1995; Mellett *et al*., 2015; Wood, 2022).

Upper Palaeolithic (45,000-10,000 BP, 43,000 – 8,000 BC)

1.4.2.4 The site-specific geophysical and geotechnical surveys conducted for the Mona Offshore Wind Project have revealed the presence of a glacial lake. This evidence therefore supports academic theories (Brooks et al., 2011; COARS, 2023; Jackson et al., 1995; Mellett et al., 2015; Fitch et al., 2011) that a large area within the Mona Offshore Wind Project Boundary would have been a partially terrestrial or intertidal environment during the Upper Palaeolithic, with final submergence of much of the area occurring c.13,000 BP. The site-specific surveys supported by desktop sources indicate that final submergence of the Mona Offshore Cable Corridor would have occurred c.6000 BP.

1.4.2.5 Despite the partially terrestrial environment within the Mona marine archaeology study area, it may not have been a favourable environment for human exploitation. Permafrost would have been present in the area, limiting the growth of vegetation and therefore the availability of resources for human exploitation. Therefore, the potential for the presence of submerged prehistoric archaeological material within the marine archaeology study area is low.

Mesolithic (10,000 – 6,000 BP, 12,000 – 4,000 BC)

1.4.2.6 Evidence from the site-specific geophysical and geotechnical surveys conducted within the Mona Offshore Wind Project Boundary and modelling conducted as part of the West Coast Palaeolandscape Study (COARS, 2023; Fitch et al. 2011) indicate that the southeast part of the Mona Array Area and along the Mona Offshore Cable Corridor was intertidal during the Mesolithic. The intertidal zone represents an environment that is rich in available resources for human exploitation, access to the sea would provide humans a food source in the form of fish and shellfish. The intertidal zone is also an environment which encourages the growth of vegetation that could be utilised for food and resources. Therefore, there is potential for the survival of archaeological material dating to this period within the Mona marine archaeology study area. However, the results of the Stage One geotechnical analysis of vibrocores taken within the Mona Offshore Cable Corridor have not identified any archaeological potential (COARS, 2023).

1.4.3 Maritime and aviation archaeology

Early prehistoric (Palaeolithic and Mesolithic)

1.4.3.1 There is currently no evidence in the UK for maritime archaeological remains pre-dating the start of the Holocene.

1.4.3.2 Watercraft may have been used in the rivers and estuaries during the Mesolithic for coastal journeys, fishing expeditions, and possibly longer journeys in favourable weather. However due to the paucity of evidence within the archaeological record and

the extent of fluvial activity across the Mona marine archaeology study area, the potential for the survival of any archaeology associated with the maritime environment from the Palaeolithic and Mesolithic periods is considered low.

Neolithic and Bronze Age

1.4.3.3 The potential for evidence of watercraft of vessels dating to the Neolithic period within the Mona marine archaeology study area is considered to be low.

1.4.3.4 Evidence of Bronze Age maritime activity has been recorded throughout England with the discovery of a number of inland watercraft and sea faring vessels. No such examples have been recorded within or close to the Mona marine archaeology study area, however it is possible that similar crafts may have been utilised to traverse the area. Generally, based on the available evidence the potential for the discovery of maritime archaeology dating to the Bronze Age is considered to be low.

Iron Age and Romano-British

1.4.3.5 Evidence of Iron Age maritime activity has been discovered in Britain in the form of Romano-Celtic boats which are examples of a new form of ship construction that was emerging in north western Europe at the time. No evidence has been found within the Mona marine archaeology study area and based on the available evidence the archaeological potential is considered to be low. The Roman occupation of Britain was by necessity a maritime endeavour, which would have required continuous transportation of resources and people to the military and civilian sites established by the Romans. Sites such as these can be found along Liverpool Bay and therefore it is likely that there would have been substantial Roman maritime traffic in this area. No evidence has been found within the Mona marine archaeology study area and based on the available evidence the archaeological potential is considered to be low to moderate.

Early Medieval and Medieval

1.4.3.6 The Early Medieval period marked a change in ship construction techniques coinciding with the end of the Roman occupation of Britain in the 5th century AD and an increasing Anglo-Saxon presence in the form of Norse and Danish Vikings. Several examples have been recorded in Britain.

1.4.3.7 With the Medieval period came a boom in maritime trade across Europe and trade expanded across the Irish Sea at this time also, with Dublin becoming an increasingly important commercial port, contributing to the maritime transportation of goods through the Irish Sea. The rapid technological advances in ship construction during the medieval period can also be attributed to increased military campaigns.

1.4.3.8 Due to the large increase of maritime traffic that would have occurred in the Irish Sea during the early medieval and medieval period, the potential for the discovery of archaeological remains dating from this period is considered to be moderate.

Post-Medieval and Modern

1.4.3.9 Records of known wreck sites and losses in UK waters are biased towards the Post-Medieval and Modern periods and therefore the precise locations of most wrecks pre-dating these periods in UK waters are not known. The majority of known and recorded wreck sites lie relatively close to the coast.

1.4.3.10 A total of 101 recorded losses have been identified within the desktop data (NRHE and NMRW) that are attributed to coordinates within the Mona marine archaeology study area. The high volume of recorded losses in the area is consistent with the increase of trade to and from Liverpool from the 16th century and the increase of military activity from the 18th century. From the 18th century onwards there was also rapid developments in shipbuilding technology including the advent of the steam engine and the use of iron hulls. These advances in shipbuilding mean that the incorporation of metal into ship design made shipwrecks more likely to survive on the seafloor and be identifiable in geophysical surveys.

1.4.3.11 Further advances in technology occurred during both World Wars and the east Irish Sea saw extensive activity associated with these periods, therefore the potential for the presence of modern military remains within the Mona marine archaeology study area is high.

1.4.3.12 The overwhelming majority of recorded losses are Post Medieval and predominantly lost to weather. Of the vessels that were lost during the periods of both World Wars, only one, Stanleigh (NRHE ID 271180) was certainly sunk as a result of enemy action. Of the 101 recorded losses, only HMS Thistle (NRHE ID 271584) was in active military service at the time of sinking and would thus constitute a Protected Place under the auspices of the Protection of Military Remains Act 1986 should any remains be positively identified as associated with this vessel.

1.4.4 Known and recorded maritime archaeology

1.4.4.1 No designated sites have been identified within the datasets for the Mona marine archaeology study area.

1.4.4.2 The desktop study has identified 36 entries within the datasets that may indicate the presence of material of anthropogenic origin within the Mona marine archaeology study area. Of these, there are three positively identified non designated wreck sites that are listed as ‘live’ by the UKHO, four possibly identified ‘live’ non designated wreck sites and six unknown sites believed to be of anthropogenic origin that are also considered ‘live’.

1.4.4.3 There are 23 other entries within the NMRW and NRHE datasets that do not correspond with UKHO records and have little to no known information associated with them and are either recorded as unknown, unnamed wrecks or seabed anomalies. These notably include the possible position of the wrecks *Glory* and *Hecla* and a record of a porthole find. These are included in the desktop gazetteer presented in Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement for completeness as they may represent archaeological material.

1.4.4.4 The *Ardlough* (UKHO 8239) was a cargo ship built in Germany in 1968 which sank in 1988 after taking on water in the Irish Sea. In addition to the UKHO record, the *Ardlough* is recorded as NMRW number 544553. The *Ardlough* is recorded as being located on the south boundary of the Mona Array Area and has been confirmed through the site-specific geophysical survey (Mona_0009).

1.4.4.5 The *Tijl Uilenspiegle* was a Belgian fishing trawler built in 1972 and sank in 1987 under mysterious circumstances. The location of the *Tijl Uilenspiegle* has been confirmed through the site-specific geophysical survey (Mona_0076).

1.4.4.6 The *Susie Mo II* (UKHO 91489) was a fishing vessel that sank in 2015. The location corresponding with the Susie Mo II has been identified through the site-specific geophysical survey (Mona_0068), though it appears that wreck material may no longer be at that location.

1.4.4.7 The *Sea Gull* was a British steam ship that was torpedoed by submarine U-103 enroute from Le Havre to Liverpool and sank on 16 March 1918. The potential wreck of the *Sea Gull* was identified within the geophysical data (Mona_0045).

1.4.4.8 The possible remains of the *Vine* (UKHO 8238), a British transport barge lost in 1877, are recorded as 'live' by the UKHO and listed as located within the Mona Offshore Cable Corridor. The position of this wreck has not been verified through the geophysical survey, but there remains a possibility for archaeological material to survive at the location shown in Figure 1.3.

1.4.4.9 The *Albanian* (UKHO 8124) was an iron-hulled steam ship built in Liverpool in 1870 used for Mediterranean trade during the 1870s until it collided with the *Nydia* (UKHO 8140) whilst on route from Liverpool to Genoa on the 18 November 1877. The collision off of Great Orme resulted in the loss of both vessels and the *Nydia*, built 1863 in Quebec, is also listed as 'live' within the Mona marine archaeology study area. The *Nydia* is described as being almost entirely buried by sand and it is believed that some damage has been caused though trawling. The *Albanian* was the subject of salvage operations in 1992 and is now reported to lie in three parts and to be very broken up. Although both of these are listed as 'live' within the Mona Offshore Cable Corridor, they have not been verified through the geophysical survey although it is possible that remains survive at the locations but have been buried. The recorded positions are shown in Figure 1.3.

1.4.4.10 Within the UKHO records of unknown origin is UKHO 93502, located within the southern section of the Mona Offshore Cable Corridor and relates to a 'degraded wreck possibly partially covered in sediment,' first identified in 2019. The dimensions of the wreck are recorded as 33.7 m x 3.8 m, with a height of 0.5 m. The record contains no further diagnostic information. No evidence of the wreck was identified within the geophysical data, the position does however lie alongside a sandbank and in an area where there is a slight curvature, although this less than 20 m. It is not possible to ascertain whether the identification is that of the side of the sandbank, or whether the wreck may now be buried. Due to the description of the wreck and its recent identification, it is considered likely that this wreck may be at its recorded location.

1.4.4.11 Four of the unknown UKHO records have also been corroborated by the geophysical survey. The UKHO data also records a large number of 'dead' entries, ranging from recordings of fisherman's fasteners to possible wrecks, however the fact that they are recorded as dead indicates that no remains of these are currently visible on the seabed. The geophysical survey has confirmed that no material exists on the seabed at these locations, however they may represent archaeological material that is buried, fragmented or no longer at their recorded positions.

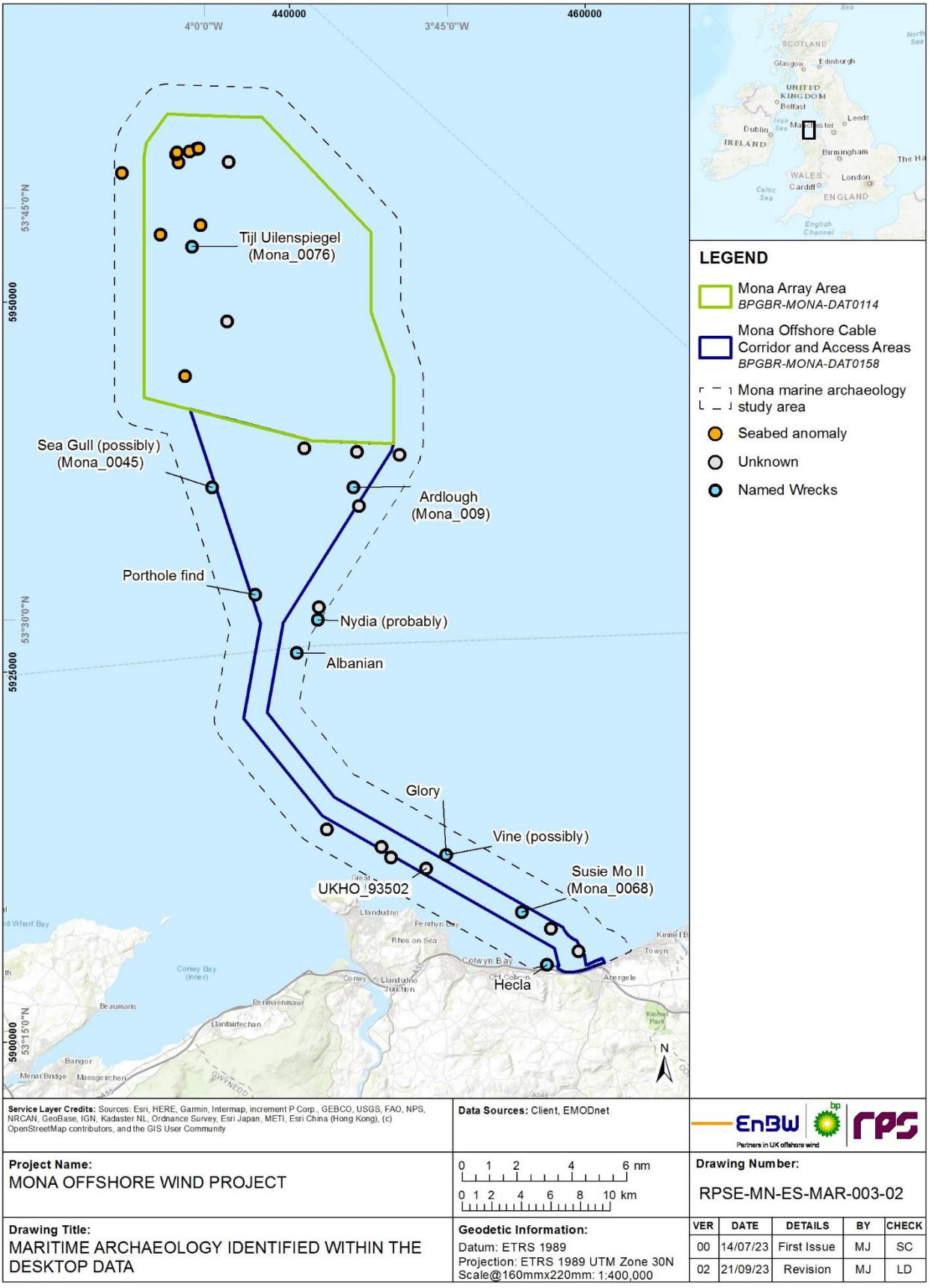

Figure 1.3: Maritime archaeology identified within the desktop data.

Aviation archaeology

1.4.4.12 Since World War II, despite the volume of both military and civilian air traffic, there have been few aviation losses off the west coast of England and north Wales, in the vicinity of the Mona Offshore Wind Project. The potential for post-war aircraft remains to be discovered within the Mona marine archaeology study area for the transmission assets is therefore considered to be low. Civilian aircraft wrecks are not subject to protection under the terms of the Protection of Military Remains Act 1986.

1.4.4.13 No aviation remains can be positively identified within the UKHO, NMRW or NRHE datasets for the Mona marine archaeology study area during the desktop study or were identified from the assessment of geophysical data.

1.4.4.14 There are eight recorded losses of aircraft attributed to coordinates within the Mona marine archaeology study area. As with maritime recorded losses, no specific location can be associated with these records.

1.4.4.15 No recorded losses of aircraft are associated with enemy action but instead appear to represent equipment failures. All eight recorded losses were military aircraft, but only one, the De Havilland Vampire (NRHE ID 515680), occurred outside of the timeframe of World War II. It was assigned to assigned to 202 AFS (Advanced Flying School) and crashed in the sea in 1953.

1.4.5 Results of the geophysical seabed features assessment

1.4.5.1 Geophysical data was collected across and beyond the Mona Array Area and Mona Offshore Export Cable Corridor. A total of 107 anomalies of potential archaeological interest were identified through the geophysical surveys. Of these, 17 are considered to be high potential anomalies, 16 are of medium potential and 74 have been classed as low potential anomalies. These are presented in Figure 1.4 and Figure 1.5.

1.4.5.2 The 74 low potential anomalies have been assessed against all available evidence and consequently are considered unlikely to have any archaeological significance and so will not be discussed further in this report. Should material of potential archaeological significance be identified during the course of Mona Offshore Wind Project they should be reported through the PAD. The locations of all low potential anomalies are presented in Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement and Appendix A.

1.4.5.3 The 16 medium potential anomalies could represent marine archaeology sites from potential debris to wreck. These are shown in Figure 1.4 and Figure 1.5 presented in Table 1.4. Full details of the medium potential anomalies and potential wrecks identified within the desktop data can be found in Volume 6, Annex 9.1: Marine archaeology technical report of the Environmental Statement.

Table 1.4: Medium potential anomalies.

ID	Category
Mona_0057	Anchor
Mona_0080	Unidentified debris
Mona_0081	Potential debris
Mona_0092	Potential wreck
Mona_0102	Potential debris

ID	Category
Mona_0109	Mound
Mona_0112	Mound
Mona_0018	Potential debris
Mona_0025	Mound
Mona_0033	Mound
Mona_0038	Debris
Mona_0044	Potential debris
Mona_0048	Potential debris
Mona_0065	Potential debris
Mona_0066	Potential debris
Mona_0069	Potential wreck

1.4.5.4 Of the 17 high potential anomalies identified, five are located within the Mona Array Area (Figure 1.4) and nine are located within the Mona Offshore Cable Corridor (Figure 1.5, eight of which have also been recorded within the UKHO data. These are presented in Table 1.5.

Table 1.5: High potential anomalies.

ID	Description
Mona_0076	A wreck that coincides with the recorded location of UKHO record 7452, the *Tijl Uilenspiegel*, a late 20th century Belgian fishing trawler that was lost in 1989 and subsequently identified in 2000.
Mona_0084	A wreck that coincides with UKHO record 8162, NMRW record 518452 and NRHE record 909485. Diver investigations in 1991 recorded the wreck as the remains of a small lightship with a double ended hull. The survey data appears to show evidence of collapse of one end of the lightship. It is likely that this wreck dates from the post medieval or modern period.
Mona_0091	A wreck corresponding to the UKHO record 7969, NMRW record 240670 and NRHE record 909482 of an unidentified steam ship. The wreck measures 37.1 m x 5.1 m and has a height of 5.8 m and shows evidence of degradation. The wreck site was dived in 2000 and reported to be intact. A small bell and pottery dating to 1906 were recovered, indicating that the date of loss must be post 1906 and potentially associated with World War I.
Mona_0108	An area of anthropogenic debris. No UKHO, NRHE, or NMRW records are associated with its position. The area of debris may represent a wreck site and consists of three distinct features. There is a high potential for Mona_0108 to be of archaeological interest due to the size, form and distribution of the material.
Mona_0110	An area of anthropogenic debris. No UKHO, NRHE, or NMRW records are associated with its position, however NRHE records 102663 and 1027034 are located <300 m south of this position and are recorded as seabed obstructions. Mona_0110 may represent a wreck site as the overall form, and distribution of features is consistent with that of a wrecked vessel
Mona_0009	The wreck of the *Ardlough* and lies in the northeast portion of the fan section of the Mona Offshore Cable Corridor. The anomaly directly corresponds with UKHO record 8239 (45 m southeast of NRHE 1004768), an Antiguan and Barbudan carrier which sank on 26th September 1998 while enroute from Garston to Belfast. The wreck lies apparently upright and mostly coherent, except for notable collapse along the port side.

ID	Description
Mona_0030	Is located in the north-west of the fan section of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE, or RCAHMW records. The size, and form, of the mound, and the associated large magnetic anomaly indicate buried material of anthropogenic origin, and potentially the remains of a wrecked vessel.
Mona_0031	Is located within the fan section of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE, or RCAHMW records. The anomaly is visible as an elongated mound, the south east end of the mound there is an accumulation of seabed, potentially indicating an extension of the main feature. There is little in the way of features to indicate the presence of a wreck, however mounds have the potential to represent buried material. The size, and form, of the mound, and the associated large magnetic anomaly indicate buried material of anthropogenic origin, and potentially the remains of a wrecked vessel.
Mona_0037	Is located in the northwest portion of the fan section of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE or NMRW records. The anomaly appears as an irregular mound but at least three linear features are visible in the SSS data on the top of the mound. The form of the mound and association with linear features is indicative of anthropogenic material. The size of the mound may indicate the remains of a wrecked vessel.
Mona_0040	Is located in the northwest portion of the fan section of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE or NMRW records. The size and form of the mound and its association with a magnetic anomaly indicate buried material of anthropogenic origin, possibly the remains of a wrecked vessel.
Mona_0049	Is located in the south area of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE or NMRW records. While the form of the anomaly is not dissimilar to a large geological feature, the size and uniqueness in the vicinity may indicate an anthropogenic origin. The survey contractor, Gardline, identified the anomaly as a potential wreck during their assessment of the data. However, the form and lack of an associated magnetic anomaly does not make this identification firm.
Mona_0067	Is located midway along the Mona Offshore Cable Corridor and corresponds with UKHO record 8144 and NMRW record 505956. The UKHO record the position of the feature as a small wreck, or piece of wreckage, originally located in 1986. The prominence of the anomaly in the area of seabed and its recording by the UKHO and NMRW indicate a potential anthropogenic origin.
Mona_0014	The anomaly measures 15.8 m x 14.9 m with a measurable height of 0.5 m, lies in the northwest of the fan section of the Mona Offshore Cable Corridor and does not directly correspond to any UKHO, NRHE or NMRW records. In form the anomaly appears as an irregular mound in the MBES data, not dissimilar from other seabed features in the area. However, the high magnitude of its associated magnetic anomaly (9,734 nT) suggests anthropogenic material of archaeological interest.
Mona_0068	Is located in the northwest fan section of the Mona Offshore Cable Corridor which corresponds to the UKHO record 91489, the Susie Mo II, which sank in 2015. The UKHO record states that in 2019, the location was the site of a wreck measuring 7.8 m x 4.9 m, with a measurable height of 3.3 m. What is unusual about the record is that the intact wreck identified in the UKHO record in 2019 is no longer visible and there is no record of it having been lifted. It is not possible to determine, with certainty, that the wreck from UKHO 91489 was that of a small fishing vessel, or whether it relates to an older structure that has since collapsed. A high-potential rating has been assigned until full-coverage SSS data can be reviewed.
Mona_0002	Is located outside of and approximately 130 m east of the Mona Offshore Cable Corridor, and to the northeast of the fan section of the Mona Offshore Cable Corridor and has been interpreted as a potential wreck corresponding with UKHO record 99231. The UKHO record is that of a degraded and buried wreck, of similar dimensions to those observed in the SSS data. No further details are given.

ID	Description
Mona_0016	Is located 120 m outside of the west boundary of the fan section of the Mona Offshore Cable Corridor and does not directly correspond with any UKHO, NRHE or NMRW records. While the origin is not clear the form of the anomaly is indicative of anthropogenic debris; the size and distribution potentially represent the remains of a collapsed wreck vessel.
Mona_0045	Is located outside of and approximately 250 m northwest of the Mona Offshore Cable Corridor of the northwest border of the Mona Offshore Cable Corridor and directly corresponds with UKHO record 7946, NRHE record 909480 and NMRW record 272253, the Sea Gull (possibly). Sea Gull is a British steam ship that was torpedoed by Submarine U-103 and sank on 17 March 1918 while enroute from Le Havre to Liverpool. The full built dimensions of Sea Gull were 68.6 m x 10.1 m, so it is possible that should the anomaly be that of Sea Gull then another section of wreck lies outside the extents of the survey data.

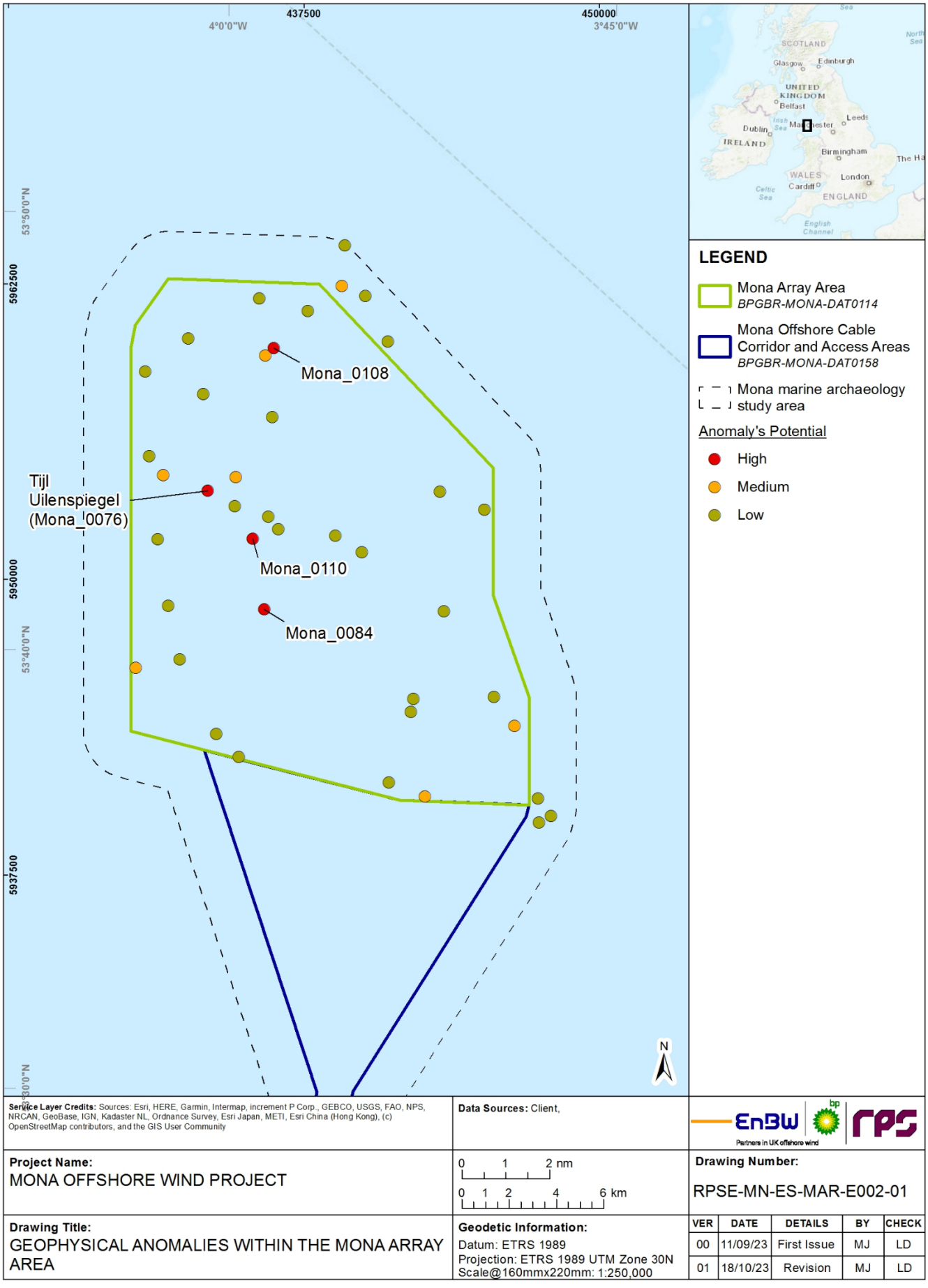

Figure 1.4: Geophysical anomalies within the Mona Array Area.

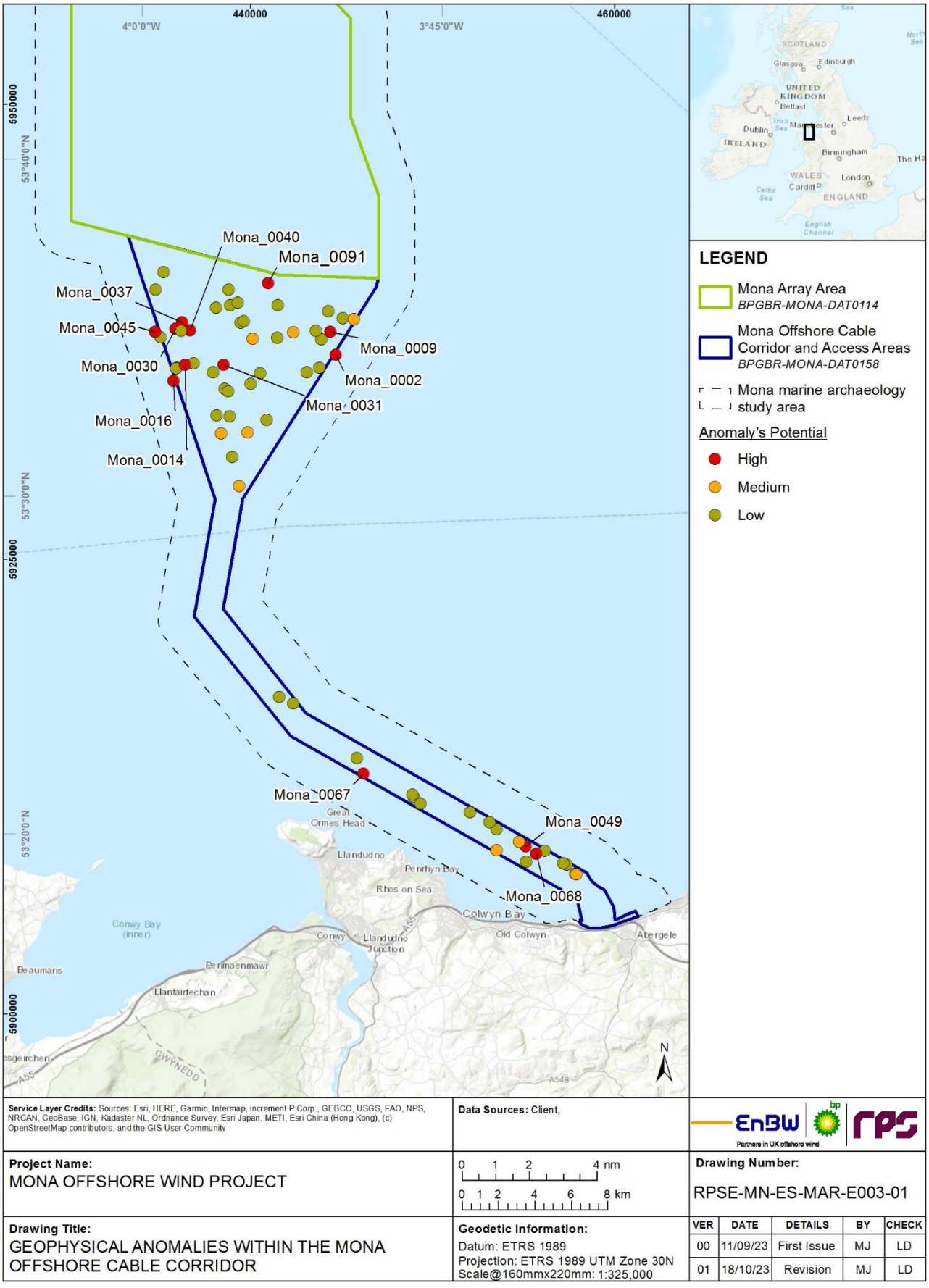

Figure 1.5: Geophysical anomalies within the Mona Offshore Cable Corridor.

Historic Seascape Character

1.4.5.5 Historical cultural processes which have shaped the character of the Mona marine archaeology study area are predominantly related to fishing and navigation activity. Infrastructure for the modern energy industry dominates the current seascape character.

1.4.5.6 The sub-character types can be broken down into the following categories:

- Modern installations and activities such as submarine cables
- Shellfish dredging in the modern period
- Navigation routes, both modern and post medieval
- Wrecks and maritime debris of unknown date
- Seabed types and characteristics of coarse sediment plains.

1.4.5.7 Due to the limited data available for the study area, these representations cannot be considered the totality of the HSC for the Mona marine archaeology study area. However, they do suggest the potential for evidence of modern industry and development, fishing activity and marine archaeology.

1.4.6 Research Frameworks

1.4.6.1 Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (The Crown Estate, 2021) states that a WSI should '*set out the importance of research frameworks in setting objectives that are delivered through realisation of the work'*.

1.4.6.2 Several research frameworks have been identified as relevant to the marine archaeology resource of the Mona marine archaeology study area. These include:

- People and the Sea: A Maritime Archaeological Research Agenda for England (Ransley et al., 2013)
- The Research Agenda for Wales: Maritime and Coastal Archaeology (Cadw, 2004) and the draft Maritime Chapter of Archaeological Research Framework for Wales (Groom, in prep.)
- The research framework for the archaeology of Wales (IfA Wales/Cymru, 2008) and
- The North West England regional research framework (Research Frameworks, 2023).

1.4.6.3 Additional Research Frameworks may be identified as relevant depending on the specific archaeological work to be undertaken. Any archaeological work and reporting under this WSI will tie research into the relevant research frameworks, ensuring that the project makes a contribution to archaeological knowledge. The objectives of the research framework will be used to guide work and recommendations made by the RA to the Applicant.

1.4.6.4 The connection with the specific archaeological work package to be undertaken, and the relevant research framework, aims and objectives, will be identified within the MSs which will proceed archaeological work. The MS will also set out how the work undertaken will be tied into the relevant research framework during OASIS reporting (see section 1.8).

1.5 Potential Impacts

1.5.1.1 The impacts of the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been assessed on marine archaeology. The potential impacts arising from the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project are listed in Table 1.6.

Table 1.6: Potential impacts.

Potential Impact	Phases Assessed	Mona Offshore Wind Project Activities	Measures adopted as part of Mona Offshore Wind Project
Sediment disturbance and deposition leading to indirect impacts on marine archaeology receptors.	Construction, operations and maintenance, decommissioning.	Construction phase. Sandwave clearance, foundation installation, cable installation. Operations and maintenance phase. Cable repair. Decommissioning phase. Removal of infrastructure.	Monitoring and watching briefs (section 1.6.3). Preservation by record (section 1.6.4). Commitment to the preparation, agreement and implementation of a PAD (section 1.6.5)
Direct damage to maritime archaeology receptors (e.g. wrecks, debris, submerged prehistoric receptors (palaeolandscapes and associated archaeological receptors).	Construction, operations and maintenance, decommissioning.	Construction phase. Sandwave clearance, cable installation, anchor placements, disused cable removal, UXO removal. Operations and maintenance phase. Repair and maintenance activities, including cable repair and rerburial, jack-up events and anchor placement. Decommissioning phase. Cable removal, anchor placements, jack up events.	AEZs and TAEZs (section 1.6.1.1) Monitoring and watching briefs (section 1.6.3). Preservation by record (section 1.6.4). Commitment to the preparation, agreement and implementation of a PAD (section 1.6.5)
Direct damage to deeply buried marine archaeology receptors – submerged prehistoric receptors (e.g. palaeolandscapes and associated archaeological receptors).	Construction.	Construction phase. Foundation installation.	AEZs and TAEZs (section 1.6.1.1) Monitoring and watching briefs (section 1.6.3). Preservation by record (section 1.6.4). Commitment to the preparation, agreement and implementation of a PAD (section 1.6.5)

Potential Impact	Phases Assessed	Mona Offshore Wind Project Activities	Measures adopted as part of Mona Offshore Wind Project
Alteration of sediment transport regimes.	Operations and maintenance.	Operations and maintenance phase. Presence of infrastructure.	Monitoring and watching briefs (section 1.6.3). Preservation by record (section 1.6.4). Commitment to the preparation, agreement and implementation of a PAD (section 1.6.5)

1.6 Measures adopted as part of the Mona Offshore Wind Project

1.6.1 Overview

1.6.1.1 A number of measures (primary and tertiary) have been adopted as part of the Mona Offshore Wind Project to reduce the potential for impacts on marine archaeology. As there is a secured commitment to implementing these measures for the Mona Offshore Wind Project, they have been considered in the assessment presented in Volume 2, Chapter 9: Marine archaeology of the Environmental Statement (i.e. the determination of magnitude and therefore significance assumes implementation of these measures).

1.6.2 Archaeological Exclusion Zones (AEZs)

1.6.2.1 Best practice favours the preservation in situ of archaeological remains, therefore the ideal preferred mitigation for archaeological remains is avoidance (Wessex Archaeology for the Crown Estate 2021). For the Mona Offshore Wind Project, AEZs have been proposed that prohibit development-related activities within their extents, which vary depending upon the nature of the site. The final Mona Offshore Wind Project design will take into account these preliminary zones, which may evolve or be removed (with the agreement of NRW and Cadw) as the Mona Offshore Wind Project progresses, subject to the project design and additional subsequent surveys that may be required.

1.6.2.2 The appropriateness and effectiveness of the AEZs and condition of the archaeological assets will be monitored through the acquisition of survey data during the lifetime of the Mona Offshore Wind Project where required. Data relating to the marine archaeology assets will be archived with NRW through RCAHMW at the outset of the Mona Offshore Wind project and as it is collected through it's lifetime.

1.6.2.3 All AEZs agreed with Cadw, will be marked on the B.14: Offshore Historic Environment Plan of the Environmental Statement. If impacts cannot be avoided, measures to reduce, remedy or offset disturbance will be agreed.

1.6.2.4 In view of their potential archaeological significance, AEZs (either in the form of individual AEZs or clusters) will be placed around the 14 anomalies classified as being of high archaeological potential and the 16 anomalies classed as being of medium potential that are located within the Mona Offshore Wind Project. These anomalies have been recommended AEZs based on the size of the anomaly, the extents of any debris, the potential significance of the anomaly, the potential impact of the Mona Offshore Wind Project and the seabed dynamics within the area. The three high potential anomalies that were identified within the Mona marine archaeology study area but outwith the Mona Offshore Wind Project have not been assigned AEZ's as they are all located more than 100 m from the Mona Offshore Wind Project Boundary and therefore there is no pathway for direct impact. One TAEZ has been recommended within the Mona Offshore Cable Corridor for UKHO record 93502.

1.6.2.5 Dependant of the form of the anomaly, AEZs have either been recommended as a radius' from the centre point of the anomaly or as a distance from the extents. Particularly in the case of shipwrecks, which tend to be longer in length than width, the use of a circle provides unequal protection around the extents. This not only impacts the protection afforded but does not present proportional mitigation.

1.6.2.6 The proposed AEZs are listed in Table 1.7 and shown in Figure 1.6 and Figure 1.7. Scope is allowed for their amendment in light of further evidence and with the involvement of consultees. AEZs can be different sizes depending on the size of the

archaeological anomaly and the extent to which there is associated debris present on the seabed.

1.6.2.7 The AEZs identified for the Mona marine archaeology study area have been compiled from the results of the archaeological assessments of geophysical and hydrographic data for Mona Offshore Wind Project. These have been reviewed against desk based and site-specific data, and as a result of this review AEZ's have been identified of varying sizes according to the size and spread of the individual archaeological receptor.

1.6.2.8 AEZs are presented as either extents or a radius. Extents indicate the distance proposed from the furthest extents of the archaeological anomaly whilst a radius AEZ is one that is measured as a circumference from the central point of the anomaly.

1.6.2.9 Further TAEZs and AEZs may be assigned during the course of the project as anomalies that have been identified in the data do not necessarily represent all of the marine archaeological material that is on the seafloor. For example, wooden wrecks can be buried under the seabed and may not appear in the data. If previously unidentified material of cultural significance is identified, it would require an AEZ.

1.6.2.10 Where further survey work has, as one of its objectives, the ensonification of previously identified sites and / or anomalies in order to alter or remove an AEZ, the Applicant will make provision for a suitably qualified Archaeological Geophysical Contractor (which may be the RA) to be available to provide advice and input into the survey and as the survey is ongoing. In some cases, this may include the presence of the RA on the vessel alongside the vessel crew, or, in most cases, this advice may be given remotely.

1.6.2.11 Low potential anomalies are not provided AEZs or TAEZs but will be considered in the final Project Design through micrositing via the acquisition of post high-resolution geophysical data, to be acquired post-consent and as part of the mitigation strategy, as outlined in Table 1.7.

Table 1.7: Proposed AEZs within the Mona marine archaeology study area.

ID	Description	Potential	Eastings	|Northings	AEZ (m)
Mona_0076	Wreck	High	433419.2	5953767.8	50 extents
Mona_0084	Wreck	High	435824.4	5948735.6	50 extents
Mona_0091	Wreck	High	440973.4	5940170.0	50 extents
Mona_0108	Potential wreck	High	436254.1	5959800.1	50 extents
Mona_0110	Potential wreck	High	435333.1	5951723.8	50 extents
Mona_0080	Unidentified debris	Medium	431545.5	5954410.7	15 radius
Mona_0081	Potential debris	Medium	446410.7	5943791.7	15 radius
Mona_0092	Potential wreck	Medium	430376.0	5946260.9	25 radius
Mona_0102	Potential debris	Medium	435869.6	5959476.0	15 radius
Mona_0109	Mound	Medium	434606.8	5954333.8	30 radius
Mona_0112	Mound	Medium	442619.1	5940823.2	15 radius
Mona_0009	Wreck	High	444396.3	5937516.9	50 extents
Mona_0030	Potential wreck	High	435890.5	5937670.3	50 extents
Mona_0031	Potential wreck	High	438516.7	5935692.4	50 extents
Mona_0037	Potential wreck	High	436239.1	5938033.9	50 extents

ID	Description	Potential	Eastings	|Northings	AEZ (m)
Mona_0040	Potential wreck	High	436676.6	5937578.9	25 extents
Mona_0049	Potential wreck	High	455141.6	5909212.6	25 extents
Mona_0067	Potential wreck	High	446219.6	5913202.3	50 extents
Mona_0014	Potential wreck	High	436407.3	5935691.7	25 extents
Mona_0068	Potential wreck	High	455717.1	5908796.2	25 extents
Mona_0018	Potential debris	Medium	439865.8	5931973.2	25 extents
Mona_0025	Potential debris	Medium	442354.5	5937489.0	50 extents
Mona_0033	Mound	Medium	438392.3	5931929.6	25 extents
Mona_0038	Potential debris	Medium	439386.8	5929010.4	50 extents
Mona_0044	Debris	Medium	445694.8	5938210.5	25 extents
Mona_0048	Potential debris	Medium	440139.3	5937112.4	25 extents
Mona_0066	Potential debris	Medium	454791.8	5909474.8	25 extents
Mona_0065	Seabed disturbance	Medium	453545.1	5908994.0	50 extents
Mona_0069	Mound	Medium	457913.3	5907677.7	50 extents
UKHO 93502	Degraded wreck possibly partially covered in sediment. Record from 2021.	N/A	449229.7	5911740.7	100 radius

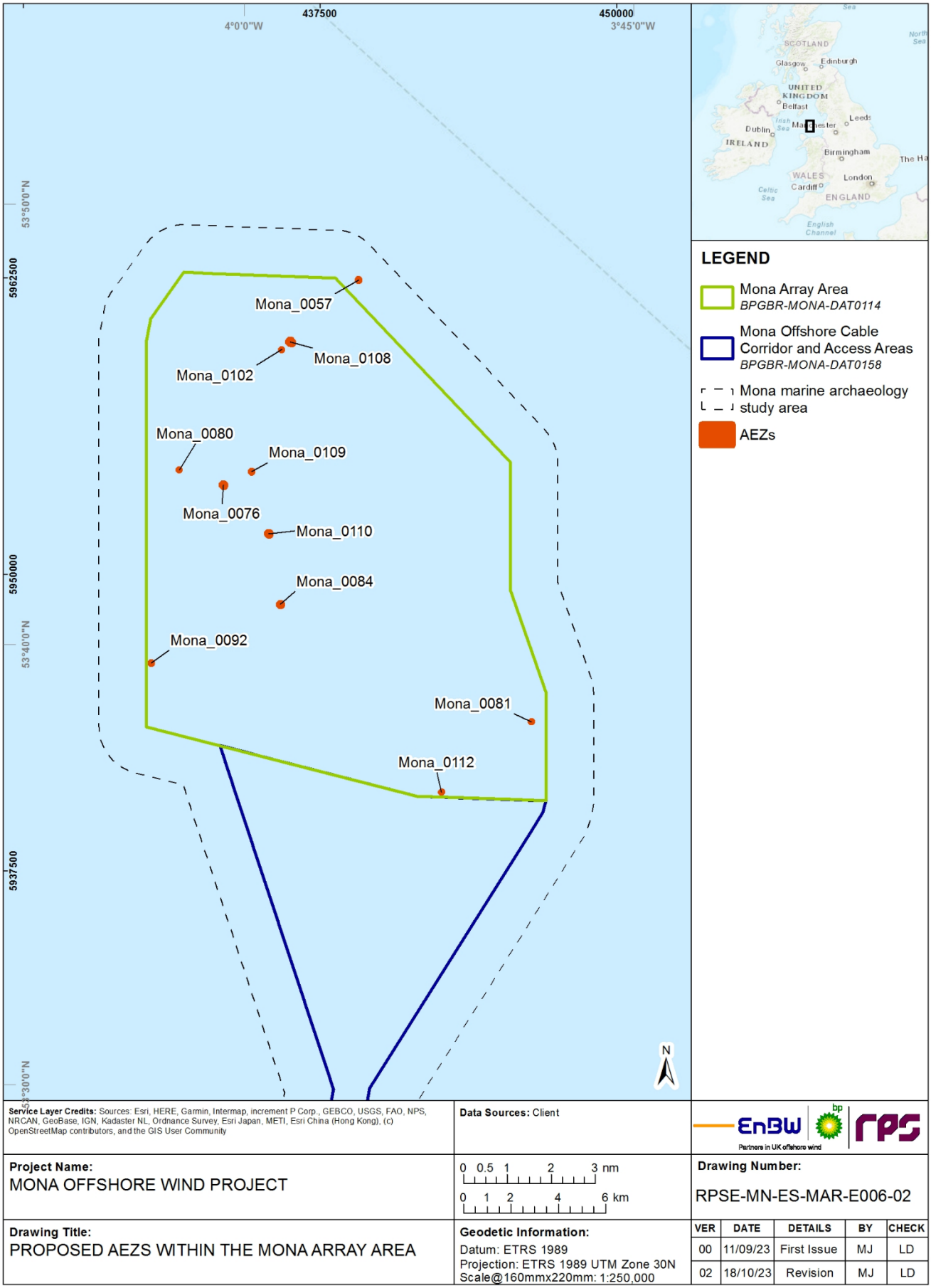

Figure 1.6: Proposed AEZs within the Mona Array Area.

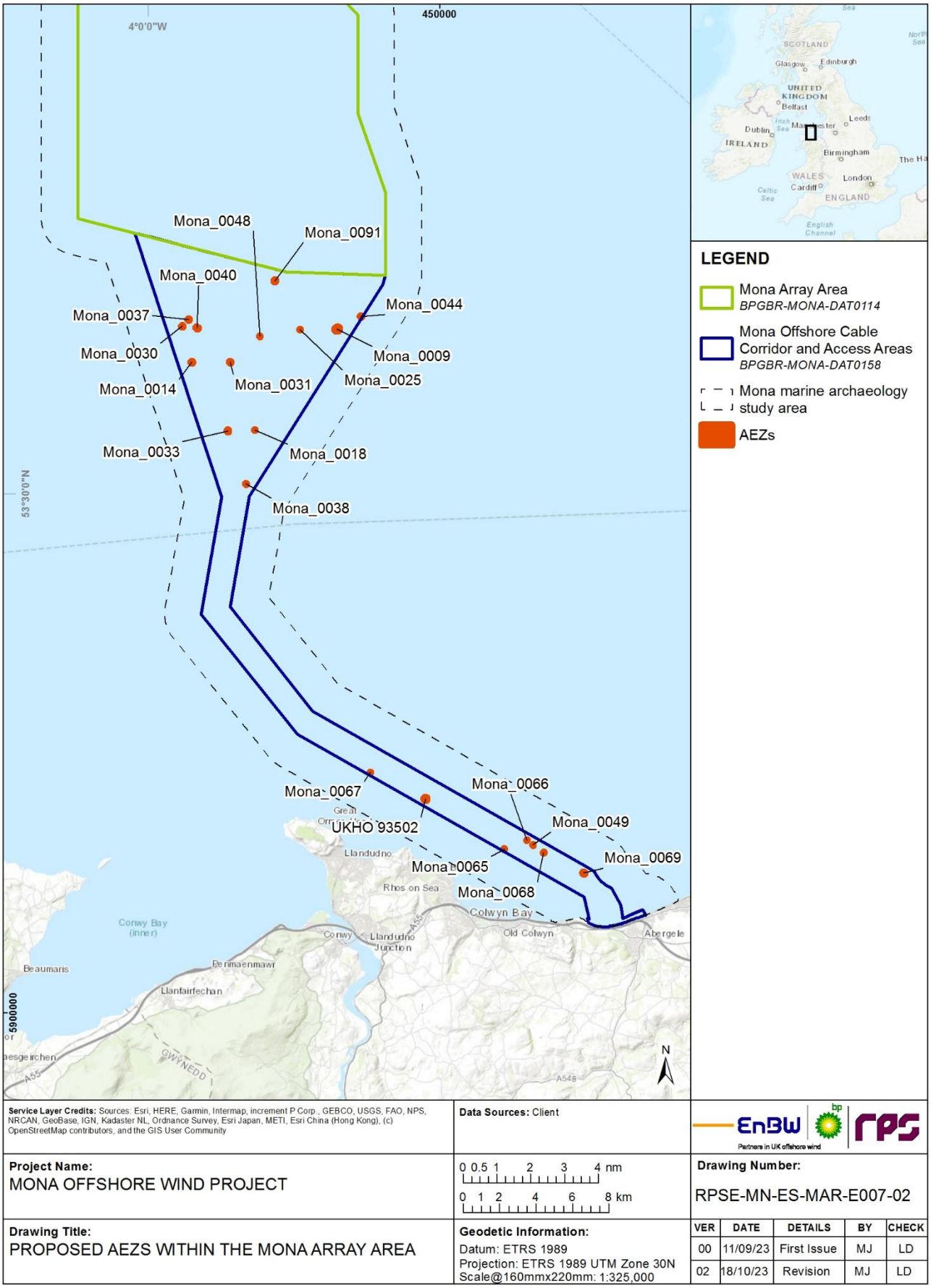

Figure 1.7: Proposed AEZs within the Mona Offshore Cable Corridor.

1.6.3 Monitoring and watching briefs

1.6.3.1 In addition to the ongoing monitoring of AEZ where required, measures adopted as part of Mona Offshore Wind Project include:

- Archaeological input into specifications for, and archaeological analysis of, any further pre-construction geophysical and geotechnical surveys.
- Mona Offshore Wind Project archaeologists to be consulted in the preparation of any pre-construction ROV/diver surveys and, if appropriate, in monitoring/checking of data.
- Archaeologists to be consulted in the preparation of pre-construction cable route clearance or other pre-construction clearance operation and, if appropriate, to carry out archaeological monitoring of such work.

1.6.3.2 The proposed mitigation strategy, which is based on the current understanding of archaeological remains and construction techniques, does not require a marine watching brief. Should future work lead to the identification of further archaeological remains, or should the construction methods or locations be altered, a marine watching brief may be required.

1.6.3.3 If a marine watching brief is required it would be conducted by a suitably qualified and experienced marine archaeologist, in line with the Chartered Institute for Archaeologists Standards and Guidance for Archaeological Watching Briefs (CIfA 2014a). A detailed MS would also be produced and approved by the AC before any watching brief activities are undertaken.

1.6.3.4 Where archaeological watching briefs are necessary a detailed MS for the proposed works will be produced and agreed with Cadw prior to any watching brief activities taking place. All watching briefs will be conducted in line with Standards and Guidance for Archaeological Watching Briefs (CIfA 2014a).

1.6.3.5 If significant archaeological or palaeoenvironmental evidence are encountered then the Applicant, in consultation with the relevant Cadw, will make provision for the Archaeological Contractor to undertake a programme of investigation commensurate with the evidence discovered.

1.6.4 Preservation by record

1.6.4.1 Where preservation in situ is not practicable, disturbance of archaeological sites or material will be offset by appropriate and satisfactory measures, also known as ‘preservation by record’. In these circumstances, the effects of the Mona Offshore Wind Project will be offset by carrying out excavation and recording prior to the impact occurring (Wessex Archaeology for The Crown Estate 2021).

1.6.4.2 The Offshore Renewables Protocol for Archaeological Discoveries (The Crown Estate, 2014) will be followed, which will involve the reporting of archaeological discoveries made during the lifetime of the Mona Offshore Wind Project. This PAD covers the reporting and investigating of unexpected archaeological discoveries encountered during construction, operations and maintenance and decommissioning activities, informed by the guidance of a marine archaeologist specialised in working with PADs for Offshore Wind Farm Projects. This PAD further makes provision for the implementation of TAEZs around areas of possible archaeological interest, for prompt archaeological advice and, if necessary, for archaeological inspection of important features prior to further construction, maintenance or decommissioning activities in the vicinity. It complies with the Merchant Shipping Act 1995, including notification to the

Receiver of Wreck, in accordance with the Code of Practice for Seabed Developers (Joint Nautical Archaeology Policy Committee (JNAPC) 2006).

1.6.4.3 In view of the potential for the presence of palaeolandscapes, associated prehistoric sites and unidentified wrecks, archaeological monitoring is deemed as appropriate where seabed material is brought to the surface. These proposals may be refined on the basis of the results of any further marine geophysical, geotechnical or diver/ROV+ surveys (section 1.7).

1.6.5 Protocol for Archaeological Discoveries

1.6.5.1 During the course of seabed preparation, construction and future activities associated with Mona Offshore Wind Project, archaeological finds and deposits may be encountered, and records may need to be produced. This situation may arise under a number of different circumstances, for example during watching brief activities.

1.6.5.2 A protocol for reporting finds of archaeological interest will be implemented during all activities relating to construction, operations and maintenance, and decommissioning. It will address the reporting of unexpected finds of archaeological material, recovered from the sea during these activities.

1.6.5.3 The protocol will largely follow the format laid down in the document Protocol for Archaeological Discoveries (PAD): Offshore Renewables Projects (The Crown Estate, 2014). The RA will operate to administer the PAD and provide initial advice to the Applicant and will liaise with the AC as necessary.

1.6.5.4 Once agreed by the Applicant and the AC, the PAD will be distributed in a form suitable for use on board construction vessels. The Applicant will ensure that the relevant staff on all construction vessels are informed of and have access to the PAD, including supporting material, detailing the find types that may be of archaeological interest, and the potential importance of any archaeological material encountered.

1.6.5.5 All finds of archaeological material will be reported by the Construction Contractor(s), to the RA/Nominated Contact who will inform the Applicant and then the AC. If the find is a ‘wreck’ within the meaning of the Merchant Shipping Act 1995 then the RA/Nominated Contact will also make a report to the Receiver of Wreck. Full contact details for all relevant parties will be included in the PAD.

1.6.5.6 The response to reported finds will be implemented through the measures set out in the PAD, including further surveys or establishment of new AEZs if appropriate.

1.6.5.7 The PAD will be implemented by means of toolbox talks presented to the relevant vessel crews to ensure that all staff are made aware of what constitutes an appropriate find. The frequency and timing of these toolbox talks is determined in relation to ongoing activities. The PAD will be supported by a package of awareness training for the Applicant and its contractors’ and sub-contractor’s staff.

1.6.5.8 At the end of the construction phase, the RA will prepare a report on the results of the PAD. The results will be included in the final archaeological report in the section covering maritime sites and finds within the area covered by the Mona Offshore Wind Project.

1.7 Methodology for archaeological work

1.7.1 Overview

1.7.1.1 Archaeological involvement in further work is a key component in the ongoing process of assessing known and potential archaeological remains within the development area,

to ensure robust and proportionate mitigation for archaeological receptors which may be impacted by the Mona Offshore Wind Project.

1.7.1.2 A detailed MS will be produced by the RA, for agreement with and approval by the Applicant, and the AC in advance of each archaeological element discussed below. Approval by the AC will be assumed if no response is received within 30 working days of submission of individual MSs. Overviews of methods are given below. These methods are in line with best practice guidance, set out within The Crown Estate 2021.

1.7.1.3 Any surveys conducted as part of the Mona Offshore Wind Project that may yield additional information on the marine archaeology of the area should be carried out to a single datum and coordinate system, preferably the ETRS 89 UTM Zone 30N for the offshore elements of the scheme.

1.7.1.4 Surveys that will require archaeological involvement include:

- Geophysical survey will require an archaeological assessment of the survey data
- Diver/ROV obstruction surveys will require an archaeological assessment of the survey data (video and positional data)
- Geotechnical investigations will require geoarchaeological assessment and, where necessary, analysis following the staged approach set out below.

1.7.1.5 Should archaeological material be encountered during any of these surveys, sufficient time and resources will be made available to ensure the archaeological assessment of such material. In areas where there are to be further impacts, no impacts will take place until the assessment has been conducted and mitigation actions agreed and implemented. The scope of any further assessment will be agreed with the AC and, where necessary, further suitable mitigation measures will be instigated in agreement with the AC.

1.7.2 Planning

1.7.2.1 When planning geophysical and geotechnical surveys, the Applicant will advise the RA well in advance and seek their input into the scope of work. Archaeological input will take the form of advice from the RA on measures to optimise archaeological results from the planned geotechnical, geophysical and other surveys or work (such as benthic grabs, for example). Areas to be considered will include:

- The available details on previously identified sites and/or anomalies and areas of heightened archaeological potential
- The archaeological potential of areas where no existing sites and/or anomalies are yet known
- The equipment, equipment settings, survey methodology(s) and data collection points that will optimise the recovery of archaeological information
- The requirements for data analysis, interpretation and archiving.

1.7.2.2 The required response to elements of archaeological input may include:

- Altering vibrocore/borehole positions in order to maximise the potential for the collection of archaeological data
- ‘Boxing’ wreck sites in order to provide the best possible images and positional data
- Altering grab sample positions in order to maximise the potential for the collection of archaeological data.

1.7.3 Geophysical survey

1.7.3.1 Any future geophysical survey data acquired for Mona Offshore Wind Project will be archaeologically assessed and recommendations for mitigation, including any necessary AEZs, will be made.

1.7.3.2 Additionally, new marine geophysical data that covers areas of development impact and AEZs will be subject to analysis by a suitably qualified Archaeological Geophysical Contractor (the RA, if suitable). Any such assessment will be preceded by a MS which will set out in detail the methods to be used, along with the aims and objectives of the work. The MS will be submitted to the AC prior to the work being conducted. Approval by the AC will be assumed if no response is received within 10 working days of submission of individual MSs.

1.7.3.3 In order to maximise the potential benefits of any geophysical survey, the Applicant will seek archaeological input at the planning stage of any such works.

1.7.3.4 Surveys will be carried out to a single datum and co-ordinate system. All survey data, including navigation (position, heading and velocity) will be acquired digitally in industry-standard formats. Care will be taken to maintain the orientation and altitude of sensors online. Track plots will be corrected for layback (including catenary effects) and made available in digital (geographical information system (GIS)) form.

1.7.3.5 Once the surveys have been processed to meet their primary objectives, the survey data, together with factual reports, will be made available in digital formats to the Applicant's RA, or a suitably qualified Archaeological Contractor for archaeological analysis and interpretation.

1.7.3.6 Archaeological interpretation may include:

- Examination of side scan sonar, magnetometer, multi-beam and seismic data, where acquired, for areas within the vicinity of known wreck sites and previously identified geophysical anomalies.
- Examination of side scan sonar, magnetometer, multi-beam and seismic data, where acquired, within areas that will be subject to development to identify any as yet unknown wreck remains.
- The assessment of seismic data and the GIR in order to plot the general trend of the subsurface sediments with archaeological potential.

1.7.3.7 An example of the criteria that has been used for the assessment of archaeological potential of contacts to date on Mona Offshore Wind Project is presented in Table 1.8.

Table 1.8: Criteria for the assessment of archaeological potential.

Potential	Characterisation
Low	An anomaly potentially of anthropogenic origin but that is unlikely to be of archaeological significance. Examples may include discarded modern debris such as rope, cable, chain or fishing gear, small isolated anomalies with no wider context or small boulder-like features with associated magnetometer readings.
Medium	An anomaly believed to be of anthropogenic origin but that would require further investigation to establish its archaeological significance. Examples may include larger unidentifiable debris or clusters of debris, unidentifiable structures or significant magnetic anomalies
High	An anomaly almost certainly of anthropogenic origin and with a high potential of being of archaeological significance. High potential anomalies tend to be the remains of wrecks, the suspected remains of wrecks or known structures of archaeological significance

1.7.3.8 The archaeological interpretation or results of any further geophysical surveys will be compiled as a report by the Archaeological Contractor and will include likely requirements (if any) for further work or any required changes to mitigation including the addition, removal or alteration of AEZs. The report will be submitted to the Applicant by the RA and to the AC. The scope of any further work will be agreed by the Applicant and the AC.

1.7.4 Diver/ROV Survey

1.7.4.1 Seabed photography and video footage will be subject to archaeological assessment and analysis by a suitably qualified Archaeological Contractor. Any such assessment will be preceded by a MS which will set out in detail the methods to be used, along with the aims and objectives of the work. The MS will be submitted to the AC prior to the work being conducted. Approval by the AC will be assumed if no response is received within 30 working days of submission of individual MSs.

1.7.4.2 In order to maximise the potential benefits of any proposed diver/ROV surveys, the Applicant will seek archaeological input at the planning stage of any such works.

1.7.4.3 Archaeological input will take the form of advice from the RA on measures to optimise archaeological results from the planned survey. Advice will include:

- The available details of sites and/or anomalies identified in the desk-based assessment.
- The archaeological potential of areas where no existing sites and/or anomalies are yet known.
- The type and level of diver/ROV positioning, voice recording and video/still recording to be utilised.
- The provision of clear guidance on the types of sites and finds that are to be reported and recorded.
- Wherever possible input into the scope of works to include potential archaeological sites/AEZs where more detailed mitigation planning is required.
- Other specific advice will be given depending on the nature and purpose of the investigations. All such areas would be outlined within the MS for the work.

1.7.4.4 Consideration will be given to having an Archaeological Contractor during any diver or ROV surveys, either as an observer(s) or participating diver(s) to optimise archaeological results and thereby reduce the need for repeat survey. However, operational constraints as well as the relevance and scope of the operation, will have to be taken into account when trying to accommodate archaeologists aboard.

1.7.4.5 Following the completion of the diver/ROV survey all data, including video footage, will be reviewed by the Archaeological Contractor. This review will identify any anomalies or sites that are potentially of archaeological interest. A report will identify those sites and/or geophysical anomalies that are of sufficient archaeological interest to warrant further investigation and/or mitigation. It will also identify those sites that are no longer of archaeological interest, and hence may be removed from the list of AEZs.

1.7.4.6 The archaeological results of any diver/ROV survey will be compiled in a report by the Archaeological Contractor. The report will include a statement of the likely requirements (if any) for further archaeological work and mitigation.

1.7.4.7 The report will be forwarded to the RA, who will submit it to the Applicant and the AC for a decision on the scope of any further work where required.

1.7.5 Geotechnical survey

1.7.5.1 Any archaeological assessment of geotechnical data will follow the guidance as set out within COWRIE's Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather 2011):

- 'Investigate the deposition sequence of sediments within the area represented by the cores to identify, as far as possible, the environments within which this deposition took place.
- Evaluate the potential for past human exploitation and occupation of these past environments.
- Produce an overview of the geological stratigraphy to provide an indication of the prehistoric archaeological potential for the area.
- Comment on the archaeological importance of the identified deposits, within the context of the wider palaeoenvironmental history of the region and the UK'.

1.7.5.2 In accordance with this guidance, future geotechnical surveys will be subject to archaeological input. Following best practice guidance this input should begin prior to core collection, and should proceed to a staged process of assessment and analysis (The Crown Estate 2021).

1.7.5.3 Early input should seek to determine methods and specifications for geotechnical sampling (e.g. vibrocores, boreholes etc.) and engagement with the Applicant and their geotechnical team should aim to find ways to ensure archaeological aims and sampling can be conducted alongside any other requirements. Following these discussions a MS for Core Collection, Transport, Retention and Storage should be produced, ensuring that cores are stored in a way which facilitates later assessment or analysis, if required. This MS may also include methods for the Stage 1 and 2 geoarchaeological assessment (see below).

1.7.5.4 Early input should also include recommendations on core locations from a geoarchaeologist. Typically, this process involves close collaboration with the SI team. Archaeological input into geotechnical core locations can allow for the greatest insights into the palaeolandscape. Round-table discussions and the review of seismic profiles tends to be a conducive method of allowing engineering and archaeological requirements to be taken into consideration when micro-siting geotechnical cores.

1.7.5.5 Following the collection of geotechnical cores, it is recommended that they undergo a staged program of geoarchaeological assessment and analysis as required. This is the primary means of ground-truthing the potential identified in this report, and of mitigating impacts to remains. The requirement for each stage of geoarchaeological assessment is determined by the results of the previous stage. In brief the process is as follows:

- Stage 1: Geoarchaeological review of core logs: This stage involves a desk-based assessment of the geotechnical core logs performed by a professional geoarchaeologist in order to determine which cores may be of interest. The selected cores will then be recommended for further study (Stage 2). Stage 1 assessment requires all cores to be recorded such that sediments that may be of archaeological interest can be identified. The scope of any further work will be agreed by the Applicant and the AC before proceeding to the next stage of assessment. If no further work is recommended a final report will be produced by the Archaeological Contractor.

- Stage 2: Geoarchaeological recording: This stage involves further study of the cores that may be of archaeological interest identified in Stage 1 in order to identify archaeological potential. The cores will be physically assessed by a geoarchaeologist who will confirm the sediments present within the cores and determine their archaeological potential and make recommendations for any suitable cores to be assessed further (Stage 3). At this point a report will be produced presenting the results of the Stage 1 and 2 analyses, recommending further study if necessary, and methodologies for any further work. The scope of further work will be agreed by the Applicant and the AC. If no further work is recommended, a final report will be produced by the Archaeological Contractor.
- Stage 3: Geoarchaeological assessment: This stage involves taking samples from the cores with archaeological potential identified in Stage 2. The samples will be analysed to determine the age and the value surviving paleoenvironmental material contained within the samples. The aims for the palaeoenvironmental analysis included establishing the preservation, diversity, and quantity of palaeoenvironmental material for the purpose of better characterising its origin environment. Any suitable material can be recommended for further study (Stage 4) if necessary. A report for the results of the Stage 3 analysis will be produced, it will also outline whether further analysis is necessary or will state if no further work is recommended.
- Stage 4 and 5: Geoarchaeological analysis and publication: This stage involves further, more detailed analysis of core samples. A report will be produced after this Stage including the results of all previous work, core location maps, sediment sequences, 2D and 3D images of the cores where necessary. The report will discuss the interpretation of palaeoenvironments in detail based on analysis of the cores and present all relevant information gathered during the desk-based assessments. The work will be undertaken to publication standard. The report will be forwarded to the RA, who will submit it to the Applicant and the AC.

1.7.5.6 This work should be undertaken by a trained geoarchaeologist. Each stage should inform the scope of the next, and work may cease at any point where no recommendations for further work are made. This would be the case if, for example, cores were determined to hold no geoarchaeological potential at the end of Stage 2.

1.7.5.7 This geoarchaeological assessment and analysis should aim to deliver conclusions on the prehistoric archaeological and palaeoenvironmental remains within the area. Further mitigation may be required based on the results of this assessment. The geoarchaeological work should follow guidance set out within Gribble and Leather 2011.

1.7.5.8 The use of an appropriate PAD such as the Crown Estates Protocol for Archaeological Discoveries: Offshore Renewables Projects also provides mitigation for prehistoric and palaeoenvironmental remains.

1.7.6 Finds and conservation

1.7.6.1 Material of anthropogenic origin that may be identified in the course of Mona Offshore Wind Project will be recovered by the Archaeological Contractor or, where recovery is impracticable, recorded. All finds will be recorded and significant objects (‘special finds’) in three dimensions using a sequence of unique numbers.

1.7.6.2 Finds and other items of archaeological interest recovered offshore in the course of investigation are the property of the Crown Estate as the landowner, with the exception of all human remains and items that are 'wreck' for the purposes of the Merchant

Shipping Act 1995. The Applicant will seek permission from the landowner to donate finds to an appropriate Museums Service prior to depositing the archive.

1.7.6.3 In the event of the discovery of items that fall under the Treasure Act 1996 (as amended), the Contractor will immediately notify the RA, who will notify the District Coroner within 14 days. The Developer and the AC will be notified as soon as possible. Items falling under the Treasure Act (as amended) will be removed from the site by the Archaeological Contractor and stored in a secure location, pending a decision by the Coroner.

1.7.6.4 Subject to these legal requirements and to the agreement reached with the Museum regarding selection, retention and disposal of material, the Archaeological Contractor will retain all recovered objects unless they are undoubtedly of modern or recent origin. The presence of modern objects will, however be noted.

1.7.6.5 Any finds and environmental samples will be processed according to professional standards for finds analysis, environmental sampling and archive preparation, and in accordance with the Chartered Institute of Archaeologists' Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (CIfA, 2014b).

1.7.6.6 Finds will be primarily conserved, bagged and boxed in accordance with guidelines set out in the United Kingdom's Institute for Conservation's Conservation Guidelines No 2 (ICON, 1984). In consultation with the Applicant and the AC, the RA will advise on the implementation of passive conservation for smaller objects pending more detailed conservation strategies. The Applicant will also make provision for a professional conservator to undertake a conservation assessment of assemblages, including recommendations and timescales for the conservation of the object.

1.7.6.7 Specialist work approved by the Applicant and the AC on metalwork, bone (including worked bone, human remains and other organic remains), industrial waste, ceramic material, glass and lithic material will be carried out by suitable Archaeological Contractors, monitored by the RA.

1.7.6.8 In the event of the discovery of unexpected, unusual or extremely fragile and delicate objects and deposits, such as waterlogged wood, the RA, the Applicant and the AC will be notified immediately. Additional work required to recover, record, analyse, conserve and archive such objects and deposits will be agreed with the AC.

Human remains

1.7.6.9 In the event of the discovery of any confirmed human remains, the Construction Contractor or Archaeological Contractor will immediately inform the RA. The RA will inform the Applicant, the AC, and where appropriate the Coroner and the Police.

1.7.6.10 It is proposed that any such remains will be left in situ until the Applicant, the Coroner and the AC have been informed. Where development will unavoidably disturb them they will be fully recorded, excavated and removed from the site subject to compliance with the relevant Ministry of Justice Licence for such activities which will be obtained by the RA.

1.7.6.11 The final placing of human remains following analysis will be subject to the requirements of the Ministry of Justice Licence.

Aviation material

1.7.6.12 The majority of aircraft wrecks are military and so fall under the legal protection of the Protection of Military Remains Act 1986. Archaeological Contractors should refer to guidance:

- Collaborative Offshore Wind Research into the Environment (COWRIE) Historic Environment Guidance (Wessex Archaeology, 2007).
- Draft Interim Guidance on the use of the Protocol for Reporting Finds of Archaeological Interest in relation to Aircraft Crash Sites at Sea (Wessex Archaeology, 2008)
- Military Aircraft Crash Sites: Archaeological guidance on their significance and future management (English Heritage, 2002).

1.7.6.13 Any finds that are suspected of being military aircraft will be reported immediately to the RA. The Applicant will be informed as well as the Service Personnel and Veterans Agency (SPVA: Joint Casualty and Compassionate Centre [JCCC] – SO3 Historic Casualty Casework). The RA should seek specialist advice for the identification of aircraft remains where necessary.

1.7.6.14 Any subsequent actions will be guided by Crashed Military Aircraft of Historical Interest: Licensing of Excavations in the UK – Guidance Notes for Recovery Groups (MOD and SPVA, 2007) and by advice received from SPVA. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately in accordance with paragraph 14 of Guidance Notes for Recovery Groups.

1.8 Reporting and archiving

1.8.1 Overview

1.8.1.1 The Welsh National Marine Plan SOC_05: Historic Assets states that "*opportunities to enhance historic assets are encouraged*" and the Marine Policy Statement (MPS) states that "*opportunities should be taken to contribute to our knowledge and understanding of our past by capturing evidence from the historic environment and making this publicly available, particularly if a heritage asset is to be lost*" (paragraph 2.6.6.3 of MPS), the project recognises that any future geophysical and geotechnical surveys undertaken will produce new archaeological data and understandings of the historic marine environment of the area. The results of these investigations will ultimately be made publicly available. This commitment (set out within Volume 2, Chapter 9: Marine archaeology of the Environmental Statement) will be satisfied by reporting, deposition of reports through the OASIS system and archiving of the project. In addition, should the results warrant it, publication will be undertaken.

1.8.2 OASIS

1.8.2.1 In late 2020 the Online Access to the Index of Investigations (OASIS) version V was launched by the Archaeological Data Service (ADS). OASIS is an online form which allows for archaeological investigations to be reported to regional HERs and national heritage bodies. The system also allows for reports to be shared for public release through the ADS library. Reporting through OASIS has been incorporated within this WSI, in line with best practice.

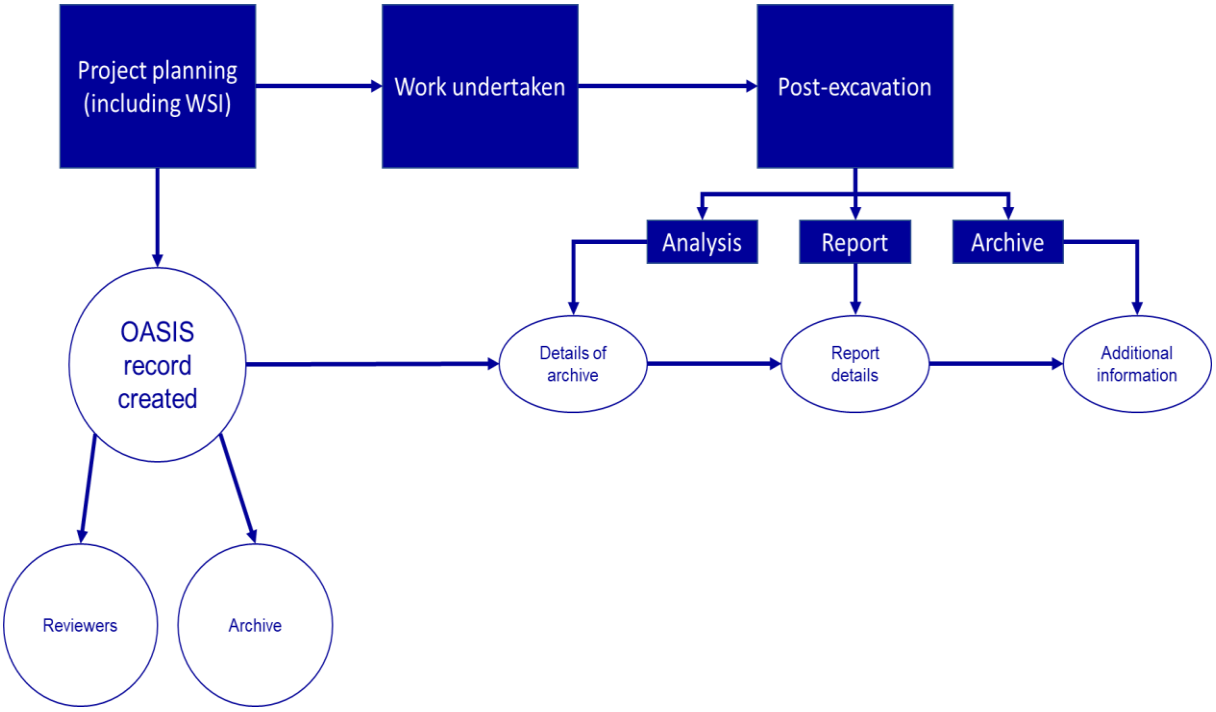

Figure 1.8: OASIS procedure.

1.8.2.2 In contrast to previous iterations of OASIS, OASIS V is a new, flexible system that is kept live throughout the course of a project. An overview of the new system is set out in Figure 10. The new system recommends that an overarching OASIS record be established at project inception (for example on receipt of marine licenses and production of a WSI).

1.8.2.3 An OASIS record will therefore be set up following consent, to notify the relevant authorities of future work that is taking place. The Developer must then ensure that an archaeological report is submitted to NRW/MMO, Cadw, Historic England following completion of any survey and subsequent investigation. The contents of this report must be agreed and accepted by the AC, NRW and MMO. The Applicant must then ensure that a copy of the agreed archaeological report is submitted through the OASIS form within 2 weeks of acceptance by the relevant AC, NRW and the MMO. Sign off on the OASIS record will be by the AC who is responsible for administering the OASIS reporting system. The Applicant should notify NRW and the MMO that the OASIS report has been submitted within 2 weeks of the submission.

1.8.3 Reporting

1.8.3.1 Reports will be prepared in accordance with the guidance provided in the relevant CIfA Standard and Guidance available on the Cifa website (http://www.archaeologists.net/codes/cifa) and with reference to any other activity or analysis specific guidance. Reports will also satisfy all requirements set out within the relevant MS covering the work package.

1.8.3.2 The timetable for depositing archives with the receiving institution after completion of the post-fieldwork programme will be set out in the relevant MS.

1.8.3.3 In the event that little of significance is found during the course of the scheme construction, a final report on the investigative work will be prepared by the Archaeological Contractor within six weeks of completion of all construction.

1.8.3.4 If significant archaeological sites and finds are recorded then this final report will be preceded by the submission to the RA by the Archaeological Contractor(s) of investigation reports following the completion of fieldwork.

1.8.3.5 The Archaeological Contractor will also be required to produce an assessment report which will establish the value of the recorded archaeology and provide a costing for the post-excavation analysis, publication and archiving (including deposition of archive).

1.8.3.6 Reports are expected to detail the work undertaken and the archaeological evidence encountered. They should discuss the importance of the results including their potential contribution to archaeological knowledge and understanding, including relevant research frameworks.

1.8.3.7 In accordance with guidance issued by the Crown Estate (2021) reports will typically include:

- A non-technical summary
- The aims and methods of the work
- The results of the work including finds and environmental remains
- A statement of the potential of the results
- An explanation of how this work is relevant to the objectives and research agendas from applicable local and national archaeological research frameworks
- Proposals for further analysis and publication
- Illustrations and appendices to support the report.

1.8.3.8 Where appropriate the report should provide recommendations for further assessment and/or analysis requirements.

1.8.3.9 The Applicant will provide a digital (pdf) copy of each report to the AC, NRW and the MMO (as appropriate) following survey completion.

1.8.3.10 Decisions regarding the level of post-excavation work, if required, will be taken following submission of investigation reports and consultation by the Developer and the RA with the AC.

1.8.3.11 Following the production and acceptance of archaeological reports they will be deposited with the relevant repositories, including the NRHE and RCAHMW, by submitting an OASIS form with a digital copy of the report.

1.8.4 Publication

1.8.4.1 In consultation with the Applicant and the AC, the RA will ensure that the results of important archaeological investigations undertaken in connection with the project will be published in an integrated manner. Publication media and all publication matters will be discussed and agreed in advance with the Applicant and AC.

1.8.5 Archiving

1.8.5.1 Archive planning will be included within detailed MSs for each activity undertaken. Archiving will follow best practice as laid out within:

- Brown, D. 2011. Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation. Archaeological Archives Forum.

- CIfA. 2020. Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives
- The Crown Estate. 2021. Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (section 13.5: Archiving).

1.8.5.2 The AC will be notified of any archaeological investigation in advance of fieldwork and any specific requirements relating to the preparation and deposition of project archives will be accommodated as appropriate.

1.8.5.3 Where there is the likelihood of any archaeological fieldwork, the RA will contact an appropriate receiving institution to discuss the intended fieldwork and seek its agreement to accept the site archive for long-term storage and curation. The RA will consult the receiving institution with regard to its policy on the selection, retention and disposal of excavated material, and to confirm the requirements in respect of the format, presentation and packaging of archive records and materials. A museum Accession Number will also be sought on each occasion. For offshore digital data, it may be appropriate to archive this with a Marine Environment Data and Information Network (MEDIN) Data Archive Centre (DAC).

1.8.5.4 Project archives, including written, drawn, photographic and material elements (together with a summary of the contents of the archive) will be prepared and deposited by the RA in accordance with the requirements of the receiving Museum, repository or digital archive.

1.8.5.5 Written, drawn and photographic archives will be compiled to a standard that allows for the publication of a summary report. Written archives will be on clean, stable materials, and will be suitable for photocopying. The materials used will be of the standard recommended in Guidelines for the Preparation of Excavation Archives for Long-term Storage (Walker, 1990).

1.8.5.6 Born-digital records, including digital photographs, will be stored and deposited in accordance with guidelines issued by the receiving repository, CIfA (2023), Historic England (2015), and the Archaeological Data Service (2023).

1.8.5.7 The timetable for depositing archives with the receiving repository after completion of the post-fieldwork programme will be agreed with the Applicant and AC.

1.8.5.8 On completion of the scheme, an OASIS form will be produced, and copies of all archaeological reports will be attached as data files. Notification of the completion of the OASIS form will be sent to the AC and NRW and/or the MMO (where appropriate).

1.8.5.9 The costs of archiving (whether digital, paper or object) will be met by the Applicant. Tenders or costings by contractors for work packages should include provision for the preparation and deposition of the expected archive.

1.9 References

Archaeological Data Service (2023). Digital Archiving: Guides to Good Practice. Available at: https://archaeologydataservice.ac.uk/help-guidance/guides-to-good-practice/ Accessed September 2023.

Brooks AJ, Bradley SL, Edwards RJ and Goodwyn N (2011) The palaeogeography of Northwest Europe during the last 20,000 years. Journal of Maps, 573-587.

Brown, D. (2011). Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation. Archaeological Archives Forum.

Cadw (2004) The Research Agenda for Wales: Maritime and Coastal Archaeology.

Cadw (2011). Conservation Principles for the Sustainable Management of the Historic Environment. Available at: https://cadw.gov.wales/sites/default/files/2019-05/Conservation_Principles%20for%20the%20sustainable%20managment%20fo%20the%20historic%20environment%20of%20Wales.pdf. Accessed September 2023.

Chartered Institute for Archaeologists (CIfA) (2014, updated 2022). Code of Conduct; Professional Ethics in Archaeology. Available at: https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2022.pdf. Accessed September 2023.

CIfA (2014a). Standard and Guidance for Archaeological Watching Briefs. Available at: https://www.archaeologists.net/sites/default/files/CIfASGWatchingbrief.pdf. Accessed September 2023.

CIfA (2014b). Standard and guidance for the collection, documentation, conservation and research of archaeological materials. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GFinds_2.pdf. Accessed September 2023.

CIfA (2014, updated 2020) Standard and Guidance for Historic Environment Desk Based Assessment. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf. Accessed September 2023.

Chartered Institute for Archaeologists (CIfA). (2023) Dig Digital. Available at: https://www.archaeologists.net/digdigital Accessed on: 10 March 2023.

Coastal and Offshore Archaeological Research Services (COARS) (2023) Mona and Morgan Offshore Wind Farm Stage 1 Geoarchaeological Assessment. Report for EnBW and bp.

The Crown Estate (2014). Offshore Renewables Protocol for Archaeological Discoveries. Available at: https://www.thecrownestate.co.uk/media/1782/ei-protocol-for-archaeological-discoveries-offshore-renewables-projects.pdf. Accessed September 2023.

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

English Heritage (now Historic England) (1998). Identifying and protecting Palaeolithic remains: Archaeological Guidance for Planning Authorities and Developers. London: English Heritage.

English Heritage (now Historic England) (2002). Military aircraft crash sites: Archaeological guidance on their significance and future management. Available at: https://historicengland.org.uk/images-books/publications/military-aircraft-crash-sites/milaircsites/. Accessed September 2023.

English Heritage (now Historic England) (2008). Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment. Available at:

https://historicengland.org.uk/images-books/publications/conservation-principles-sustainable-management-historic-environment/conservationprinciplespoliciesandguidanceapril08web/. Accessed September 2023.

English Heritage (now Historic England) (2013). Marine Geophysics Data Acquisition, Processing and Interpretation, Guidance Notes. Available at: https://historicengland.org.uk/images-books/publications/marine-geophysics-data-acquisition-processing-interpretation/mgdapai-guidance-notes/. Accessed September 2023.

Fitch, S., Gaffney, V., Ramsey, E., and Kitchen, E. (2011) West Coast Palaeoloandscapes Survey. Online, Available at: https://www.dyfedarchaeology.org.uk/lostlandscapes/WCPStechnical.pdf. Accessed September 2023.

Gribble, J. and Leather, S. (2011). Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. Commissioned by COWRIE Ltd (project reference GEOARCH-09). Available at: https://www.historicenvironment.scot/media/2376/2011-01-offshore-geotechnical-investigations-and-historic-environment-analysis-guidance-for-the-renewable-energy-sector.pdf. Accessed September 2023.

Groom, P. (in prep.). Maritime, in The Archaeological Research Framework for Wales.

Institute of Conservation (ICON) (1984). Environmental Guidelines for the Permanent Storage of Excavated Material from Archaeological Sites. Conservation Guidelines No. 3, ICON.

IEMA (2016) Environmental Impact Assessment. Guide to Delivering Quality Development. Available: https://www.iema.net/download-document/7014. Accessed September 2023.IEMA, IHBC and CIfA (2021) Principles of Cultural Heritage Impact Assessment in the UK. Available: ttps://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.pdf. Accessed August 2023.

IFA Wales/Cymru (2008). The Research Framework for the Archaeology of Wales. Available at: https://www.archaeoleg.org.uk/index.html. Accessed September 2023.

Jackson DI, Jackson AA, Evans D, Wingfield RTR, Barnes RP, Arthur MJ (1995) United Kingdom Offshore Regional Report: The geology of the Irish Sea. British Geological Survey.

Joint Nautical Archaeology Policy Committee (JNAPC) (2006). Code of Practice for Seabed Development.

Mellett., C, Long, D, Carter,G, Chiverrell, R &Van Landegham, K. (2015) Geology of the seabed and shallow subsurface: The Irish Sea. British Geological Survey Commissioned Rep. Accessed June 2022.

Ministry of Defence (MOD) and Service and Personnel and Veterans Agency (SPVA) (2007). Crashed Military Aircraft of Historical Interest: Licensing of Excavations in the UK. Guidance Notes for Recovery Groups.

Ransley, J., Sturt, F., Dix, J., Adams, J., and Blue, L. (2013). People and The Sea: A Maritime Archaeological Research Agenda for England. York: Council for British Archaeology.

Research Frameworks (2023). The North West England Regional Research Framework. Available at: https://researchframeworks.org/nwrf/. Accessed September 2023.

Standing Conference of Archaeological Unit Managers (SCAUM) 2007). Health and Safety in Field Archaeology: Manual, SCAUM/FAME.

UK Government (1974). Health and Safety at Work Act 1974 c. 37. Available at: https://www.legislation.gov.uk/ukpga/1974/37/contents. Accessed July 2023.

UK Government (1999). Management of Health and Safety at Work Regulations 1999 no. 3242. Available at: https://www.legislation.gov.uk/uksi/1999/3242/contents. Accessed September 2023.

Walker, K. (1990). Guidelines for the preparation of excavation archives for long-term storage, ICON.

Welsh Government (2017) Planning Policy Wales Technical Advice Note 24: The Historic Environment. Available: https://www.gov.wales/sites/default/files/publications/2018-09/tan24-historic-environment.pdf. Accessed September 2023.

Welsh Government (2020) Managing the Marine Historic Environment of Wales. Available at: https://www.gov.wales/sites/default/files/consultations/2019-03/managing-the-marine-historic-environment-of-wales-consultation-document_0.pdf. Accessed September 2023.

Wessex Archaeology for The Crown Estate. (2021) Archaeological Mitigation for Offshore Wind Farms: Model Clauses for Written Schemes of Investigation. Available: https://www.thecrownestate.co.uk/media/3917/guide-to-archaeological-requirements-for-offshore-wind.pdf. Accessed October 2023.

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

Wessex Archaeology (2008). Aircraft Crash Sites at Sea: A Scoping Study. Available at: https://historicengland.org.uk/research/results/reports/8331/AircraftCrashSitesatSea_AScopingStudy. Accessed September 2023.

Wood G (2022) Technical File Note Preliminary Ground Model Morgan & Mona Windfarm Development Irish Sea. Report for EnBW and bp.

Appendix A: Gazetteer of potential anomalies within the Mona marine archaeology study area

ID	Location	Potential	Description	Name	UKHO	NRHE	NMRW	L	W	H	X	Y
Mona_0002	Cable Corridor	High	Potential wreck		99231			36.9	24.2	0.8	444699.0	5936231.0
Mona_0009	Cable Corridor	High	Wreck	*Ardlough*	8239	1004768		86.7	31.6	13.3	444396.3	5937516.9
Mona_0014	Cable Corridor	High	Potential wreck					14.9	15.8	0.5	436407.3	5935691.7
Mona_0016	Cable Corridor	High	Potential wreck					18.5	5.6	0.6	435778.6	5934819.7
Mona_0030	Cable Corridor	High	Potential wreck					8.3	3.9	2.4	435890.5	5937670.3
Mona_0031	Cable Corridor	High	Potential wreck					11.8	3.8	0.5	438516.7	5935692.4
Mona_0037	Cable Corridor	High	Potential wreck					8.8	5.3	2.6	436239.1	5938033.9
Mona_0040	Cable Corridor	High	Wreck					125.0	30.0	1.6	436676.6	5937578.9
Mona_0045	Cable Corridor	High	Wreck	*Sea Gull* (possibly)	7946	909480	272253	38.6	11.2	1.7	434768.9	5937505.8
Mona_0049	Cable Corridor	High	Potential wreck					6.2	6.1	0.8	455141.6	5909212.6
Mona_0067	Cable Corridor	High	Potential wreck		8144		506956	7.8	7.1	1.6	446219.6	5913202.3
Mona_0068	Cable Corridor	High	Potential wreck	*Susie Mo II* (possibly)	91489			16.8	10.2	0.3	455717.1	5908796.2
Mona_0076	Array Area	High	Wreck	*Tijl Uilenspiegel*	7452			29.7	7.6	7	433419.2	5953767.8
Mona_0084	Array Area	High	Wreck		8162	909485	518452	15.8	5.3	2.8	435824.4	5948735.6
Mona_0091	Array Area	High	Wreck		7969	909482	240670	37.1	5.1	5.8	440973.4	5940170.0
Mona_0108	Array Area	High	Potential wreck					93.1	45.7		436254.1	5959800.1
Mona_0110	Array Area	High	Potential wreck					34.8	9.7	1.0	435333.1	5951723.8
Mona_0018	Cable Corridor	Medium	Potential debris					16.7	10.3	1.0	439865.8	5931973.2
Mona_0025	Cable Corridor	Medium	Potential debris					8.0	7.7	0.5	442354.5	5937489.0

ID	Location	Potential	Description	Name	UKHO	NRHE	NMRW	L	W	H	X	Y
Mona_0033	Cable Corridor	Medium	Potential debris					18.1	13.5	0.9	438392.3	5931929.6
Mona_0038	Cable Corridor	Medium	Potential debris					11.5	11.0	0.2	439386.8	5929010.4
Mona_0044	Cable Corridor	Medium	Debris		7959			10.7	1.8	0.9	445694.8	5938210.5
Mona_0048	Cable Corridor	Medium	Potential debris					10.1	4.7	0.6	440139.3	5937112.4
Mona_0057	Array Area	Medium	Anchor					18.1	22.1	1.1	439115.4	5962417.7
Mona_0065	Cable Corridor	Medium	Seabed disturbance					18.6	14.3	0.2	453545.1	5908994.0
Mona_0066	Cable Corridor	Medium	Potential debris					7.8	4.2	0.4	454791.8	5909474.8
Mona_0069	Cable Corridor	Medium	Mound					47.6	14.0	0.6	457913.3	5907677.7
Mona_0080	Array Area	Medium	Unidentified debris					9.1	2.8	2.3	431545.5	5954410.7
Mona_0081	Array Area	Medium	Potential debris					11.5	2.2	0.6	446410.7	5943791.7
Mona_0092	Array Area	Medium	Potential wreck					8.8	1.3	0.5	430376.0	5946260.9
Mona_0102	Array Area	Medium	Potential debris					4.9	3.1	1.4	435869.6	5959476
Mona_0109	Array Area	Medium	Mound					16.5	5.4	1.4	434606.8	5954333.8
Mona_0111	Array Area	Medium	Potential debris					12.4	9.6	0.7	450799.2	5942774
Mona_0112	Array Area	Medium	Mound					9.9	4.7	0.4	442619.1	5940823.2
Mona_0113	Array Area	Medium	Wooden sailing ship					59.1	27.3		450956.5	5944683.9
Mona_0001	Cable Corridor	Low	Potential debris					1.7	1.6	0.2	436179.6	5937551.6
Mona_0003	Cable Corridor	Low	Potential debris					2.6	1.7	0.8	443785.4	5935513.1
Mona_0004	Cable Corridor	Low	Potential debris					3.6	3.0	1.4	441465.6	5937188.9
Mona_0005	Cable Corridor	Low	Potential debris					6.5	0.3	0.7	438879.8	5938960.7
Mona_0006	Cable Corridor	Low	Potential debris					1.0	0.4	0.3	434784.6	5939824.2
Mona_0007	Cable Corridor	Low	Potential debris					5.8	2.8	0.3	434784.6	5939824.2
Mona_0008	Cable Corridor	Low	Potential debris					1.7	0.5	0.7	445083.4	5938239.0

ID	Location	Potential	Description	Name	UKHO	NRHE	NMRW	L	W	H	X	Y
Mona_0010	Cable Corridor	Low	Fishing gear					13.8	1.0	0.8	438147.4	5932919.2
Mona_0011	Cable Corridor	Low	Likely geological					3.1	1.1	0.3	443912.1	5937095.7
Mona_0012	Cable Corridor	Low	Likely geological					8.3	1.6	0.1	443602.7	5937566.8
Mona_0013	Cable Corridor	Low	Potential debris					1.5	1.4	0.4	438998.6	5930610.0
Mona_0015	Cable Corridor	Low	Potential debris					2.0	0.3	0.3	439304.2	5939111.3
Mona_0017	Cable Corridor	Low	Potential debris					2.8	0.8	0.3	438863.0	5932853.4
Mona_0019	Cable Corridor	Low	Likely geological					5.6	0.8	0.0	442353.8	5917060.8
Mona_0020	Cable Corridor	Low	Potential debris					3.7	2.3	0.1	441579.4	5917421.4
Mona_0021	Cable Corridor	Low	Potential debris					4.7	0.2	0.4	440885.4	5932651.2
Mona_0022	Cable Corridor	Low	Linear feature					11.3	0.1	0.0	436873.0	5935782.9
Mona_0023	Cable Corridor	Low	Potential debris					6.6	5.4	0.8	438590.7	5934354.7
Mona_0024	Cable Corridor	Low	Potential debris					35.3	5.4	0.0	438774.6	5934225.8
Mona_0026	Cable Corridor	Low	Likely geological					2.0	0.6	0.3	443103.1	5935263.6
Mona_0027	Cable Corridor	Low	Potential debris					4.2	0.8	0.2	439458.5	5938008.6
Mona_0028	Cable Corridor	Low	Potential debris					3.1	0.4	0.1	435213.9	5940774.6
Mona_0029	Cable Corridor	Low	Potential debris					1.3	0.7	0.7	438105.3	5938819.9
Mona_0032	Cable Corridor	Low	Potential debris					4.0	1.0	0.5	440014.2	5934652.6
Mona_0034	Cable Corridor	Low	Potential debris					3.2	2.7	0.8	441513.1	5938976.2
Mona_0035	Cable Corridor	Low	Likely geological					11.5	1.9	1.6	437952.8	5935278.5
Mona_0036	Cable Corridor	Low	Potential debris					3.0	1.0	0.5	435054.6	5937201.0
Mona_0041	Cable Corridor	Low	Likely geological					1.7	0.7	0.1	435938.5	5935538.8
Mona_0042	Cable Corridor	Low	Potential debris					2.6	2.9	0.2	435911.1	5935507.8
Mona_0043	Cable Corridor	Low	Likely geological					3.9	3.1	0.6	440542.6	5935222.3

ID	Location	Potential	Description	Name	UKHO	NRHE	NMRW	L	W	H	X	Y
Mona_0046	Cable Corridor	Low	Linear feature					5.9	0.2	0.2	439643.2	5938089.2
Mona_0051	Cable Corridor	Low	Chain, cable, or rope					17.6	0.4	0.1	453539.2	5910147.4
Mona_0052	Cable Corridor	Low	Fishing gear					15.2	0.1	0.2	448998.9	5911915.4
Mona_0053	Array Area	Low	Likely geological					3.8	4.1	0.6	439243.3	5964150.5
Mona_0053	Cable Corridor	Low	Potential debris					3.9	0.2	0.3	456183.4	5908968.1
Mona_0054	Cable Corridor	Low	Likely geological					2.2	1.6	0.2	452084.9	5911107.2
Mona_0055	Cable Corridor	Low	Potential debris					7.2	0.2	0.2	455154.5	5908377.3
Mona_0056	Array Area	Low	Chain, cable, or rope					89	0.4	0.1	440102.2	5962003.5
Mona_0056	Cable Corridor	Low	Potential debris					6.9	1.7	0.1	457859.7	5907707.1
Mona_0057	Cable Corridor	Low	Potential debris					1.4	1.7	0.3	448904.2	5912061.1
Mona_0058	Array Area	Low	Potential debris					5.7	2.8	1.2	441044.3	5960071.5
Mona_0058	Cable Corridor	Low	Chain, cable, or rope					32.5	0.3	0.1	457391.9	5908212.6
Mona_0059	Array Area	Low	Likely geological					3.5	1.5	1.4	437665	5961357.8
Mona_0059	Cable Corridor	Low	Chain, cable, or rope					64.6	0.3	0.0	457190.3	5908275.0
Mona_0060	Array Area	Low	Fishing gear					18.6	2	0.2	443262.3	5953708.4
Mona_0061	Cable Corridor	Low	Potential debris					8.7	0.8	0.1	449357.5	5911558.8
Mona_0062	Array Area	Low	Likely geological					29.6	3.5	1.9	432607.7	5960196.9
Mona_0062	Cable Corridor	Low	Potential debris					2.3	0.6	0.3	445860.2	5914056.1
Mona_0064	Cable Corridor	Low	Potential debris					4.5	1.9	0.1	453164.0	5910543.1
Mona_0065	Array Area	Low	Linear feature					22.8	0.1	0.1	436153.6	5956883.3
Mona_0066	Array Area	Low	Linear feature					4.1	0.8	0.1	433238.3	5957837.2
Mona_0067	Array Area	Low	Linear feature					19.9	0.8	0.2	430787.7	5958799.3
Mona_0068	Array Area	Low	Unidentified debris					5.5	1.5	0.3	439943.1	5951162.2

ID	Location	Potential	Description	Name	UKHO	NRHE	NMRW	L	W	H	X	Y
Mona_0069	Array Area	Low	Linear feature					14.3	0.8	0.3	443432.5	5948646.5
Mona_0070	Array Area	Low	Unidentified debris					2.6	1.4	1.4	438825.4	5951842.4
Mona_0073	Array Area	Low	Potential debris					3.4	0.8	0.3	435984.8	5952664.9
Mona_0074	Array Area	Low	Potential debris					2.2	1.3	0.4	436408.4	5952122.7
Mona_0075	Array Area	Low	Likely geological					3.1	0.9	0.3	434563.7	5953111.3
Mona_0078	Array Area	Low	Linear feature					19.5	0.1	0.3	445536	5945025.6
Mona_0079	Array Area	Low	Fishing gear					20	0.1	0.1	430954.3	5955226
Mona_0082	Array Area	Low	Linear feature					12.6	0.3	0.4	442140	5944942.9
Mona_0083	Array Area	Low	Potential debris					5.7	0.4	0.5	447401.2	5940723.4
Mona_0085	Array Area	Low	Likely geological					23	6.3	1.7	442029.2	5944403.6
Mona_0086	Array Area	Low	Potential debris					2.6	0.6	0.4	431309.4	5951695.3
Mona_0088	Array Area	Low	Likely geological					3.9	1.1	0.3	431749.4	5948889.5
Mona_0089	Array Area	Low	Likely geological					13.4	0.6	0.4	441088.7	5941414.9
Mona_0090	Array Area	Low	Potential debris					0.6	0.7	0.5	432251.3	5946628.3
Mona_0093	Array Area	Low	Linear feature					10.3	0.4	0.1	434750.3	5942491.9
Mona_0094	Array Area	Low	Potential debris					2.8	0.6	0.1	433784.3	5943463.7
Mona_0101	Array Area	Low	Linear feature					23.9	0.8	0.1	445136.8	5952944.8
Mona_0106	Array Area	Low	Potential debris					3.3	0.8	0.4	435616.7	5961888.1
Mona_0114	Array Area	Low	Likely geological					60.7	18.5		447444.3	5939716.4
Mona_0115	Array Area	Low	Likely geological					8	3.7		447964.5	5939981.3

2 Protocol for Archaeological Discoveries (PAD)

2.1 Introduction

2.1.1.1 This Protocol for Archaeological Discoveries (PAD) sets out the procedure for reporting discoveries of potential archaeological interest made during the course of construction, operations and maintenance and decommissioning activities associated with Mona Offshore Wind Project.

2.2 Aims

2.2.1.1 The aim of the PAD is to reduce any adverse effects of Mona Offshore Wind Project upon the historic environment by enabling people working on the project to report their finds in a manner that is both convenient to their every-day work and effective with regard to curatorial requirements.

2.2.1.2 The archaeological finds made during these works are important because they shed light on past human use of the landscape, sea and seabed. The information that such discoveries bring to light can help archaeologists to better understand what happened in the past, and therefore to better protect those aspects of our history and pre-history that should be conserved on behalf of future generations.

2.2.1.3 The Protocol that will be used is based on the Protocol for Archaeological Discoveries (PAD) for Offshore Renewables Projects introduced by The Crown Estate (The Crown Estate, 2014).

2.2.1.4 The Applicant will employ a Retained Archaeologist (RA) to provide archaeological consultancy and to liaise with and report as appropriate to the Contractors, the Applicant and the Archaeological Curator (AC).

2.2.2 Roles and responsibilities within the PAD

2.2.2.1 For a full description of roles and responsibilities in relation to the Mona Offshore Wind Project and marine archaeology see J.18: Outline Offshore WSI of the Environmental Statement. Roles that are specific to the PAD only are described below.

Site champion

2.2.2.2 The Site Champion is the person formally appointed by the Applicant to be directly responsible for implementation of the PAD and producing reports arising from a particular activity location. The Site Champion could be a Vessel Master, a Construction Foreperson or any other person in a position to control the immediate works.

Nominated contact

2.2.2.3 The Applicant's Nominated Contact is the formal point of contact for all matters relating to the PAD between the Applicant, its subcontractors, the Site Champions, RA, the AC, and the Regulator. The Nominated Contact could be Mona Offshore Wind Project's Environmental Manager, Project Manager or any other coordinator that the Applicant feels is appropriate and effective in acting in this role. It is critical that all parties hold the Nominated Contact's full contact details and that any changes to the Nominated Contact's details are circulated as soon as possible.

2.3 Reporting structure

2.3.1 The PAD has been designed to allow developers to report unexpected finds of archaeological interest made on the seabed during the course of development works. A series of actions is defined for such cases.

2.3.2 The PAD anticipates that discoveries made by project staff are reported to the Site Champion (e.g. Vessel Master or Site Foreman) on their vessel or site, who then reports to the Nominated Contact (the RA is the recommended Nominated Contact).

2.3.2.1 The RA will liaise with the Developer and the AC, along with any additional relevant stakeholders depending on the nature and significance of the find, and planned activities within the area. Additional mitigation may be recommended depending on the nature of the find.

2.3.2.2 Key steps in the reporting process of the PAD are shown in Figure 2.1.

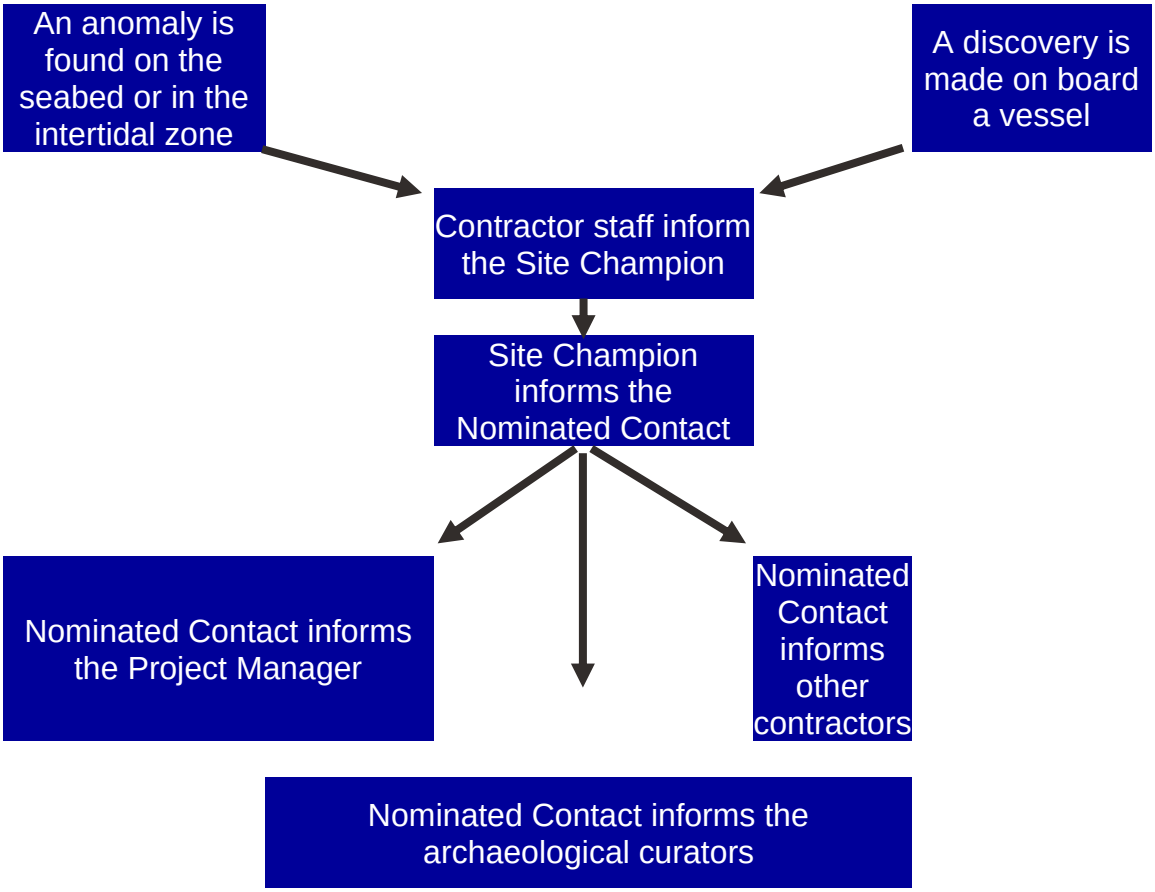

Figure 2.1: Reporting process of the PAD.

2.3.2.3 A summary of the key roles and steps in the PAD process are set out in the figure above.

2.3.2.4 On the vessel or site, the person responsible for reporting anomalies or finds will be the Site Champion. Anomalies or finds will be brought to the attention of the Site Champion by the Contractors or project staff. The Site Champion will inform the Nominated Contact (who can be the RA).

2.3.2.5 The Developer's RA can provide specialist advice on finds identification, assessments of significance, and technical support services relating to the mitigation of the impacts of the project on the historic environment.

2.3.2.6 Protocol for Archaeological Discoveries (The Crown Estate 2014) includes an additional step whereby the report is passed to the Implementation Service who provide additional support on identification and input into mitigation. This Service is run by an archaeological contractor. The RA, who has access to all project datasets and typically has a strong understanding of the archaeological potential of the area, along with specialists in maritime archaeology, is best placed to give this advice. As such there is no need for the inclusion of the additional step of corresponding with the Implementation Service. The 2021 Crown Estate guidance on Archaeological Written Schemes of Investigation, which post-dates the 2014 PAD guidance, indicates that although the 2014 guidance sets out one PAD, others can also be used and further states that the 2014 guidance can be used to 'support the development of a PAD for any offshore wind project (The Crown Estate 2014). The approach set out here is therefore in line with existing guidance.

2.3.2.7 The RA, along with the Developer and their contractors shall draw to the attention of all relevant staff the potential for archaeological material to be found in the course of survey and inform them of the possible importance of such finds.

2.4 Approach to Finds

Legislation

2.4.1.1 It should be noted that if the wreck of an aircraft is encountered it may be automatically protected as a protected place under the terms of the Protection of Military Remains Act 1986 and it is an offence to tamper with, damage, or move the wreck or to remove items.

2.4.1.2 Furthermore, all items of 'wreck' are reportable to the Receiver of Wreck under the terms of the Merchant Shipping Act 1995. Appropriate finds will be reported to the Receiver of Wreck within the required timescales (28 days) by the RA, thereby satisfying this legal requirement.

2.4.1.3 The following guidelines can be used to identify any discovered material and must be referred to when planning appropriate handling and storage. Advice on the identification of finds has been provided following the accepted advice provided by The Crown Estate 2014. Further advice on finds can be sought from the RA.

2.4.1.4 Archaeological material can come in a variety of sizes, shapes and materials. Materials can degrade in different ways so it is important that they are handled with care and that the appropriate handling and storage techniques are applied.

2.4.1.5 Finds are vulnerable to deterioration at all times, whether they are recovered or not. Fragile material, such as wood, can be damaged by the force of passing machinery. It is crucial that all finds be treated carefully and interfered with as little as possible.

2.4.1.6 Leaving finds in situ is the best way to manage them. Once a find is recovered to the surface, it requires conservation which can be difficult and expensive to administer.

2.4.2 Handling and conservation procedures

- Handle all finds carefully
- Photograph all sides of a find with a scale

- Take close up photographs of any markings, glazing, or imagery
- Keep finds wet and ensure the water is changed regularly if biological growth is detected
- Keep finds cool and ideally in the dark
- Keep finds in protective containers where possible
- Label any finds
- Follow the information below on finds storage and contact the RA if further advice is required
- Do not attempt to clean the find by removing any sediment build up, concretion, or marine life
- Do not allow finds to dry out
- Do not handle finds more than necessary.

2.4.3 Advice for specific materials

2.4.3.1 The following materials may be encountered on the seabed or onboard the vessel and as such the following sections provide advice as per The Crown Estate 2014 for the handling and storage of these.

Metal

2.4.3.2 Metal is likely to survive in marine environment, though it may corrode when in water or form concretions of material (a hard mass of material which typically has a mineral matrix, commonly formed around ferrous objects in particular). Typical metal finds might include ingots, ballast, coins, ornaments, tools, weapons, aircraft or ship parts, and personal items. The Crown Estate Guidance for the identification of metals is as follows:

- Iron and steel: The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. In broad terms, iron and steel objects which are covered by a thick amorphous concrete-like coating ('concretion') are likely to be of archaeological interest and should be reported. Pieces of metal sheet and structure may indicate a wreck and should be reported. Specific operational measures are likely to apply in respect of ordnance (cannonballs, bullets, shells) which should take precedence over archaeological requirements. However, discoveries of ordnance may be of archaeological interest, and they should be reported.
- Other metals: Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest. Aluminium objects may indicate aircraft wreckage from World War Two, especially if two or more pieces of aluminium are fixed together by rivets. All occurrences should be reported' and remains of this nature may be subject to the Protection of Military Remains Act 1986. "*Copper and copper alloy (bronze, brass) objects might indicate a wreck, or they may be very old. All occurrences should be reported. Precious metal objects and coins are definitely of archaeological interest because they are relatively easy to date. All occurrences should be reported*" (The Crown Estate 2014).

2.4.3.3 If possible, do not recover metal. It can be difficult and expensive to conserve and some types of site, such as aircraft, are covered by specific legislation which prohibits recovery without appropriate licences.

2.4.3.4 For metals which are lifted, lifting should be carried out carefully and the find should be photographed. All metals should be stored in cool seawater. Different metals should not be stored together. The shape of the concretion can be used to identify the item and as such concretions should not be removed. If the find is too large to cover in seawater, wrap it in soaked material and keep wet. Some metal products e.g. lead, pewter and copper salts can be toxic, so handle with gloves or wash hands thoroughly after contact.

2.4.3.5 Metals can sometimes be identified from the colour of their corrosion. Table 2.1 provides some guidance for the identification of metal.

Table 2.1: Identification of metal.

Metal	Corrosion
Gold	No corrosion.
Silver	White, waxy layers that turn lilac in the light.
Copper/Copper Alloy e.g. Bronze	Dark red/purple/green/blue.
Iron/Steel	Black or rusty with a crust of concretion.
Lead	Grey or white crystals.
Pewter/Tin/Lead Alloy	Grey surface, possibly crystalline, soft or friable.
Aluminium	Little corrosion.

Ceramics

2.4.3.6 Pottery can be made from china, porcelain, terracotta, earthenware and other clay-based materials. Typical finds might include crockery, ornaments, clay pipes, lamps, containers and tableware. Any fragment of pottery is potentially of interest, especially if it is a large fragment. Items which look like modern crockery can be discarded, but if the item has an unusual shape, glaze or fabric it should be reported (The Crown Estate, 2014: 19). Additionally, clay pipes should be reported.

2.4.3.7 Actions to take are to photograph finds with a scale, especially if they have any glazing or markings. Store in saltwater.

Ceramic building material (CBM)

2.4.3.8 Ceramic building material can be in the form of bricks, building blocks, mudbricks, and tile. Bricks and tile can appear unusually shaped. Ceramic building material can be evidence of a ship, or submerged settlement.

2.4.3.9 Bricks with modern proportions and v-shaped hollows (‘frogs’) are of no archaeological interest. Unfrogged, ‘small’, ‘thin’ or otherwise unusual bricks may date back to Medieval or even Roman times and should be reported (The Crown Estate 2014). Occurrences of tile should also be reported.

2.4.3.10 Actions to take are to photograph finds with a scale, especially if they have any glazing or markings on them. Store in saltwater.

Stone

2.4.3.11 Stone has been used by humans for thousands of years and it very durable underwater, making it a common find. There are different types of stone; quartz,

limestone, marble, granite, obsidian, slate, sandstone, and flint. Typical finds might include ballast, anchors, millstones building material, shot, carvings, tools, sculptures, whetstones, flint or stone tools and other personal items.

2.4.3.12 Small to medium size stones that are shaped, polished and/or pierced may be prehistoric axes. All occurrences should be reported. Objects such as axe heads or knife blades made from flint are likely to be of prehistoric date and should be reported. Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported. The recovery of numerous stones may indicate the ballast mound of a wreck, or a navigational cairn. All occurrences should be reported (The Crown Estate 2014).

2.4.3.13 Actions to take are to photograph with a scale and then store in water or wrap in soaked towelling.

Peat and clay

2.4.3.14 Peat is black or brown fibrous soil that formed when sea level was so low that the seabed formed marshy land, for example on the banks of a river or estuary. Peat is made up of plant remains, and also contains microscopic remains that can provide information about the environment at the time it was formed. This information helps us to understand the kind of landscape that our predecessors inhabited, and about how their landscape changed. It can also provide information about rising sea-level and coastline change, which are important to understanding processes that are affecting us today. Prehistoric structures (such as wooden trackways) and artefacts are often found within or near peat, because our predecessors used the many resources that these marshy areas contained. As these areas were waterlogged, and have continued to be waterlogged because the sea has risen, 'organic' artefacts made of wood, leather, textile and so on often survive together with the stone and pottery which are found on 'dry' sites.

2.4.3.15 Fine-grained sediments such as silts and clays are often found at the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea level change. Any discoveries of such material would be of archaeological interest, and their occurrence should be reported (The Crown Estate 2014).

2.4.3.16 Actions to take include that all sediments collected should be stored in a sealed container with seawater and keep cool. Do not try to break apart the deposits.

Faunal remains

2.4.3.17 Skeletal finds and faunal remains can come in the form of bone, ivory, tooth, antler, baleen, tortoiseshell, tusk, or shell. Typical finds might include human or animal remains, personal items such as combs or jewellery, carvings and tool handles.

2.4.3.18 Discoveries of animal bone, teeth and tusks are of archaeological interest because they may date to periods when the seabed formed dry land, and should be reported. Such bones, teeth, tusks etc. may have signs of damage, breaking or cutting that can be directly attributed to human activity. Large quantities of animal bone may indicate a wreck (the remains of cargo or provisions) and should be reported. Human bone is definitely of archaeological interest, and may, if buried and found within territorial waters, be subject to the provisions of the Burial Act 1857. Alternatively, it may be subject to the Protection of Military Remains Act 1986. Any suspected human bone should be reported, and treated with discretion and respect.

2.4.3.19 Objects made out of bone – such as combs, harpoon points or decorative items – can be very old and are definitely of archaeological interest. All occurrences should be reported (The Crown Estate 2014).

2.4.3.20 Actions to take are to consider that skeletal finds are vulnerable to environment change, so if any are recovered, ensure they are photographed with a scale and then immediately submerge in seawater and seal in a suitable container. Change the water if biological growth occurs e.g. algae mould.

Wood

2.4.3.21 Wooden finds could be evidence of a wrecked vessel. Typical wooden finds might include small personal items e.g. tools and bottle corks, or larger finds e.g. ships timbers, furniture, chests, barrels, dwelling posts, and wattle panels.

2.4.3.22 Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest. 'Roundwood' with bark – such as branches – is unlikely to be of archaeological interest, although it may provide paleo-environmental evidence. However, roundwood that has clearly been shaped or made into a point should be reported. Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails – all occurrences should be reported. Objects made out of dark, waterlogged wood – such as bowls, handles, shafts and so on – can be very old and are definitely of archaeological interest. All occurrences should be reported (The Crown Estate 2014).

2.4.3.23 Actions to take are to consider that timber finds are often very fragile and so must be lifted with care. Photograph with a scale. Do not allow the wood to dry out and ensure that it has sufficient support to stop it falling apart and submerge it in seawater. Keep the find in a cool and dark area. Change the water if biological growth is detected e.g. algae or mould. If the find is too large to store in water, try to keep it damp and cool in a darkened area.

Fibre and textiles

2.4.3.24 Fibrous finds are unlikely to survive in marine conditions, but occasionally they do. Typical fibrous finds might include ropes and rigging, weaving, sailcloth, sacks, clothing, basketry, fishing nets etc.

2.4.3.25 Due to the incredibly fragile nature, once any fibrous or textile find has been recovered it must be dealt with quickly. Take photographs with a scale, but do not use flash. Carefully place it in a sealed container. Try to keep it out of the light. If possible, keep the find in its original burial deposit e.g. the sediment it was found in, and seawater. This will help to protect the material.

Plastic etc.

2.4.3.26 In most cases, rubber, plastic, Bakelite and similar modern materials are not of archaeological interest and can be disregarded. One exception is where such materials are found in the same area as aluminium objects and structures, which may indicate aircraft wreckage from World War Two. Such material should be reported (The Crown Estate 2014).

2.4.3.27 Actions to take include to not bend or clean any plastic or rubber finds. Photograph the find with a scale and then store in seawater in a cool and dark area.

Resinous or Mineral Substance

2.4.3.28 These materials include amber, jet, coal, or bitumen. Typical finds might include ornaments, jewellery, beads, sealants or caulking materials, all of which would be of archaeological interest and should be reported.

2.4.3.29 Actions to take are to photograph a find with a scale, and then keep stored in seawater. These finds might appear stable, but if they are not stored properly, they may begin to deteriorate.

Glass

2.4.3.30 Glass artefacts are found on the seabed. Finds may include bottles, beads, panes of glass from ship's windows. Unless obviously modern (beer bottles etc) glass finds should be reported, particularly where it occurs alongside other finds as this may represent a wreck site.

2.4.3.31 Glass is likely to survive in marine conditions, but it does degrade; glass deterioration is usually categorised by leaching, with causes an iridescent pattern to form on the glass, it looks somewhat like an oil slick. It can also begin to flake away.

2.4.3.32 Actions to take are to photograph with a scale before packing carefully to avoid breakage. Ensure it is covered in cool seawater in the dark.

Appendix B: Preliminary Record Form

Protocol for Archaeological Discoveries

Preliminary Record Form: Discoveries on the seabed/on board/in the intertidal zone/on land

Company name			
Vessel/Team Name			
Site/Sea Area Name			
Date			
Time of compiling information			
Name of compiler (Site Champion)			
Name of finder (if different from above)			
Time at which discovery was encountered			
Vessel position at time when anomaly was encountered			
Latitude		Longitude	
Datum (if different from WGS84)			
Original position of the anomaly on the seabed, if known			
Notes on likely accuracy on position stated above:			
How accurate is the position?			
Is the position the original position or has the material been moved by operations?			
Details of circumstances that led to the discovery			
Description of the find / anomaly			
Apparent size /extent of the anomaly			
Details of any find(s) recovered			
Details of any photographs, drawings of other records made of the find(s) e.g. location figure			
Details of treatment or storage of find(s)			
Date and time Nominated Contact informed			
General notes if discovered on the seabed:			
Derived from e.g. Obstacle Avoidance Sonar, Cable Tensiometer?			
Apparent size/ extent of anomaly (length, width, height above seabed)			
Extent of deviation/ route development			
Signed		Date	