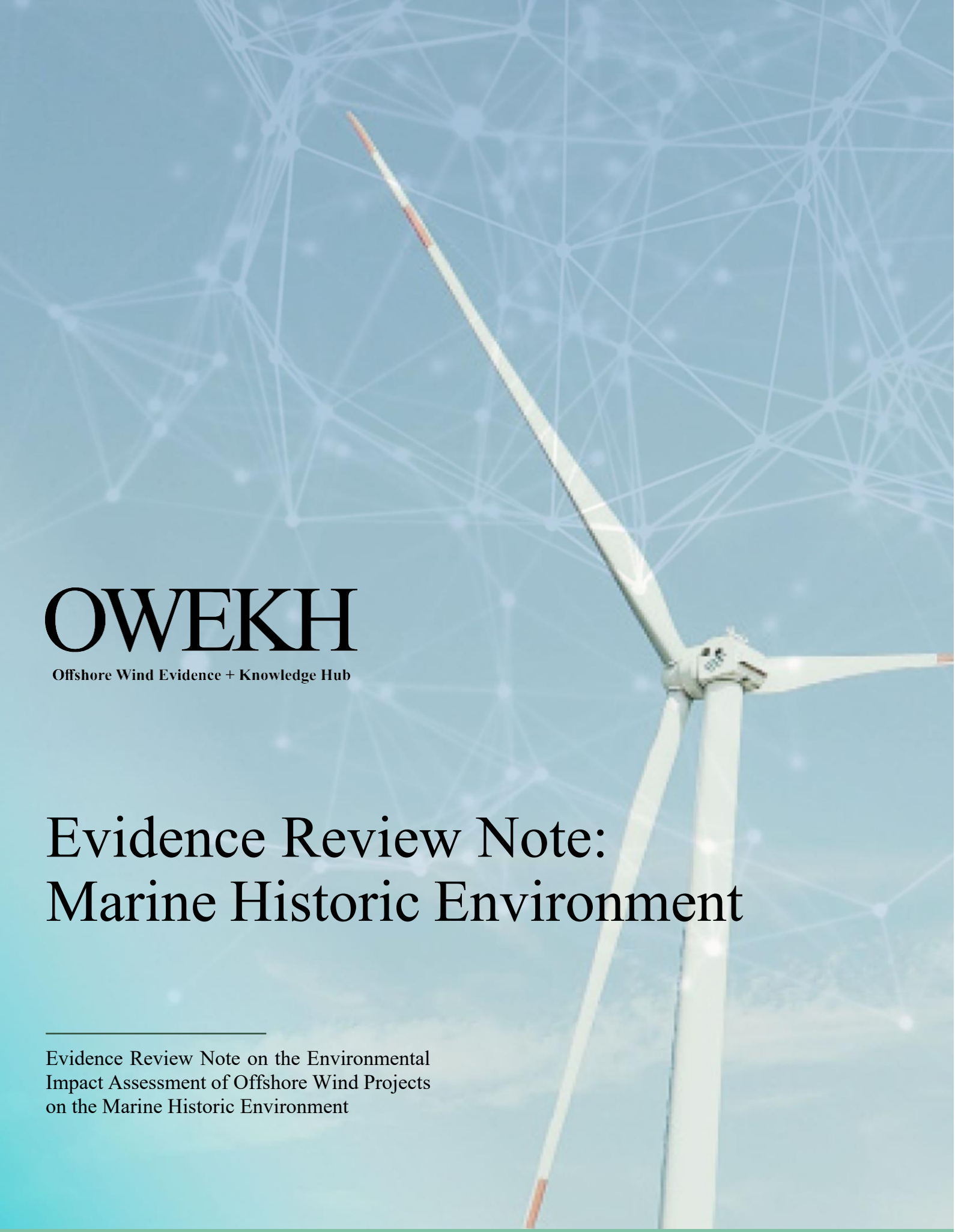

OWEKH

Offshore Wind Evidence + Knowledge Hub

Evidence Review Note: Marine Historic Environment

Evidence Review Note on the Environmental Impact Assessment of Offshore Wind Projects on the Marine Historic Environment

Offshore Wind Evidence + Change Programme

THE CROWN ESTATE

ISEP Impact Assessment

Acknowledgements

This note has been developed by OWEKH's Marine Historic Environment Technical Topic Group (TTG), led by The Crown Estate and Rufus Howard of the Institute of Sustainability and Environmental Professionals (ISEP), with Secretariat support from AtkinsRéalis.

The document reflects the prevailing knowledge and evidence base at the time of publication, developed through open collaboration between practitioners, industry representatives, consultancies and technical experts. It reflects a shared understanding of current challenges and opportunities in relation to impact assessment of offshore wind on the marine historic environment.

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Author's note: Contributions to this document are made in a personal or professional capacity and do not necessarily imply endorsement of the entire document by the contributors or by the contributors' respective organisations.

About OWEKH

The Offshore Wind Evidence Knowledge Hub (OWEKH) is a centralised platform that supports evidence-based decision-making in the offshore wind sector. It brings together stakeholders to share best practice, access data, and apply learning and trusted knowledge, helping to inform development, proportionate impact assessment, policy and planning. Find out more at: owekh.com

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Executive Summary

This Evidence Review Note (ERN) provides comprehensive guidance on assessing the impacts of offshore wind farm (OWF) projects on the marine historic environment. Drawing on evidence from over 76 Environmental Impact Assessments (EIAs), along with input from regulators and heritage professionals, the ERN aims to support more effective, proportionate, and consistent EIAs. It should be read alongside *Evidence Review Note: Environmental Impact Assessment*, which provides complementary guidance on the overarching approach to EIA.

This ERN identifies significant variation in scoping practices, chapter structure, terminology, and impact reporting across OWF projects, hindering comparability and clarity. Despite this, evidence confirms that well-designed mitigation measures have successfully reduced significant adverse impacts to negligible or minor levels in recent projects. To address these challenges and build on good practice, the ERN gives the following recommendations:

- **Standardisation of Scoping**: Adopt a consistent, evidence-based approach to EIA scoping using a three-tier categorisation (Categories A–C) of impacts. This will improve efficiency and focus assessments on likely significant effects.
- **Consistency and Clarity of Reporting**: Use standardised chapter structures and terminology to enhance accessibility and comprehension. Ensure signposting is clear, and aligned with planning policy terminology. This will improve engagement among non-specialist stakeholders.
- **Proportionate Reporting**: Be concise and focus reports on significant effects. Move technical detail such as historic baseline information to appendices. Use digital tools, such as GIS-based maps, interactive visualisations and web-based reporting to enhance clarity and usability.
- **Pre-Application and Pre-Construction Survey Requirements**: Informed by pre-application advice, developers will actively manage risks in their decisions about the extent and resolution of surveys at successive stages of the development process. Use a Design Envelope proportionately, and balance flexibility against the need for understanding among decision-makers, so they can assess risks to the marine historic environment.
- **Monitoring and Enforcement**: Conditions, commitments and requirements secured through planning and consenting must be enforceable and underpinned by robust, standardised monitoring frameworks integrated with CEMPs. Post-consent reporting and archiving must demonstrate that mitigation has been effective, with data deposited in national archives and aligned with national research frameworks.
- **Strategic Approach to Risk Assessment**: Create greater alignment between project-level assessments and wider strategic objectives, including cumulative effects across multiple OWF projects. This will improve efficiency and provide better context for decision-making.

- **Use of Cumulative Effects Assessment (CEA):** Adopt a standard methodology for assessing cumulative impacts on the marine historic environment, particularly for areas of known archaeological sensitivity and repeated development.
- **Acknowledgement of Beneficial Effects**: Offshore wind developments can enhance knowledge of the marine historic environment through survey, investigation, and discovery. Acknowledge and record these positive contributions consistently.

By implementing these recommendations, the offshore wind sector can reduce costs, increase certainty, and streamline the consenting process. Clearer, more consistent and proportionate assessments will strengthen engagement and promote good design. It will ensure the UK's marine heritage is protected along with its ambitions for clean energy growth.

Picture courtesy of Principle Power

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Ben Barden, 2022

List of Abbreviations and Acronyms

Acronym/Name /Abbreviation	Description
AEZ	Archaeological Exclusion Zone
CADW	Historic Environment Service of the Welsh Government
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CES	Crown Estate Scotland
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement (EIA Report in Scotland)
HE	Historic England
HED	Historic Environment Division Northern Ireland
HES	Historic Environment Scotland
IEMA	Institute of Environmental Management and Assessment (now IESP)
IEP	Industry Evidence Program
ISEP	Institute of Sustainability and Environmental Professionals (formerly IEMA)
MDE	Marine Data Exchange
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
NGO	Non-Governmental Organisation
oCEMP	Outline Construction Environmental Management Plan
OWF	Offshore Wind Farm
OWEC	Offshore Wind Evidence and Change Programme
OWEER	Offshore Wind Environmental Evidence Register
OWEKH	Offshore Wind Evidence and Knowledge Hub
oWSI	Outline Written Scheme of Investigation
PAD	Protocol for Archaeological Discoveries
PINS	Planning Inspectorate
RCAHMW	Royal Commission on Ancient & Historical Monuments of Wales
TCE	The Crown Estate
TTG	Technical Topic Group
WSI	Written Scheme of Investigation

Glossary of Terms

Term	Meaning
Cultural Significance	Refers to the 'significance of heritage assets' to provide clear distinction between this and the 'significance of effect'.
Effect	The assessment of the consequence of an impact on a receptor. The effect is the measure that brings together the magnitude of the impact and the heritage asset's importance.
Impact	A change in a heritage asset or the experience of an asset in its setting that changes its cultural significance. This impact could be a positive or negative outcome. It is not a measure of the reach or extent of the proposal.
Heritage Asset	Those elements of the historic environment – buildings, monuments, sites or landscapes – that have been positively identified as holding a degree of significance meriting consideration (UK Marine Policy Statement, 2011).
Outline Construction Environmental Management Plan (CEMP)	A document included at the pre-consent stage of an application which sets out the responsibilities and environmental standards that the planning applicant (and any contractors) will comply with. It serves as a framework and baseline from which the final Construction Environmental Management Plan (CEMP) will be developed post-consent. It typically refers to the Outline Written Scheme of Investigation.
(Outline) Written Scheme of Investigation (WSI)	A Written Scheme of Investigation (WSI) is an umbrella document for all archaeological surveys, investigations and assessments required for an OWF project. An Outline WSI is developed during the EIA process and forms the framework for the assumed mitigation that will be submitted with associated application. The WSI may be split into phases, but is intended to be maintained throughout the lifespan of an OWF. Often there is an onshore and offshore WSI. Depending on the project design, this may mean the intertidal cable area is covered by only one WSI (either onshore or offshore but reflecting issues pertinent to both).
National Curator	The relevant national authority responsible for the care, protection, and management of the historic environment within the UK administration: HES in Scotland, HE in England, Cadw/RCAHMW in Wales, HED in Northern Ireland.
Phase	The phase of a project lifecycle. Typically divided into construction, operation and decommissioning phases to differentiate the changing impacts of a project.
Receptor	Something being impacted. A broad category, that can include human beings, species, receiving environment, resources, or a specific entity, location or asset. In heritage, the receptor is the cultural significance of the heritage asset.
Significance of effect	A binary determination of whether an effect on a receptor is substantial and material. It accounts for the context of the impact, receptor and effect(s) identified, based on a scale of impact and threshold of significance.
Significance of heritage assets	'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic'. (UK Marine Policy Statement (2011: 21)).
Technical Topic Group	Representatives from marine historic environment organisations who have collectively contributed to the creation of this document.

1. Introduction

1.1 Overview of OWEKH

The Offshore Wind Evidence and Knowledge Hub (OWEKH) has a mission to facilitate and streamline the consenting process for offshore wind farm (OWF) projects through a comprehensive, sector-wide online portal: owekh.com. The portal offers a unified access point for critical data and information, including the latest guidance and best practice documents. Supported by a network of key stakeholders, it fosters collaboration and data sharing across the OWF sector.

OWEKH is sponsored by The Crown Estate and supported by:

- Department of Agriculture, Environment and Rural Affairs (DAERA) Northern Ireland.
- Department for Energy Security and Net Zero (DESNZ).
- Department for Environment, Food & Rural Affairs (DEFRA).
- The Institute of Sustainability and Environmental Professionals (ISEP).
- Natural Resources Wales (NRW).
- Marine Management Organisation (MMO).
- Offshore Wind Evidence and Change (OWEC) Programme.
- Offshore Wind Industry Council (OWIC).
- Planning Inspectorate (PINS) (Observer).
- Welsh Government.

The portal's data component provides access to a diverse range of datasets from public, private, and non-governmental organisation (NGO) sources, all relevant to OWF development. The knowledge component analyses this data to generate evidence-based insights and guidance.

By consulting with key regulators and statutory bodies, OWEKH ensures these insights are translated into high-quality and actionable Evidence Review Notes (ERNs). ERNs aim to bring consistency, efficiency and standardisation to the assessment, planning and development of OWF projects.

An evidence-led approach supports impact assessments. It informs consenting decisions by offering clear and consistent guidance that can be easily and widely disseminated to interested parties. OWEKH's efforts are designed to accelerate the sustainable growth of OWF energy, aligning with the UK Government's Clean Power[1] objectives. This may also link to emerging requirements of Environmental Outcome Reports (EOR).

[1] GOV. UK Clean Power 2030 Action Plan

1.2 Introduction to the Marine Historic Environment Evidence Review Note

The OWEKH ERN concept has been designed to enhance the Environmental Impact Assessment (EIA) process for OWF projects. As part of the ongoing initiatives to improve consenting and EIA practices, the ERN concept aims to address the challenges identified across the offshore wind sector, including methodological issues, scoping inconsistencies, increasing length of reports, and gaps in coordination and consultation. These challenges, highlighted during multiple stakeholder consultations, underscore the need for a more systematic and evidence-based approach to EIA.

This ERN provides the latest guidance for the EIA of OWF projects on the marine historic environment.

Section 1: An introduction to OWEKH and the ERN concept.

Section 2: A summary of evidence informing the recommendations.

Section 3: Key recommendations and guidance for future projects.

Section 4: Calls for further research and evidence gaps.

Section 5: A summary of key recommendations.

Section 6: Members of the Technical Topic Group who have contributed to the ERN.

Section 7: References and recommended further reading.

Annex A: OWF projects that have published EIAs.

Annex B: Guidance on writing the marine historic environment Environmental Statement (ES)/ EIA.

Annex C: Example standard wording for mitigations for oCEMPs, commitment, conditions and requirements.

This ERN should be read in conjunction with *Evidence Review Note: Environmental Impact Assessment*, which provides overarching guidance on the structure and principles of EIA assessment and reporting across all OWS projects.

Based on the Industry Evidence Program (IEP[2]) pilot and subsequent discussions with key stakeholders across the sector, there is wide agreement that the current EIA practices can be significantly improved. There is a consensus that more strategic, coordinated efforts are necessary to advance the practice of EIA, ensuring it is both effective and efficient. Translating these improvements into actionable steps requires robust evidence and thorough scrutiny to produce recommendations that can be widely adopted.

The ERN serves as a platform to address these needs by providing a standardised analysis of existing data, identifying key findings, and offering actionable insights by focusing on several key areas: Evidence-Based Practice; Proportionate Scoping; Avoiding Duplication of Effort; Standardisation and Consistency; Collaboration and Consensus; Continuous Improvement.

[2] IEMA, The Crown Estate, RHDHV (2018) Industry Evidence Programme Offshore Wind Farms - Pilot Industry Evidence Base.

2. Review of Evidence

2.1 Methodology

The review of evidence to support this ERN consisted of three key elements:

1. A review of previous assessments of marine archaeology and cultural heritage undertaken as part of the EIA process for UK OWF.
2. A review of any other key reports or research related to the impact assessment of marine historic environment for OWF, for example, decision notices, monitoring reports, academic and industry research, government and stakeholder guidance. Project-specific Written Schemes of Investigation (WSI) were not reviewed.
3. Stakeholder engagement with leading experts, consultees and regulators of the marine historic environment for offshore wind.

Referenced documents will be available within OWEKH, where possible.

2.2 Assessment of Marine Archaeology and Cultural Heritage

EIA regulations are in force across all parts of the UK for major classes of development (which includes OWF). They require the identification and description of any likely significant effects of a development on archaeology and cultural heritage. For the purpose of EIA of OWF, different projects use different terms to describe the assessment of cultural heritage. It can be labelled marine archaeology and cultural heritage, or marine historic environment, for example.

This ERN uses the term marine historic environment as a catch-all term to refer to archaeology and cultural heritage within the marine (and intertidal) environment – a commonly used term within the offshore wind sector.

The historic environment includes all aspects of the environment resulting from the interaction between people and places through time. It includes all surviving physical remains of past human activity, whether visible, buried or submerged.[3] The marine historic environment refers to the historic environment of the UK marine area.[4] Although the primary driver in EIA for assessing impacts on the marine historic environment are EIA regulations and requirements, there are additional policy drivers and legislation in place that require the consideration, protection and conservation of the marine historic environment within the planning system.

For example, the UK Marine Policy Statement recognises that:

"*Marine activities have the potential to result in adverse effects on the historic environment both directly and indirectly, including damage to or destruction of heritage assets*[5]*".*

As such: "*The view shared by the UK Administrations is that heritage assets should be enjoyed for the quality of life they bring to this and future generations, and that they should be conserved through marine planning in a manner appropriate and proportionate to their significance*"[6].

[3] UK MPS 2.6.6.1

[4] MCAA 2009 s.42

[5] UK MPS 2.6.6.6

[6] UK MPS 2.6.6.3

It is important to note that this ERN focuses only on assets within the marine environment, including the intertidal zone, up to Mean High Water Springs (MHWS). This excludes the assessment of impacts on onshore archaeology and cultural heritage associated with landfalls, onshore transmission routes and cable routes, or onshore electrical infrastructure such as convertor stations and substations. However, the Technical Topic Group (TTG) recognised that consideration of the historic environment within adjacent terrestrial areas can often be important for providing context to intertidal and offshore assessments. Assessments of the marine historic environment may also benefit from reference to archaeology and coastal heritage above MHWS at the landfall, for example, where this context will help understanding of the impacts below MHWS.

The one exception is where the assessment of impacts on onshore heritage assets is undertaken as part of a marine historic environment chapter (e.g. if there is no corresponding onshore archaeology and cultural heritage chapter). This is discussed further in **Section 3**.

As part of the Scottish onshore wind sector deal, Scottish Renewables and the Scottish Government have recently published *Guidelines on Streamlining Environmental Impact Assessment for Onshore Wind Farms*, which includes a cultural heritage EIA evidence note[7].

futuristman/Shutterstock, 2020

[7] Scottish Renewables (2025) *Guidelines on Streamlining Environmental Impact Assessment for Onshore Wind Farms*. https://www.scottishrenewables.com/assets/000/005/061/Streamlining_EIA_Guidance_September_2025_original.pdf?1758009802

2.3 Review of OWF Marine Historic Environment Assessments

The review looked at the identified impacts and proposed mitigation from the ES[8] and EIA Reports from 76 OWF EIAs completed in the UK that included the assessment of the marine historic environment. A full list of the EIAs included in this review is in **Annex A**.

It is evident that the marine historic environment chapter of an ES or EIA report[9] typically describes the existing environment relating to the marine archaeology and cultural heritage resource. It assesses the potential impacts of an OWF during construction, operation and maintenance, and decommissioning. Where the potential for significant adverse impacts is identified, mitigation measures are set out, and any established conditions, requirements or commitments are recorded.

Typically, the marine archaeology and cultural heritage resource occurring in an OWF study area includes *known* heritage assets (i.e. previously recorded sites, features and finds) and *potential* heritage assets (i.e. sites, features and finds that may be present but are yet to be discovered) including those associated with prehistoric land surfaces. Collectively these constituents are typically referred to as the 'm*arine historic environment.'*

The marine historic environment was identified as an aspect in all 76 projects included in the review. More than 504 pre-mitigation impacts were assessed and reported across project phases, with categorisation of the impacts ranging from 'no impact' to 'major adverse effects.' In simple terms, 'no impact' would indicate no concerns, and 'major adverse effects' typically refers to loss or damage of important heritage assets.

Types of impacts are relatively consistent. They can be divided into two main groups of effects:

- Direct and indirect effects for discrete receptors (i.e. specific wrecks) or palaeolandscapes (sometimes further separated into offshore and landfall effects).
- Effects on historic seascape character (or setting).

The majority of evidence provides information relating to direct and indirect effects. Variations in methodology include study areas considered (i.e. whether landfall is included), reporting style and terminology, and whether pre- and post-mitigation impact significance was stated. Common trends are clearly apparent in impact identification, and direct and indirect effects are typically subdivided into:

- Direct impact to known heritage assets during construction, operation and decommissioning.
- Direct impact to potential (or unknown) heritage assets during construction, operation and decommissioning.
- Indirect impact to known heritage assets from changes to physical processes during construction, operation and decommissioning.
- Indirect impact to potential (or unknown) heritage assets from changes to physical processes during construction, operation and decommissioning.

[8] ES is the term used in Wales and England. EIA Report is used in Scotland. Where this ERN refers to an ES, this can also be taken to refer to EIA reports for Scottish projects.

[9] Exact chapter titles may vary between projects.

The setting of heritage assets is defined as: 'the surroundings in which an asset is experienced' (Historic England, 2017)[10] and: 'the way the surroundings of a historic asset or place contributes to how it is understood, appreciated and experienced.' (Historic Environment Scotland, 2016)[11]. It is necessary to consider visual and other environmental factors such as noise, dust and vibration, spatial associations, and the historic relationship between places. Setting assessment for OWF is focused on the physical setting, historic associations and character (rather than visual, noise, dust etc.). It is measured by reference to the capacity of that setting or character to accommodate change.

The review of evidence has focused on the marine historic environment chapters, and therefore where seascape and setting have been covered within landscape and visual assessment chapters, these were not included in the review[12]. Within the EIAs reviewed the impacts on setting and seascape are typically subdivided into the two following categories:

- Impacts to the setting of known heritage assets from operation of the OWF.
- Impacts to historic seascape character

More detail on impacts and related mitigations is provided in **Section 3**. This includes guidance, key findings and a summary of the key impacts, mitigations, and recommended commitments.

2.4 Analysis of EIA data and reports

The Industry Evidence Programme (IEP)[13] undertook a review of OWF impact assessment up to 2018, to develop an evidence base to drive proportionate impact assessment in the sector. As part of this study, the ES of 50 different OWF were reviewed, and consultation held with key stakeholders.[14] In 2024, the IEP review was updated to include an additional 26 EIAs to support the development of this ERN.

The methodology was based on a review of the original ES and then identifying and aggregating the findings to establish trends in impact identification, mitigation and monitoring. Further work was undertaken to review Decision Notices to assess conditions and requirements imposed. Where possible, post-consent monitoring reports have been used to inform implementation and post-implementation of mitigations, requirements and conditions.

The original IEP review showed that the application of mitigation reduced the total number of major adverse impacts from 105 to 10: a reduction of more than 90% , and a reduction of moderate adverse impacts from 68 to 19: a reduction of over 70%. This indicates that a range of established mitigation techniques were being used to reliably reduce the predicted significance of impacts. This earlier trend is even more pronounced in the new data from 2017-2024, where moderate and major impacts were reduced from 62 to 0 between pre- and post-mitigation: a 100% reduction. This indicates that mitigation measures are now sufficiently established. The most recent 26 EIAs have not reported any significant adverse effects after mitigation has been put in place and secured by conditions, commitments and requirements.

[10] Historic England (2017) *The Setting of Heritage Assets*. Historic Environment Good Practice Advice in Planning Note 3 (Second Edition)

[11] Historic Environment Scotland (2016). Managing Change in the Historic Environment.

[12] See OWEKH (2025) Evidence Review Note: Seascape and Visual Impact for further details.

[13] IEMA, The Crown Estate, RHDHV (2018) Industry Evidence Programme Offshore Wind Farms - Pilot Industry Evidence Base.

[14] Ibid.

2.5 Additional Evidence

ERNs are designed to be live documents that are periodically and iteratively updated as new information, data, research and good practice becomes available. In addition to EIAs, the ongoing review of evidence will consider any reports and data arising from the Decision Notices, published monitoring reports, WSIs, academic research, and government and non-governmental guidance (**see Section 7**). The core industry-specific guidance is *Archaeological Written Schemes of Investigation for Offshore Windfarm Projects* (The Crown Estate 2021)[15] prepared by Wessex Archaeology, that develops the ideas of the *Historic Environment Guidance for the Offshore Renewable Sector* (Wessex Archaeology for COWRIE 2007)[16]. These provide guidance on survey, appraisal and monitoring of the marine historic environment during the development of OWF projects in the UK.

2.6 Expert Stakeholder Input

In addition to documentary sources, the review includes stakeholder feedback from workshops, questionnaires, individual and organisational submissions of evidence, and expert opinion. A list of representatives of organisations that have contributed to this ERN is in **Section 6**.

Jason Hawkes, 2015

[15] The Crown Estate and Wessex Archaeology (2021), *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects*.

[16] Wessex Archaeology for COWRIE (2007) *Historic Environment Guidance for the Offshore Renewable Sector.*

3. Guidance

3.1 EIA Scoping of Marine Historic Environment

The guidance presented in this section presents an approach to streamlining the assessment of impacts. It aims to reduce the need for lengthy descriptions of potential impacts that will not – or are unlikely – to occur, with the application of specific and standard mitigation. This does not negate the requirement for the essential archaeological assessments that inform the baseline. The approach depends on establishing commitments to the implementation of robust, enforceable mitigation and monitoring measures for the marine historic environment (see **Annex C**).

Standard commitments, based on The Crown Estate WSI guidance (2021), include:

- Phased archaeological assessment of marine geophysical data throughout the life cycle of the OWF project (including post-construction monitoring).
- Phased geoarchaeological assessment of geotechnical survey data, including targeted archaeology-specific continuous cores, if required, during pre- and post-consent phases.
- Targeted investigation of archaeological features using divers or a remotely operated vehicle (ROV), if appropriate. based on the findings of the archaeological assessment of geophysical survey data.
- Implementation of Archaeological Exclusion Zones (AEZs) informed by the archaeological assessment of geophysical data and pre-construction diver or ROV surveys.
- Micro siting of OWF infrastructure to avoid AEZs and additional anomalies of possible archaeological interest.
- Additional survey or investigation, if features cannot be avoided, to inform additional mitigation requirements.
- Development and implementation of marine WSI in accordance with *Archaeological Written Schemes of Investigation for Offshore Windfarm Projects* (The Crown Estate 2021).
- Implementation of Protocol for Archaeological Discoveries (PAD) in accordance with *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate 2014).
- Post-construction monitoring to ensure that impacts have not occurred during the construction phase.
- Further monitoring and assessment during the operation phase and in advance of decommissioning, if required.
- Archaeological review in consultation with key statutory consultees (CADW/HE/HED/HES/RCAHMW).

The following tables have been developed as a guide for OWF project developers seeking to agree the scope of EIA assessment prior to applying for planning consent. The rationale for this is set out *in Evidence Review Note : Environmental Impact Assessment*. OWEKH ERNs have a three-category system (A-C). The references A, B, and C are for the purposes of distinguishing categories only; they are not intended for coding. These categorisations are a tool to encourage focus on key areas, rather than definitive labels. They are not intended to be referenced as specific categories used in the presentation of impacts, but rather to support clarity and structure during analysis.

The guidance below is for OWF projects only. It is not applicable to EIAs for other sections (e.g. marine aggregate or capital dredging, or port and harbour development).

In assessments of the marine historic environment, the receptor is the cultural significance of the heritage asset, the impact is how this is changed, and the effect is a weighted measure of the significance of this change. In general, marine historic environment impacts are evaluated in terms of the sensitivity (often defined as the importance or value) of the receptor combined with the magnitude of impact on the receptor.

The impacts can be divided into three categories:

- **Category A**: Impacts that have potential for significant adverse effects and require specific mitigation to be put in place.
- **Category B**: Impacts that are unlikely to result in significant adverse effects, if firm commitments to the implementation of standard mitigation are in place and secured through enforceable licence conditions.
- **Category C**: Impacts that are unlikely to result in significant adverse effects.

A three-step process is recommended for the scoping of the marine historic environment:

- Step 1: Identify potential Category A impacts (significant adverse) that require full impact assessment in the EIA.
- Step 2: Identify any Category C impacts that do not require further study, action or reporting.
- Step 3: Set out the range of Category B impacts that will be included in the marine historic environment chapter of the ES but will not be subject to full impact assessment, with commitment to implementing, in all cases, the standard good practice mitigation to monitor, mitigate and control these impacts and risks.

The initial categorisation and selection process must be properly detailed and documented as a part of scoping.

Following this initial review exercise, the ES or EIA report will focus the marine historic environment chapter. It will primarily report on potential significant adverse effects, with a focus on what monitoring, mitigation and controls are required and how they are secured.

Recommendations for the purpose of EIA:

- Include Category A impacts in the EIA. Focus on the application of the mitigation hierarchy and commitments to identify management and mitigation measures, where available (**see Table 1**).
- If appropriate evidence and commitments are provided at scoping, streamline the description of Category B impacts in the EIA. Focus on communicating the mitigations, commitments and requirements (**see Table 2**). Lengthy reporting is not required in an impact assessment chapter to determine likely effects.
- Use the ES chapter to concisely summarise the marine historic environment baseline, and provide detailed archaeological assessments in technical appendices. Include enough detail in the baseline to demonstrate how mitigations, commitments and requirements will prevent significant effects associated with Category A and Category B impacts.

- Category C impacts are not always routinely included in the scope of assessment. But, include category C impacts in the scoping documentation, together with a brief reasoning for their categorisation. Clearly describe standard mitigation (**see Table 3**) in the scoping document to allow for scoping out from further assessment.

The tables below have been developed following the mitigation hierarchy as advocated by the Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA). The mitigation hierarchy is a systematic approach used to minimise adverse effects of a project or scheme on the environment and people. It involves a series of steps or principles to guide decision-making and prioritise activity.

The mitigation hierarchy follows four stages, with the most desirable first:

- Avoid
- Prevent
- Reduce
- Offset

The hierarchy indicates that avoidance is the priority, and offsetting should only be relied on as a last resort. In practice, the top of the mitigation hierarchy is most effectively applied at the strategic level, in the consideration of alternatives, site selection and design.

For the purposes of setting impacts, the tables make reference to 'known heritage assets' which includes those located onshore, within the intertidal zone, or submerged within the marine environment. Submerged archaeological sites are rarely experienced in the same way as onshore or intertidal heritage assets, and visual considerations and other environmental factors such as noise, dust and vibration are not as important to the assessment of impact. Instead, assessments of submerged sites may make more reference to their physical setting and to spatial associations, as well as relationships with other assets or seascapes, and the contribution this makes to their cultural significance.

Setting

For many ES, the assessment of impacts on the setting of onshore heritage assets caused by offshore infrastructure during operation, will be undertaken as part of an accompanying onshore archaeology and cultural heritage chapter.

Where there is no onshore chapter (e.g. where an EIA is undertaken for an OWF array area alone), the marine historic environment chapter may need to consider impacts to the setting of heritage assets in the adjacent onshore areas. In Scotland, applications are made to separate consenting authorities for terrestrial and marine elements, and assessments are received by the two consenting authorities at different times. There, impacts to the setting of onshore heritage assets caused by offshore infrastructure must be included in the marine historic environment chapter of the EIA report.

The tables below apply to onshore and intertidal heritage assets, as well as those in the marine environment. It is essential that the approach to settings assessment is discussed with relevant stakeholders early in the consenting process to ensure information is presented appropriately for consideration under the relevant consenting regime. *Evidence Review Note: Seascape, Landscape and Visual Impact (SLVI)* maybe useful to guide these assessments. The relationship between *ERN: SLVI* and this ERN, and the inclusion of the historic environment, including

landscape and seascape, will be considered as part of the review process outlined in **Section 5**. A SLVIA chapter may reference heritage assets and landscapes or seascapes in terms of visual impact assessment. But, this does not replace the requirement for the assessment of impact on the cultural significance of heritage assets from changes in their setting, which must always be assessed within the historic environment chapter.

Indirect impacts

The review identified examples of indirect impacts to site preservation conditions from drilling fluid breakout or the heat from installed cables. These have not been included in the tables below as they have been accepted as non-significant on multiple previous projects. For drilling fluid breakout, for example, cables are always micro routed to avoid known heritage assets. Standard project mitigation is detailed in an oCEMP, and does not require further consideration in the marine historic environment chapter. In specific circumstances, where significant archaeological remains would be at risk from changes in site preservation conditions (i.e. heritage assets cannot be avoided) this would be addressed in the mitigation plan for Category A direct impacts.

Seascape character

Changes to the historic seascape character are also excluded from the tables below. The UK Marine Policy Statement (2011) defines seascapes as: 'landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other.' Assessments of effects on seascapes[17], as in an SLVIA chapter, must take account of the marine historic environment as a contributory factor.

This is distinct from the concept of historic seascape character. The historic seascape character of coastal and marine areas around England was mapped through a series of Historic Seascape Characterisation (HSC) projects funded by Historic England and later brought together under an initiative to consolidate the existing projects into a single national database (LUC, 2017). The programme uses GIS to map data that can be queried to identify the key cultural processes that have shaped the historic seascape within a given area. Consideration of historic seascape character, as expressed by projects such as Historic England's HSC, if available for a project area, will form part of the baseline assessment. It can contribute to an understanding of 'setting' for a specific heritage asset, or group of heritage assets such as a palaeolandscape, network, or maritime activities, for example. Historic seascape character is not an EIA receptor. Instead, it can be described as part of the wider baseline narrative in terms of its ability to accommodate the change associated with the introduction of an OWF project.

[17] Approaches to seascape and marine character assessments are currently under review by the MMO. This will inform consideration of the relationship between *Evidence Review Note: Seascape, Landscape and Visual Impact (SLVI*) and *ERN: Marine Historic Environment* as part of the future review process in consultation with the TTG.

Table 1 sets out the category A impacts of OWF that are likely to have significant adverse effects on the marine historic environment, even with mitigation. These impacts must be carefully managed following the mitigation hierarchy and are best avoided through project location siting and design.[18] The consideration of alternatives and design process will apply the mitigation hierarchy to avoid the impacts listed. Where a project proceeds with category A impacts, it is likely to result in significant adverse effects, be contested by stakeholders, be a material consideration for decision-makers.

Table 1: Category A Impacts

Ref	Generic Impact	Information to Support Scoping		
		Rationale	Advice and Evidence for Scoping	Commitment required
ERN-MH-A1	*Direct impacts* on the cultural significance of *known* heritage assets during the *construction phase (unavoidable)*.	At scoping, where the removal or destruction of known heritage assets is known to be *unavoidable*, further assessment and mitigation is required as part of the EIA. *See **Table 2** for projects involving avoidance of direct changes to known heritage assets.*	• Location and description of all known heritage assets to be directly impacted. • Explanation and rationale for why the direct impacts cannot be avoided through micro siting, routing and the use of AEZs. • Methodology for further assessment and development of mitigation to prevent, reduce, then offset the effects. • Proposed consultation with key stakeholders and regulators to support the above.	Detailed mitigation plans in the Outline Written Scheme of Investigation (oWSI) to implement any prevention, reduction and offsetting committed to in the EIA.
ERN-MH-A2	Impacts on the cultural significance of heritage assets resulting from changes to their *setting* from operation of the OWF.	For potential changes to the setting of heritage assets, the primary mitigation step of avoidance will be through the OWF project location selection. At scoping, where a chosen OWF project location interacts with a receptor(s) of high importance and sensitivity, and is judged to be likely to have an adverse effect on setting, further assessment is required as part of the EIA.[19] *Where the siting of the OWF has avoided interactions with the setting of sensitive heritage assets, it should be scoped out of the EIA assessment as set out **Table 3**.*	• Location and description of all heritage assets that are likely to have their setting changed. • Explanation and rationale for why the OWF location has been selected. • Any significant impacts from visible elements, such as turbines, that are limited to the operation phase. • Methodology for further assessment of impact on the setting of identified heritage assets. • Proposed consultation with key stakeholders and regulators to support the above.	The EIA must include measures to prevent, reduce and/or offset impacts on the cultural significance of heritage assets associated with changes in setting. These measures must be secured through detailed mitigation plans in the oWSI to ensure implementation.

[18] IEMA (2024) Implementing the Mitigation Hierarchy from Concept to Construction.

[19] For example, an international designation such as a UNESCO World Heritage Coast may be sensitive to changes in setting, as was the case for Navitus Bay.

Table 2 sets out the category B impacts of OWF with potential to have significant adverse effects on the marine historic environment without mitigation. These impacts must be carefully managed following the mitigation hierarchy.[20] With standard mitigations in place and appropriately secured through conditions, requirements and commitments, any residual effects should be reduced below the level of significant adverse effects.

Table 2: Category B Impacts

Ref	Generic Impact	Information to Support Scoping		
		Rationale	Advice and Evidence for Scoping	Commitment required
ERN-MH-B1	*Direct impacts* on the cultural significance of *known* heritage assets during the *construction phase (avoidable)*.	Where *avoidance* of *all* heritage assets, and any identified anomalies interpreted as having the highest potential to be heritage assets, is possible using AEZ, the impacts *will not result in significant adverse effects*. Prior to any construction phase, the consent holder will produce a WSI (based on the oWSI) as a condition of consent. This will ensure that identification of any additional AEZs (or revisions to those recommended in the ES and oWSI) occurs post-consent and pre-construction.	• Location and description of all known heritage assets (and identified anomalies with the highest potential to be heritage assets, if survey and assessment were carried out in advance of scoping). • Explanation and rationale for why changes to the heritage assets can be avoided through micro siting, routing and AEZs. • Methodology and timing for further survey and commitment to extend mitigation to cover any new heritage assets identified. • Proposed consultation with key stakeholders and regulators to support the above.	The ES must include a commitment to the application of AEZs to ensure avoidance of known heritage assets. This should be accurately transferred into the oWSI. A commitment to accepting conditions and requirements to secure their implementation is also required.
ERN-MH-B2	*Direct impacts* on the cultural significance of *potential* heritage assets during the *construction phase*.	Potential heritage assets are those that are yet to be discovered. Once 'known' they are subject to the same measures as 'known' heritage assets. Or they can be already discovered but not identified as heritage assets, with good potential to be confirmed as such following further investigation. Where the oWSI commits to further investigation and mitigation that includes a	• Location and description of identified anomalies with lower potential to be heritage assets (if survey and assessment were carried out in advance of scoping). • Methodology and timing for further survey and investigation (e.g. an archaeological assessment of geophysical survey data, an assessment of ROV data, a diver survey, offshore watching briefs) and commitment to extend mitigation to cover any new heritage assets identified.	The approach to further investigation and mitigation, as specified in the oWSI, which also sets out the use of a PAD to support efficiencies in communication

[20] IEMA (2024) Implementing the Mitigation Hierarchy from Concept to Construction.

Ref	Generic Impact	Information to Support Scoping		
		Rationale	Advice and Evidence for Scoping	Commitment required
		PAD, the impacts *will not result in significant adverse effects*.	• Proposed consultation with key stakeholders and regulators to support the above.	between identified parties if archaeological discoveries occur. The preparation and implementation of oWSI and PAD are set out as conditions and requirements within any deemed Marine Licences of the DCO to secure implementation.
ERN-MH-B3	*Indirect impacts* on the cultural significance of heritage assets associated with changes to *physical processes* during *construction, operation and decommissioning.*	Receptors include known and potential heritage assets. Standard mitigation can be applied, such as taking account of potential changes to marine physical processes during AEZ design and reviewing monitoring data (e.g. post-construction monitoring of AEZs and seabed impacts through marine geophysical surveys and provision for additional mitigation if impacts are identified). With this mitigation in place, the impacts *will not result in significant adverse effects*. *Should the results of the marine physical processes assessment indicate that changes might extend outside the proposed DCO order limits, any heritage assets within the anticipated zone of influence must be included in the impact assessment.*	• Use the scoping chapter to set out the methodology, timing, consultation and description of mitigation such as an analysis of monitoring data, along with clear commitments to accept conditions and requirements to secure implementation. • In the scoping chapter, include a commitment to refer to and use the assessment results in the chapter including the physical processes assessment.	Monitoring to be detailed in an agreed and approved WSI, based on the oWSI submitted at DCO application and produced in accordance with the conditions and requirements specified in the deemed Marine Licences of the DCO.

Table 3 sets out other aspects of OWF where there is clear evidence to support the rationale that the aspect will have no, or negligible, impact on the marine historic environment and will not lead to any significant adverse effects. These impacts will be scoped out of the assessment to reduce unnecessary assessment time and cost on all parties.

Table 3: Category C Impacts

Ref	Generic Impact	Information to Support Scoping		
		Rationale	Advice and Evidence for Scoping	Commitment required
ERN-MH-C1	*Direct impacts* on the cultural significance of heritage assets located *outside* the defined project or application boundary (e.g. DCO order limits, Marine Licence or Section 36 boundary).	This should be scoped out of EIA as there is *no pathway for direct disturbance*, damage or alteration to heritage assets *outside the proposed DCO order limits*. *Receptors located outside the order limits but with mitigation in the form of an AEZ which extends inside the Order Limits to be included in Category B impacts.*	• During scoping, make reference to this ERN and the rationales provided in this table for scoping out these matters.	No works to be undertaken beyond the DCO order limits.
ERN-MH-C2	*Direct impacts* on the cultural significance of heritage assets within the defined project or application boundary (e.g. DCO order limits, Marine Licence or Section 36 boundary). during *operation* and *decommissioning*.	This matter should be scoped out of EIA as any *disturbance of archaeological heritage assets* within the proposed DCO order limits will only occur during the *construction phase* of the proposed development. No further effects are anticipated during the *operation* of the proposed development. *During operation, in the event of infrastructure failure or damage, there may be scenarios where further impacts could occur.* *Decisions regarding the final decommissioning policy, which are largely unknown at the point of application, may also result in scenarios where further impacts could occur.*	• During scoping, make reference to this ERN and the rationales provided in this table for scoping out these matters. • Reassess areas where new works or activities are carried out during the operation and decommissioning phases, where footprints have not been covered by pre-construction or construction assessment and mitigation. • Cover risk of failures or replacement as part of the operational phase Environmental Management Plan (EMP) or Environmental Management System (EMS). Set out clear protocols for future assessment, consultation and permitting for these circumstances. • The requirements for additional assessment in advance of decommissioning works, or repowering are determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator.	The oWSI must include a commitment to the retention of AEZs throughout the project lifetime, any necessary commitments to monitoring, the ongoing implementation of a PAD, and the production of archaeological method statements in the event of exceptional maintenance events.

Ref	Generic Impact	Information to Support Scoping		
		Rationale	Advice and Evidence for Scoping	Commitment required
ERN-MH-C3	Impacts on the cultural significance of heritage assets resulting from changes to their *setting* from construction and decommissioning of the OWF.	This should be scoped out of EIA. *Construction* and *decommissioning* phase impacts on *setting* are *temporary and non-significant*. *Decisions regarding the final decommissioning policy, which are largely unknown at the point of application, may also result in scenarios where further changes in setting could occur.*	• During scoping, make reference to this ERN and the rationales provided in this table for scoping out these matters. • The requirements for additional assessment in advance of decommissioning works, or repowering, are determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator.	N/A
ERN-MH-C4	Impacts on the cultural significance of heritage assets resulting from changes to their *setting* from operation of the OWF.	If during scoping, sufficient information can be submitted indicating how the siting of the OWF has avoided interactions with the setting of sensitive heritage assets (either individual or grouped), the matter should be scoped out of the EIA as negligible. Minor impacts to the setting of less important or sensitive heritage assets will unlikely result in significant adverse effects. *Any likely significant impacts are likely to be limited to operation phase, and only for visible elements, such as turbines. Construction phase impacts on setting are temporary and therefore not likely to result in significant adverse effects.*	An assessment must be provided at scoping including: • Details of the location and description of all heritage assets that could potentially have their setting changed. • An assessment, including the methodology, setting out how impacts to the setting of the identified heritage assets has been undertaken to establish no likely significant effect, i.e. explaining the key factors and rationale such as the importance and sensitivity of the identified heritage receptors. • Results of pre-scoping consultation with key stakeholders and regulators to support the above conclusions. • If there is uncertainty about the potential for likely significant effects for specific heritage assets, limit the scope of EIA to those specific assets. It should not revisit the long list of potential assets reviewed as part of the scoping assessment.	N/A

Improving scoping is key to efficient and proportionate assessment and reporting. The central role of scoping in delivering proportionate EIA is clearly advocated in the IEMA Proportionate EIA Strategy[21] and recognised by Historic England's feedback to the IEP pilot study. It stated: '*The proposed revised model for EIA requires far more effort to prepare meaningful scoping exercises inclusive of completed desk-based assessments*'.

A summary of the proposed categories for OWFs is provided below.

Table 4: Summary of Marine Historic Environment Impact Categories

Generic Impact	Phase		
	Construction	Operation	Decommissioning
Direct impacts on the cultural significance of known heritage assets	Category A (if unavoidable). Category B (if avoidable).	Category C.	Category C.
Direct impacts on the cultural significance of potential heritage assets	Category B.	Category C.	Category C.
Direct impacts on the cultural significance of heritage assets outside the defined project or application boundary	Category C.	Category C.	Category C.
Indirect impacts on the cultural significance of heritage assets associated with changes to physical processes	Category B.	Category B.	Category B.
Impacts on the cultural significance of heritage assets resulting from changes to their setting	Category C.	Category A (if unavoidable). Category C (if avoidable).	Category C.

Marine geophysical surveys and associated archaeological assessments are not commonly used prior to scoping stage, due to the significant cost and time commitments required to undertake this phase of work. However, The Crown Estate has recently decided to acquired marine geophysical data in advance of the Offshore Wind Leasing Round 5 which hopes to establish a new floating wind sector in the Celtic Sea off the coasts of south Wales and south west England. This will support early decision making and de-risking, and accelerate projects [22]. This change in process means that geophysical data and supporting archaeological assessments will be available in advance of scoping for Round 5 projects, and will support the approach in the tables above.

It will be necessary to put greater focus on evidence and stakeholder engagement earlier on in the scoping process to provide sufficient confidence that the EIA scope can be more streamlined. In Scotland, the Marine Directorate emphasises the importance of early pre-application meetings and a scoping workshop as part of its

[21] IEMA (2017) Delivery Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice.

[22] https://www.thecrownestate.co.uk/our-business/marine/round-5-latest-update

guidance for offshore renewable energy projects on marine licensing and consenting requirements.[23]

As recognised by Historic England: *'Industry should be providing the evidence that post-consent conditions are being completed to demonstrate mitigation is effective and that this aspect could be scoped out of an Environmental Statement'*. Therefore, in order to improve scoping, we need to focus on improved monitoring and enforcement of mitigation to provide the evidence of, and confidence in, their efficacy. **See section 3.2.5** for further recommendations on monitoring and enforcement.

Recommendation 1: Standardisation of Scoping

Adopt a consistent approach to scoping for all OWF ES and EIA reports. Follow the advice in Tables 1-3 of this ERN to standardise the approach and improve efficiency for all stakeholders.

Picture courtesy of Principle Power

[23] https://www.gov.scot/publications/marine-licensing-and-consenting-offshore-renewable-energy-projects

3.2 Consistency and Clarity of EIA Reporting

The review of 76 previous assessments identified a wide variety of reporting styles of impacts on the marine historic environment. There are a number of drivers for this variety in reporting styles and content, including the EIA requirements themselves, various good practice guidelines, house styles for certain developers, house styles for certain consultants and experts, legal advice, curatorial advice and comments from stakeholders.

Variability in reporting increases the burden on all stakeholders reading and interpreting the reports, and can hinder understanding of the impacts, especially for non-experts.

The review identified several improvements to reporting:

- Chapter structure and accessibility.
- Clarity and consistency of impact reporting.
- Proportionate reporting.
- Standardised survey requirements.
- Improved monitoring and enforcement.

Evidence Review Note: Environmental Impact Assessment recommends a standard 12-section ES chapter structure. This ERN aligns with that structure and provides detailed guidance in **Annex B** on how marine historic environment considerations can be integrated within the standard framework.

Given the wide variety of influences on style and content, it is important that all parties, including developers, consultants, lawyers, statutory advisors and consenting authorities, align on the requirements set out in this ERN to bring greater clarity and consistency across OWF reporting.

As well as inconsistency in chapter structures, the use of impact classifications varies across OWF projects. For example, projects have often used different scales to describe effect levels (e.g. negligible, minor, moderate, major) with no common threshold for what constitutes a 'significant effect.' In most EIA chapters, moderate effects and above are defined as significant effects, however for marine historic environment, different policy tests may be applied to determine impact on cultural significance, or integrity of setting, for example.

Evidence Review Note: Environmental Impact Assessment advocates for the adoption of a single, consistent terminology across the UK's EIA regimes in order to improve understanding among stakeholders, streamline review processes, and reduce ambiguity when projects cross administrative boundaries or when consultants work in multiple jurisdictions. In practice, marine historic environment practitioners who are responsible for writing a chapter will be guided by the terminology used in the ES to which they are contributing. For this reason, recommendations on standardised terminology are not included here, although these can be reviewed in Section 3 of *Evidence Review Note: Environmental Impact Assessment*.

A standardised approach to the assessment of heritage impact assessment is set out in *The Principles of Cultural Heritage Impact Assessment,* jointly authored by the Chartered Institute of Archaeologists, The Institute of Historic Building Conservation and IEMA in 2021. While this does not include a prescribed format for outputs, it does provide a framework for written reports, which it recommends are tailored to meet the requirements of the relevant consenting regime (geographical and legislative). Further guidance on a standardised approach is provided in the

Environmental Impact Assessment Handbook (NatureScot 2018).[24] There is also a standardised approach for impact on World Heritage Sites in the ICOMOS *Guidance and Toolkit for Impact Assessments*[25].

Discussion of different uses of terminology and the description of marine historic environment impacts forms a key part of this ERN, although there are some areas where consensus was not fully reached. It is recommended that efforts continue to discuss – and where possible align – terminology and reporting as part of the future review process in consultation with the TTG.

Recommendation 2 – Consistency and Clarity of Reporting

Taking into account the specific requirements of devolved administrations across the UK, adopt a consistent approach to all OWF ES. This will make it easier for stakeholders to access the reports and find relevant information. Apply a consistent approach to the terminology and description of marine historic environment impacts for all OWF ES. This will improve efficiency and clarity for all stakeholders.

The standardised terminology and approach must be sufficiently inclusive of standard terminology and approaches used in the NPPF, NPF4, NDF, SPPS and UK MPS. It must be well signposted and supported so it can be easily understood by generalists and planning officers who may not be experts in heritage or the marine historic environment.

See **Annex B** for a standard chapter outline for marine historic environment.

3.3 Proportionate Reporting

The potential (and actual) impacts on the marine historic environment arising from an OWF have been studied in the UK for more than 25 years. For example, offshore surveys were carried out for the Scroby Sands OWF between 1999 and 2002, but with very limited reporting (less than one page in the ES). For comparison, 10 years later for Round 3, ES for Moray Firth had offshore historic environment sections running to 54 pages, and East Anglia One offshore historic section at 94 pages. Another 10 years on, in August 2023, the Rampion 2 OWF ES section on marine archaeology (Category 6, Volume 2, Chapter 16) was 193 pages long – and it needs to read in combination with the historic environment section (Category 6, Volume 2, Chapter 25) which is another 446 pages long. To put this into context, the historic chapter of Rampion 2 is twice as long as the entire ES for Scroby Sands.

It is accepted that the scale of the latest windfarms is significantly larger and more complex than early projects. Assessment techniques have improved, as has technology and our understanding of impacts. But, many stakeholders, including ISEP[26], believe that the reporting for many EIA aspects has become disproportionate to the significance of the impacts.

There are a number of immediate and relatively straightforward steps that can be taken to reduce the length of marine heritage ES chapters, while still maintaining

[24] NatureScot (2018) *Environmental Impact Assessment Handbook.*

[25] IUCN/ICOMOS/ICCROM/IUCN (2022) *Guidance and Toolkit for Impact Assessments in a World Heritage Context.*

[26] IEMA (2017) Delivery Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice.

robust EIA standards. *Evidence Review Note: Environmental Impact Assessment* provides recommendations on overall chapter length and format for consistency and usability across all disciplines.

This ERN builds on it with the following recommendations:

- Present baseline information as concise summaries using tables and figures as necessary, only when directly pertinent to the impact assessment. Provide necessary baseline data and supporting information as evidence through in technical appendices.
- Capture detailed assessment in the technical report, with the key results summarised in the ES and cross-referenced to the technical report as necessary.
- Whilst the TTG did not agree a clear preference on whether onshore and offshore chapters should be combined, clear signposting of where the intertidal area is assessed, and where the boundary between the two assessment lies (e.g. MHWS or MLWS), will avoid the need for duplication.
- Where reporting of adaptive mitigation within the ES creates a high quantity of duplication with the oWSI or CEMP, consider using tables and cross-referencing to avoid duplication and repetition.

Kirsty Andrews, UPY 2022

3.4 Use of Digital Reporting

The use of digital tools and methodologies in EIA offers significant opportunities to improve the clarity, efficiency, and proportionality of reporting in the context of OWF projects. By leveraging digital technologies, the EIA reporting of the marine historic environment could better focus on reporting significant effects while remaining accessible to diverse stakeholders. Recommendations for using digital impact assessment approaches to reporting are set out in *Evidence Review Note: Environmental Impact Assessment* and are summarised below.

Table 5: Digital Approaches to Marine Historic Environment Reporting

Approach	Recommendations
Interactive and dynamic reporting	Replace static PDF documents with interactive digital reports that enable users to navigate directly to relevant sections, such as mitigation measures or significant impacts.
	Use web-based platforms to host digital reports, integrating dynamic features like interactive maps, timelines, and 3D visualisations of heritage assets. The publication of details on the locations of uncharted sites might need to wait until sensitivities can be managed around safety or security, for example.
Enhanced use of GIS and mapping tools	Incorporate GIS-based impact mapping to visually represent spatial relationships between proposed OWF developments and marine heritage assets.
	Use layered maps to display baseline data, exclusion zones and predicted impacts, allowing stakeholders to toggle between views. Where possible, ensure these meet the standards of, and are available through, the Marine Data Exchange.
Clear and engaging visualisations	Use infographics, charts and visual summaries to condense complex findings into understandable formats for experts and the public.
	Present mitigation strategies and post-consent monitoring plans through interactive flowcharts and dashboards.
Stakeholder accessibility and inclusivity	Ensure all digital outputs meet Web Content Accessibility Guidelines (WCAG) to accommodate diverse user needs, including those with disabilities.
	Develop intuitive user interfaces that allow non-specialists to explore key findings without technical barriers.
Integrated reporting and monitoring	Link post-consent reporting tools with real-time monitoring dashboards to provide updates on the effectiveness of mitigation measures post-consent. This ensures stakeholders remain informed and enhances transparency. Where possible, meet the standards of, and make information available through, the Marine Data Exchange.
Templates and standards for digital reporting	Adopt industry-wide templates for digital reporting of ES, ensuring consistency across OWF projects.
	Standardise methodologies for incorporating digital tools into EIAs, particularly for marine historic environment, to reduce variability and improve comparability.

By embracing digital approaches to impact assessment, the OWF sector can ensure that marine historic environment reporting is proportionate, accessible and aligned with best practices, ultimately supporting sustainable development and heritage preservation. Surveys can be designed to provide data for multiple chapters and use-cases. This information should be collected and shared using good data management practices.[27]

Recommendation 3: Proportionate Reporting

Adopt a proportionate approach to the reporting of marine historic environment impacts for all OWF ES and reports. This will reduce burden and improve the clarity for all stakeholders. See **Annex B** for a standard chapter outline and guidance on proportionality.

Use proven and effective digital tools to present data in a more accessible way, and to support handover between project phases.

3.5 Recommendations on Design Envelope and Survey Requirements

An important step to improve efficiencies is for primary data acquisition programmes (including geophysical and geotechnical surveys) to be built around effective communication between all parties, and to ensure they include archaeological objectives. Pre-application advice will help developers actively manage risks in their decisions about the extent and resolution of surveys at successive stages of the development process.

Some heritage stakeholders have expressed concern over developers taking an excessive approach to seeking flexibility in their use of parameters, known within the industry as the 'Rochdale Approach', 'Design Envelope' or the use of a 'Rochdale Envelope'.[28] As further explained in the *Evidence Review Note – Environmental Impact Assessment*, the Design Envelope balances flexibility for developers with a robust framework for assessing and mitigating potential environmental impacts, ensuring compliance even when project specifics are uncertain at the outset. However, in some evidence review revealed some cases where an excessive approach to the Design Envelope was taken, making the process incredibly complex.

The key parameters for the marine historic environment in the Design Envelope broadly include the area and depth of potential interactions with the seabed (for direct impacts) and the number and height of wind turbines for impacts on setting (where visibility is a factor i.e. for onshore or intertidal heritage assets). Until layouts of infrastructure are defined (post-consent, pre-construction) the actual worst case remains unknown, with the best case being that all known heritage assets, and geophysical anomalies or features with the potential to be of archaeological interest, are avoided. It is therefore recommended that the key parameters included in the Design Envelope for the marine historic environment are

[27] Gribble, J. and Leather, S. for EMU Ltd. *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector*. Commissioned by COWRIE Ltd (project reference GEOARCH-09)

[28] Named after a legal case in the UK (Rochdale MBC v. SSE, 1977), it sets the framework for assessing the **worst-case scenario** within those parameters.

defined in the scoping report and agreed in pre-application consultation to avoid unnecessary levels of reporting and reduce complexity.

The use of the Design Envelope is directly connected to the scope of survey and assessment at the pre-application and pre-construction stages. For a development consisting of hundreds of square kilometres, detailed surveys are not viable at the EIA stage. The majority of detailed survey work and subsequent management, mitigation and monitoring can only proceed once a survey based on a smaller, fixed layout is established.

Lower resolution 'characterisation' geophysical surveys can be useful to inform assessments for EIA with a commitment to higher resolution pre-construction surveys, captured in the oWSI (including UXO survey, based on the project-specific UXO risk assessment and risk mitigation strategy). Although some geotechnical surveys, and associated geoarchaeological assessments, may be undertaken pre-consent, large scale geotechnical surveys, focusing on the site conditions within the smaller fixed layouts, are often delayed until the Design Envelope has been refined, post-consent. It is therefore essential that the oWSI includes the commitment to the incorporation of geoarchaeological objectives when planning these surveys, including any pre-commencement surveys that are undertaken post-application but pre-consent, for example. The implementation of a PAD during these surveys will allow for any unexpected discoveries.

Developers planning geophysical surveys at the various stages of a project, taking into account of the requirements of individual OWS projects and study areas, can find advice in Historic England's *Marine Geophysics: Data Acquisition, Processing and Interpretation Guidance Notes*.[29] Archaeological specialists should assist the client with the survey specifications that are put out to tender by the developer for geophysical and geotechnical surveys to ensure they meet the minimum requirements for assessment and inclusion within the EIA and/or WSI.

Survey data should made available in the Marine Data Exchange (this is typically a license condition) although access to this data may take several years due to the length of the pre-consent and construction phase. The Marine Data Exchange Heritage Accelerator project will recapture heritage information from seabed surveys over the past 20 years and transfer it into archives and records within the Crown Estate's Marine Data Exchange and Historic England's National Marine Heritage Record (NMHR) where it can be discovered and explored.

[29] Historic England (2025). *Marine Geophysics Data Acquisition, Processing, and Interpretation Guidance Notes*.

Recommendation 4: Pre-Application and Pre-Construction Survey Requirements and the Design Envelope

Support proportional assessment through the balance of early characterisation with targeted, high-resolution survey later in the project. Initial geophysical surveys will provide broad coverage to inform siting and support avoidance, while detailed surveys will focus on refined layouts once design parameters are narrowed.

Use the Design Envelope in a disciplined manner. Minimise parameter ranges wherever possible, particularly through the PEIR process, to reduce uncertainty and improve the clarity of assessment. Justify any flexibility, stating clear commitments to post-consent survey, mitigation and stakeholder engagement.

Refine design flexibility through the PEIR and phase survey effort appropriately to deliver efficient, effective EIA while maintaining confidence and transparency for heritage stakeholders.

3.6 Monitoring, Enhancement and Enforcement

Monitoring in the context of marine historic environment must be standardised and improved in general. For example, AEZs are monitored post-construction to demonstrate avoidance, whereas more effort could be made to understand the anomaly being avoided during the pre-construction phase. In this case, the historical environment is enhanced, rather than a negative effect simply being avoided. There is guidance on this put forward by Historic England and in the Crown Estate's Protocol.[30]

Enforceable conditions within a DCO are essential and represent an important component of the examination of an application. The monitoring and investigation of unknown and unexpected finds must be proportionate to the significance of impact and agreed between the developer, the EIA team and the statutory historic environment body.

Detailed archaeological conditions must be included in wider project consent plans (pre-consent), such as the Mitigation and Monitoring Schedule (MMS) and the Environmental Management Plan (EMP), for construction and operation phases. Any archaeological mitigation must be clear and prominent. Where possible, inductions for relevant site workers on any AEZ should include archaeological briefings and the PAD.

In accordance with The Crown Estate 2021[31], a final agreed WSI will be developed post-consent in consultation with appropriate National Curator and potentially an interim pre-commencement WSI, if surveys are planned in the early post-application/pre-construction phase. Detailed archaeological method statements must be produced prior to survey or construction work, in support of the WSI. They should be coherent, address specific archaeological objectives and: *'focus on the technical detail of the survey methodologies for the specific work packages'*. Developer-led assessments must also: *'identify applicable objectives from the relevant research frameworks'*.

A project archive providing public access to the completed programme of analysis and reporting is required to meet the professional standards for commercial

[30] Wessex Archaeology (2010) *Protocol for Archaeological Discoveries: Offshore Renewables Projects.*

[31] The Crown Estate and Wessex Archaeology. (2021) *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects.*

archaeology. Timely and successful completion of Online Access to the Index of Archaeological Investigations (OASIS) forms means copies of reports will be hosted there, along with the results of analysis. Data relating to AEZs must be archived in national heritage archives or national monument records, to ensure that baseline monitoring data is available long-term, wherever possible (this is also a current action of the Heritage Accelerator programme between The Crown Estate and Historic England). This process shows the effectiveness of mitigation, through the demonstration of completed archaeological analysis and reporting. The project needs to demonstrate how known or possible archaeological sites were avoided, and how the surveys have revealed new information about the historic environment (a positive impact from the development).

Where a decision has been taken that led to the clearance of archaeological materials, it must be fully accountable in the decision-making process. Sufficient mitigation, as agreed with heritage bodies (e.g. a watching brief, post recovery recording, deposit of materials with accredited institutions) must be proven to have been executed. In reality, consent enforcement is required to make sure delivery occurs and to ensure judgements about mitigation are effective.

Evidence needs to be provided by industry to show that post-consent conditions are being completed, to demonstrate that mitigation is effective, and to inform future EIAs.

Published archaeological research frameworks are key mechanisms to set the relevant research questions that inform mitigation measures and strategies in the EIA process. More attention can be focused on frameworks in method statements and technical reporting. This will optimise data-gathering exercises that are not compromised by other (engineering) objectives, and support the move towards proportionality in EIA and standardisation across OWF applications.

Frameworks to consider include:

- North Sea Prehistory Research and Management Framework[32]
- People and the Sea[33]
- Scottish Archaeological Research Framework[34]
- Research Framework for the Archaeology of Wales[35]
- Regional research frameworks, e.g. East Midlands Historic Environment Research Framework[36]

The method statement and technical reporting should use research frameworks to identify particularly relevant types, themes or periods of archaeology in the development area. They can also be used in WSIs to highlight questions that post-consent works could address.

Not all research frameworks will be relevant to all projects. Some are based on specific geographic regions or areas, or have not been designed with offshore wind specifically in mind. Therefore, while frameworks can be useful for informing significance assessments, their coverage and relevance to offshore wind varies. Practitioners should reference relevant frameworks in assessments, where appropriate, but this ERN cannot be too prescriptive regarding which frameworks are relevant for specific projects.

[32] North Sea Prehistory Research and Management Framework (NSPRMF). https://researchframeworks.org/nsprmf/
[33] Ransley, J., Sturt, F., Dix, J, Adams, J. and Blue, L. (Eds.) (2013). People and the Sea: A Maritime Archaeological Research Agenda for England. York: Council for British Archaeology.
[34] Scottish Archaeological Research Framework (ScARF) (https://scarf.scot/)
[36] East Midlands Historic Environment Research Framework (researchframeworks.org/emherf/)

[35] A Research Framework for the Archaeology of Wales (https://archaeoleg.org.uk/intro.html).

[36] East Midlands Historic Environment Research Framework (researchframeworks.org/emherf/)

Recommendation 5 – Monitoring and Enforcement

Enforceable conditions within a DCO, S36 Consent or Marine Licence are essential and represent an important component of the examination of an application. Accompany these conditions with a robust monitoring protocol in the WSI to ensure they are implemented. Agree monitoring conditions in advance with relevant National Curators/stakeholders and standardise them to form consistent practice for all parties.

3.7 Addressing Significant Adverse Effects

There may be significant adverse effects identified that are not easy to mitigate (**see Table 1**). In these cases, the impacts will be a material consideration of the planning decision. The ultimate decision makers may still grant permission for a project to proceed based on the overall planning balance of impacts and benefits across a range of environmental, social and economic considerations, in line with national planning policy and national and international laws. The evidence review did not identify any instances where, following mitigation, OWF projects recorded significant adverse effects on the marine historic environment. No instances were identified of permission being granted where significant adverse effects were predicted.

The application of the mitigation hierarchy is being successfully applied to the extent that major adverse effects are considered to be unlikely. However, the lack of adverse significant effects is contingent on the implementation and effectiveness of the committed mitigations.

Picture courtesy of Principle Power

4. Further calls for evidence and research

There is a need for more complicated, far reaching, or policy-based issues to be addressed, through calls for further studies or research.

4.1 Strategic Level Assessment for Foreseeable Significant Effects

This section provides advice on how the marine historic environment can be considered in relation to OWF and strategic plans, including integration with marine planning, strategic assessment of relevant plans, and strategic environmental assessments of zone identification and other spatial planning. The aim is to promote the principles of the mitigation hierarchy. A strategic approach to the identification and assessment of significant effects on the setting of heritage assets and historic seascape character, for all OWF impact assessments, will to reduce uncertainty at project level, where mitigation is likely to be less effective.

The effects on setting of important heritage assets and on historic seascape character are not easy to mitigate. However, to an extent, both of these could be assessed at a strategic level during lease or development area selection. Impacts on these two factors should be assessed, where data exists at the strategic level, and if deemed unacceptable to key decision makers, these zones should not be progressed to project level assessment. If decision makers determine – at the strategic level – that the impacts are acceptable, this decision should inform the scoping of subsequent project-level assessments. These should then be able to rely on more streamlined scopes of assessment, with reliance being placed on the strategic level assessment to avoid duplication of assessment. The project can still report the significant adverse effects in the EIA, but if it was foregone conclusion that it would not form a material issue at the project level, given its earlier consideration an approval at the strategic level, it should have been clearly set out in scoping.

When approaching the marine historic environment chapter, particular reference needs to be made to defined national grid connection points and how these influence the EIA and any SEA exercise. In particular, the integration of marine spatial planning with national and regional transmission infrastructure planning would help to ensure marine plans and strategic level considerations, such as transmission connection planning, and national and internationally important heritage assets, are considered at the earliest possible stage.

For example, The Crown Estate and Historic England's Marine Heritage Accelerator will promote digital recording of OWF site data and monitoring reports with access through the Marine Data Exchange. By using this data to enhance heritage information in the Marine Data Exchange and integrate it with Historic England's National Marine Heritage Record, the project should improve project-specific and strategic decision-making.

All stakeholders – particularly those responsible for OWF leasing and zone selection, and bodies responsible for marine spatial planning – should ensure that offshore wind strategic plans align with Marine Policy Statement (MPS) and UK Marine Plans to integrate cultural heritage considerations early in the planning process. Spatial planners can use data from projects such as Historic England's HSC and National Heritage Lists to inform spatial planning and cumulative impact assessments. All parties should promote and engage in cross-sector collaboration (renewables,

conservation, archaeology) to develop best practices for managing the marine historic environment within wider marine spatial planning frameworks.

The evidence review encourages early and strategic heritage risk assessments at the planning stage, incorporating stakeholder engagement, to reduce project-level uncertainty. Planners should consider developing zoning guidance that identifies areas of high, medium and low sensitivity for OWF development, based on known historic environment constraints. For example, regional heritage sensitivity mapping tools could be developed to provide upfront data on heritage risks. To support this, the ERN advocates for greater coordination of strategic-level cumulative impact assessments across multiple OWF projects to assess sector-wide effects on heritage landscapes.

Strategic Environmental Assessments (SEA) and any future replacement under Environmental Outcome Reports (EOR) should incorporate historic environment baseline data alongside ecological and socio-economic factors. SEAs should promote thematic research on past landscapes, submerged heritage and setting impacts to refine OWF zone selection and mitigate heritage conflicts early. Impacts on heritage setting and visual impact assessments (e.g. viewshed analysis) at the SEA stage should help understand and mitigate changes to historic seascape character before project-level decisions. Marine planners should consider buffer zones around significant heritage assets to seek to avoid significant adverse effects arising in project-level assessments.

The ERN process encourages long-term monitoring and adaptive management strategies to track heritage impacts and refine best practices. New data, evidence and good practice arising from monitoring and research will be incorporated into this ERN periodically, via the OWEKH TTG on marine historic environment, to refine its recommendations.

Recommendation 6: Strategic Approach to Risk Assessment

Where sufficient data exists, adopt a strategic approach to the identification and assessment of significant effects on the marine historic environment for all OWF leasing and zoning studies. This will reduce uncertainty at project level where mitigation is less likely to be effective.

4.2 Cumulative Effects

The study of cumulative effects in EIA typically relates to impacts of the proposed project along with other ongoing, or foreseeable, projects that might have overlapping impacts on the same receptors. This form of Cumulative Effects Assessment (CEA) is common practice and follows available guidance such as the Planning Inspectorate (PINS) advice on CEA[37], advice published by the MMO[38] and Natural England.[39] In practice, this form of CEA can be referred to as inter-cumulative effects because it relates to a cumulative assessment of effects from multiple projects. It is also good practice, and a requirement of EIA regulations, to consider the interactions of impacts on different factors within a project – sometimes referred to as intra-cumulative effects.

When considering inter-cumulative effects across multiple projects, it is common practice to look at thresholds (i.e. for pollution) or carrying capacities (i.e. for species and landscapes) to determine if a cumulative effect will cross a tipping point whereby the additionality or effect in aggregate will lead to further harm. In the context of the marine historic environment, there is unlikely to be a threshold for harm in the same sense as for pollution. But, the concept can be applied to loss of a particular type of asset, if that asset has already been lost due to multiple previous projects. In other words, a type of historic asset may become rarer over time if multiple instances of this type of asset have been destroyed or damaged through multiple previous projects.

It is also true that for the marine historic environment, there is potential for cumulative beneficial effects through survey work and investigations. The discovery and recording of previously unknown sites and artefacts can increase our understanding of the marine historic environment. The cumulative effect of this knowledge is a beneficial effect, although any expenditure of effort towards this should be proportionate to the potential benefit. The extent of this beneficial effect must also be weighed up against the potential cumulative effect of loss of access to seabed areas, due to the presence of OWFs and associated exclusion zones around infrastructure elements. These could restrict, or prohibit, the ability to undertake archaeological investigation and research in the future.

Specific guidance for cumulative assessment relating to to the historic marine environment is available in the *Guidance for Assessment of Cumulative Impacts on the Historic Environment for Offshore Renewable Energy* (COWRIE 2008).[40]

Recommendation 7: Use of Cumulative Effects Assessment

Adopt a consistent approach to assessing CEA for the Marine Historic Environment. Undertake a meta-review of evidence to identify any cumulative adverse effects arising across the OWF deployment, and use this to inform future projects. The review must include the extent to which access to seabed areas, for future archaeological investigation, has been lost or restricted following the construction of OWFs.

[37] Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK

[38] A strategic framework for scoping cumulative effects (MMO 1055) - GOV.UK

[39] Development of a generic framework for informing Cumulative Impact Assessments (CIA) related to Marine Protected Areas through evaluation of best practice - NECR147

[40] COWRIE (2008) *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy.* Commissioned by COWRIE Ltd (project reference CIARCH-11-2006).

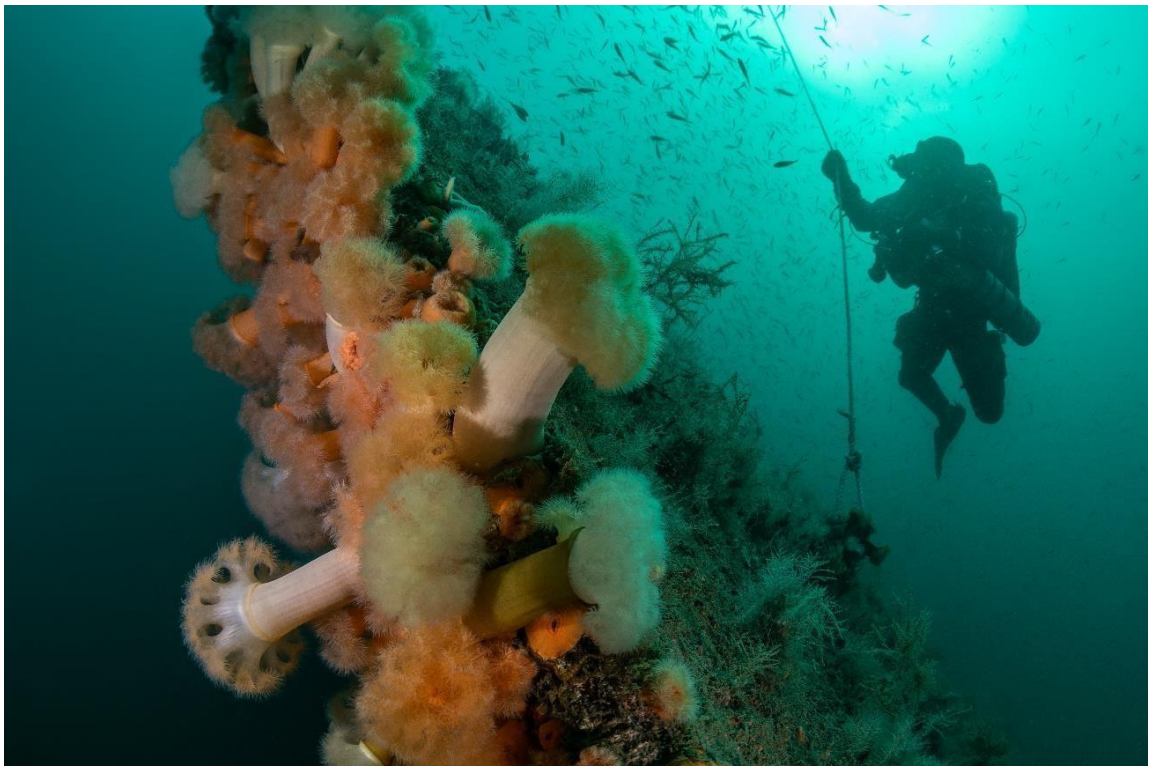
4.3 Addressing Beneficial Effects

Legislation and regulation in EIA are increasingly placing more emphasis is put on the beneficial effects of a project, rather than just avoiding or mitigating adverse effects. According to Historic England, insufficient attention is given to the identification of positive aspects of a project through EIA. This is particularly relevant for heritage because surveys and archaeological examination of data will often identify marine heritage assets and palaeogeographical details of the area that were not previously known or confirmed. This contributes to knowledge and understanding, and communication to the public (ideally through the OASIS system and a suitable national monuments record archive, as discussed in **Section 3.2.5**).

Further engagement across the UK's statutory historic environment bodies to further inform the approach to, and understanding of, beneficial effects.

Recommendation 8: Acknowledge Beneficial Effects

Undertake a review of evidence and get agreement from key stakeholders at the project and wider strategic level. Clarify cumulative effects of OWF on the marine historic environment to confirm the contribution of positive effects to our understanding of the historic environment. Use this agreement as standard acknowledge of the effects of for future OWF EIAs. Get consensus on guidance for recording and publishing research and evidence.



Rick Ayrton/UPY 2022

5. Summary of Recommendations

Building on the overarching recommendations in *Evidence Review Note – Environmental Impact Assessment*, Sections 3 and 4 of this ERN set out the rationale for recommendations to improve the practice of assessment and management OWF impacts on the marine historic environment.

The following recommendations are for practitioners, developers and reviewers of EIAs for OWF projects in relation to marine historic environment:

5.1 Standardisation of Scoping

Adopt a consistent approach to scoping for all OWF ES and EIA reports. Follow the advice in Tables 1-3 of this ERN to standardise the approach and improve efficiency for all stakeholders.

5.2 Consistency and Clarity of Reporting

Taking into account the specific requirements of devolved administrations across the UK, adopt a consistent approach to all OWF ES. This will make it easier for stakeholders to access the reports and find relevant information. Apply a consistent approach to the terminology and description of marine historic environment impacts for all OWF ES. This will improve efficiency and clarity for all stakeholders.

The standardised terminology and approach must be sufficiently inclusive of standard terminology and approaches used in the NPPF, NPF4, NDF, SPPS and UK MPS. It must be well signposted and supported so it can be easily understood by generalists and planning officers who may not be experts in heritage or the marine historic environment.

See **Annex B** for a standard chapter outline for marine historic environment.

5.3 Proportionate Reporting

Adopt a proportionate approach to the reporting of marine historic environment impacts for all OWF ES and reports. This will reduce burden and improve the clarity for all stakeholders. See Annex B for a standard chapter outline and guidance on proportionality.

Use proven and effective digital tools to present data in a more accessible way, and to support handover between project phases. See **Annex B** for a standard chapter outline and guidance on proportionality.

5.4 Pre-Application and Pre-Construction Survey Requirements and the Design Envelope

Support proportional assessment through the balance of early characterisation with targeted, high-resolution survey later in the project. Initial geophysical surveys will provide broad coverage to inform siting and support avoidance, while detailed surveys will focus on refined layouts once design parameters are narrowed.

Use the Design Envelope in a disciplined manner. Minimise parameter ranges wherever possible, particularly through the PEIR process (where applicable). Use of the Design Envelope must be disciplined. Developers should minimise parameter ranges wherever possible, particularly through the PEIR process), to reduce uncertainty and improve the clarity of assessment. Flexibility should be justified and accompanied by clear commitments to post-consent survey, mitigation, and stakeholder engagement.

By refining design flexibility through the EIA and phasing survey effort appropriately, developers can deliver efficient, effective EIA while maintaining confidence and transparency with heritage stakeholders.

5.5 Monitoring and Enforcement

Enforceable conditions within a DCO, S36 Consent or Marine Licence are essential and represent an important component of the examination of an application. Accompany these conditions with a robust monitoring protocol in the WSI to ensure they are implemented. Agree monitoring conditions in advance with stakeholders and standardise them to form consistent practice for all parties. See **Annex C** for example conditions.

5.6 Strategic Approach to Risk Assessment

Where sufficient data exists, adopt a strategic approach to the identification and assessment of significant effects on the marine historic environment for all OWF leasing and zoning studies. This will reduce uncertainty at project level where mitigation is less likely to be effective.

5.7 Use of Cumulative Effects Assessment

Adopt a consistent approach to assessing CEA for the Marine Historic Environment. Undertake a meta-review of evidence to identify any cumulative adverse effects arising across the OWF deployment, and use this to inform future projects. The review must include the extent to which access to seabed areas, for future archaeological investigation, has been lost or restricted following the construction of OWFs.

5.8 Acknowledgement of Beneficial Effects

Undertake a review of evidence and get agreement from key stakeholders at the project and wider strategic level. Clarify cumulative effects of OWF on the marine historic environment to confirm the contribution of positive effects to our understanding of the historic environment. Use this agreement as standard acknowledgement of the effects for future OWF EIAs. Get consensus on guidance for recording and publishing research and evidence.

6. Collaboration and Review

Representatives from the following organisations have contributed to this document through the Marine Historic Environment TTG.

Technical Topic Group Participants	
AtkinsRéalis	MSDS Marine
Coracle Archaeology	Ørsted
Cotswold Archaeology	Royal Commission on Ancient & Historical Monuments of Wales
Equinor	SSE Renewables
Haskoning	Tetra Tech RPS Energy
Historic Environment Scotland	The Crown Estate
Historic England	University of Southampton
Institute of Sustainability and Environment Professionals	Wessex Archaeology
Maritime Archaeology	WSP

Document Update Roadmap

The ERN is a dynamic document designed to evolve with advancements in knowledge, technology, and regulatory frameworks. The following update schedule is proposed:

- Launch ERN as pilot for use on projects.

Short-Term Updates (6-12 months):

- Incorporate user feedback from pilot and update ERN.
- Assess the adoption rate of key recommendations and adjust where uptake is low.
- Launch updated ERN.

Long-Term Updates (1+ years):

- Bi-annual meetings of the Marine Historic Environment TTG will be held to review evidence and feedback.
- After 12 months the TTG will conduct a comprehensive review of the ERN's effectiveness, incorporating stakeholder surveys and case studies.
- The TTG will maintain the ERN as a live document, revising it on a regular and ad hoc basis to reflect new legislation, policy updates and stakeholder consensus.

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ANNEX A: Offshore Wind Farms

The following 79 OWF have undertaken EIAs and published information on the potential impacts in the ES and EIA reports. These assessments have informed the development of this ERN.

Atlantic Array	Kincardine
Awel y Môr	Lincs
Barrow	London Array I
Beatrice	Lynn
Beatrice Extension	Mona
Berwick Bank	Moray West
Blyth Offshore Demonstrator	Morecambe Offshore Windfarm Generation Assets
Burbo Bank	Morgan Offshore Wind Project
Burbo Bank Extension	Muir Mhor
Docking Shoal	Navitus Bay
Dogger Bank Creyke Beck	Neart na Gaoithe
Dogger Bank South	Norfolk Boreas
Dogger Bank Teesside	Norfolk Vanguard East
Dogger Bank C	Norfolk Vanguard West
Dudgeon	North Falls
Dudgeon and Sheringham Shoal Extensions	North Hoyle
East Anglia One	Ormonde
East Anglia One North	Ossian
East Anglia Two	Outer Dowsing
East Anglia Three	Pentland
European Offshore Wind Deployment Centre (EOWDC)	Race Bank
Five Estuaries	Rampion
Forthwind	Rampion 2
Galloper	Rhyl Flats
Greater Gabbard	Robin Rigg
Green Volt	Salamander
Gunfleet Sands 1	Scroby Sands
Gunfleet Sands 3	Seagreen One A
Gunfleet Sands 3	Sheringham Shoal
Gwynt Y Môr	Teeside
Hornsea One	Thanet
Hornsea Two	Thanet Extension
Hornsea Three	Triton Knoll
Hornsea Four	Walney 1
Humber Gateway	Walney 2
Hywind	Walney 3
Inch Cape	West of Duddon Sands
Inner Dowsing	Westermost Rough
Kentish Flats	Whitecross
Kentish Flats 2 Extension	

ANNEX B: Recommended ES Chapter Structure

This Annex provides aspect-specific guidance for integrating marine historic environment assessment into the ES using the standard 12-section chapter structure set out in the overarching *Evidence Review Note: Environmental Impact Assessment*. It is intended for use by technical authors preparing the marine historic environment chapter, as well as EIA coordinators and reviewers seeking consistency across aspects.

Chapter Section	Historic Environment Considerations
1. Introduction	Confirm that the chapter covers the marine historic environment from Mean High Water Springs (MHWS) seaward. State the relationship to any separate onshore archaeology chapters. Briefly outline relevant interrelations with other aspects such as UXO, physical processes, or seascape. (*Target length: 1 page.*)
2. Policy and Legislative Framework	Refer to relevant UK and devolved policy and legislation (e.g. Protection of Wrecks Act 1973, Protection of Military Remains Act 1986, Marine (Scotland) Act 2010). Reference National Policy Statements (EN-1, EN-3), Marine Policy Statement, and marine plans. Include guidance sources such as Historic England's *Marine Geophysics* (2013), The Crown Estate WSI guidance (2021), and HES/MD standards. (*Target length: 1-2 pages.*)
3. Study Area and Scope of Assessment	Define the marine study area, including any buffers around the proposed DCO limit to inform the assessment of the marine historic environment. Clarify differences between assessment area, geophysical survey extent and cumulative area. State any data exclusions or overlaps with onshore coverage. (*Target length: 1-2 pages.*)
4. Consultation	Summarise statutory and non-statutory consultation with stakeholders such as Historic England, Cadw, RCAHMW, and relevant local authorities. Present key issues raised at scoping, PEIR, and during pre-application dialogue. Indicate how feedback influenced methodology, survey scope or mitigation. (*Target length: 1-2 pages.*)
5. Assessment Methodology	Describe the process for identifying and assessing known and potential archaeological receptors. Include classification systems for heritage sensitivity (often defined as importance or value), magnitude of impact and significance. Confirm approach to assessing setting. Note any limitations (e.g. survey resolution) and how uncertainty has been addressed. (*Target length: 2-3 pages.*)
6. Baseline Environment	Summarise existing marine archaeological conditions, including wrecks, anomalies, submerged landscapes, and known heritage features. Include palaeoenvironmental context and HSC where relevant. Use summary tables, figures and mapping. Technical detail should be in appendices or a supporting baseline report. (*Target length: 4-6 pages.*)

Chapter Section	Historic Environment Considerations
7. Design Parameters and Maximum Design Scenario (MDS)	Identify the aspects of the design that could affect the marine historic environment (e.g. foundation type, seabed preparation, scour protection). Confirm use of a Design Envelope and explain how realistic worst-case parameters have been selected for assessment. (*Target length: 1-2 pages.*)
8. Assessment of Effects	Structure assessment by project phase. Address: – Direct impacts (e.g. seabed disturbance, drilling, cable installation). – Indirect impacts (e.g. scour, sediment displacement). – Effects on setting. Include justification for significance conclusions. If no significant effects are expected, explain why. (*Target length: 4-6 pages.*)
9. Additional Assessments	Include aspect-specific detail on: • Cumulative effects (e.g. with other wind farms, aggregate dredging, cables). • Transboundary effects (if features or historic landscapes span jurisdictions). • Interaction of effects (where not already covered, e.g. heritage and visual impact, fisheries, or physical processes). (*Target length: 2-3 pages.*)
10. Mitigation and Enhancement Measures	Detail embedded mitigation such as siting design, AEZs, micro-siting, and design constraints. Outline additional measures including PAD, oWSI, planned survey and assessment, and archaeological briefings for contractors. Note any potential for public benefit (e.g. interpretation, data sharing). (*Target length: 2-3 pages.*)
11. Residual Effects and Monitoring	Present any effects remaining after mitigation, with a clear binary statement on significance for the purpose of EIA. Describe monitoring and enforcement mechanisms (e.g. archaeological watching briefs, post-construction geophysical survey, compliance with oWSI and PAD). Confirm data management and reporting (e.g. Marine Data Exchange, OASIS, HER submission). (*Target length: 1-2 pages.*)
12. Summary of Commitments	Provide a concise commitments table with: – Description of each mitigation or survey commitment. – When it will be implemented. – How it will be secured (e.g. DCO requirement, DML, WSI). Ensure consistency with other commitments registers or summary documents. (*Target length: 1-2 pages.*)
Appendices and Technical Outputs	Where appropriate, the ES chapter should reference or append the following supporting documents: • Desk-Based Assessment (DBA) – summarising known and potential heritage assets, data sources and constraints. • Gazetteer of known heritage assets and anomalies with the potential to be of archaeological interest. • Marine geophysical interpretation report. • Archaeological review of UXO risk assessment. • Geoarchaeological DBA and assessment reports including deposit model.

Chapter Section	Historic Environment Considerations
	• oWSI and PAD. • Historic seascape character and setting assessment. As a minimum, it is expected that a DBA, oWSI and PAD are provided as technical appendices, annexes or supporting documents. The DBA may contain some of the other documents, such as the Gazetteer, as an appendix to the DBA. Where a gazetteer of marine heritage assets is included, it should follow a standard structure to support interoperability. Fields should include: • Location. • Feature type and condition. • Dimensions (length, width, height above seabed, depth). • References to datasets (UKHO, NMR, HER IDs). • Assessment of archaeological potential. • AEZ status and rationale. The gazetteer should be supplied in a spreadsheet format (e.g. Excel or CSV) to support onward use by curators, regulators and researchers.

ANNEX C: Example Conditions and Requirements

Annex C provides a framework to support the drafting and implementation of robust, enforceable mitigation and monitoring measures for the marine historic environment across all OWF EIAs. It builds on **Section 2.6** of this ERN, which outlines the importance of securing mitigation, verifying delivery and enabling enhancement through clearly defined commitments and post-consent obligations.

Annex C includes:

- C1: A checklist of standard commitments.
- C2: Example wording for conditions and consent requirements
- C3: Examples of published requirements/conditions from some recent DCOs/s36s for the marine historic environment.

C1 Standard Commitments

All developers are expected to commit to the following obligations at the scoping phase, to provide confidence to regulators and statutory bodies that the standard necessary post-consent mitigations are agreed. These commitments are based on The Crown Estate WSI guidance (2021), adapted to incorporate all UK National Curators.

1. Phased archaeological assessment of marine geophysical data throughout the lifecycle of the OWF project (including post-construction monitoring). Archaeological advice will be sought at the planning stage of each phase of survey to ensure the suitability of the marine geophysical survey data for archaeological assessment.

2. Phased geoarchaeological assessment of geotechnical survey data during the pre-[41] and post-consent phases of the OWF project. Archaeological advice will be sought at the planning stage to ensure that geoarchaeological objectives are taken into account. If required, this will include recommendations for the acquisition of targeted archaeology-specific continuous cores to provide undisturbed sediments suitable for dating and palaeoenvironmental analysis.

3. Archaeologists to be consulted in the preparation of any pre-construction ROV or diver surveys and in monitoring and checking of data, if appropriate, based on findings of the archaeological assessment of geophysical survey data.

4. Implementation of AEZs informed by the archaeological assessment of geophysical data and pre-construction ROV or diver surveys.

5. Mico siting of OWF infrastructure to avoid AEZs and additional anomalies of possible archaeological interest as much as possible. If features cannot be avoided, then additional survey or investigation will be undertaken to establish the archaeological interest of the feature and to inform additional mitigation requirements.

[41] The survey itself may not be carried out until the post-consent stage.

6. Development and implementation of WSI in accordance with *Archaeological Written Schemes of Investigation for Offshore Windfarm Projects* (The Crown Estate, 2021).
7. Implementation of PAD in accordance with Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate, 2014).
8. Post-construction monitoring of AEZs will be carried out to confirm that there has been no impact on the archaeological features in AEZs. The duration of monitoring should be consistent with the timeframe for monitoring processes (e.g. sediment transport) that have been identified as having possible indirect archaeological effects.
9. During the operation phase, mitigation measures such as AEZs, avoidance of additional anomalies of possible archaeological interest, and the PAD will remain in place. Monitoring will be undertaken if it becomes apparent that activities that could impact the seabed have taken place within any AEZ. If reassessment is required in advance of decommissioning, it will be considered in consultation with relevant regulators and statutory consultees.
10. Ongoing archaeological review in consultation with relevant National Curators and stakeholders will take place as required through the project lifecycle.

C2 Standard Language Requirements and Conditions

These example conditions apply to DCO and deemed Marine Licence processes. They may also inform s36 and Marine Licence conditions in devolved jurisdictions. The following standard language is typically used:

> *The Licence Holder must prepare a Marine Written Scheme of Archaeological Investigation (WSI) in consultation with (relevant National Curators) and in accordance with 'Archaeological Written Schemes of Investigation for Offshore Windfarm Projects' (The Crown Estate, 2021). The Marine WSI will include the methodology for further investigations to be undertaken prior to construction, the requirement for AEZs to be established to protect any known, identified or unexpected marine archaeological receptors and the implementation of a PAD in accordance with 'Protocol for Archaeological Discoveries: Offshore Renewables Projects' (The Crown Estate, 2014). The WSI must be agreed with the Licensing Authority following consultation with (relevant National Curators) four months in advance of any survey work commissioned to aid delivery of the construction works.*
>
> *Construction must not begin until a Construction Method Statement, in accordance with the WSI, setting out archaeological mitigation during construction, has been agreed in writing by the Licensing Authority.*
>
> *Offshore geotechnical and geophysical surveys (including a UXO survey, where appropriate, for the project specific UXO Risk Assessment and Risk Mitigation Strategy) and ground-truthing of those selected heritage assets which cannot be avoided and anomalies of possible archaeological interest, will be undertaken prior to construction, including a staged geoarchaeological assessment and will be subject to a full archaeological review in consultation with (relevant National Curators).*

C3 Example Requirements and Conditions

This table shows some examples of published requirements and conditions from some recent DCOs and s36s for marine historic environment.

Windfarm	Condition/Requirement
Sheringham and Dudgeon Extension Projects (England 2024)	*Pre-commencement surveys* Pre-commencement surveys and archaeological investigations and pre-commencement material operations which involve intrusive seabed works must only take place in accordance with a specific outline written scheme of investigation (which must accord with the details set out in the outline written scheme of investigation (offshore)) which has been submitted to and approved by the MMO.
	Written scheme of investigation The licensed activities or any phase of those activities must not commence until the following have been submitted to and approved in writing by the MMO. (e) an archaeological written scheme of investigation in relation to the offshore Order limits seaward of MHWS, which must accord with the outline written scheme of investigation (offshore) and industry good practice, in consultation with the statutory historic body to include: (i) details of responsibilities of the undertaker, archaeological consultant and contractor; (ii) a methodology for further site investigation including any specifications for geophysical, geotechnical and diver or remotely operated vehicle investigations; (iii) archaeological analysis of survey data, and timetable for reporting, which is to be submitted to the MMO within four months of any survey being completed; (iv) delivery of any mitigation including, where necessary, identification and modification of archaeological exclusion zones; (v) monitoring of archaeological exclusion zones during and post construction; (vi) a requirement for the undertaker to ensure that a copy of any agreed archaeological report is deposited with the Archaeological Data Service, by submitting an OASIS ('Online Access to the Index of archaeological investigations') form with a digital copy of the report within six months of completion of construction of the authorised scheme, and to notify the MMO and Historic England that the OASIS form has been submitted to the Archaeological Data Service within two weeks of submission; (vii) a reporting and recording protocol, including reporting of any wreck or wreck material during construction, operation and decommissioning of the authorised scheme; and (viii) a timetable for all further site investigations, which must allow sufficient opportunity to establish a full understanding of the historic environment within the offshore Order limits and the

Windfarm	Condition/Requirement
	approval of any necessary mitigation required as a result of the further site investigations prior to commencement of licensed activities.
Hornsea Four (England, 2020)	*Pre-construction survey* Subject to receipt from the undertaker of specific proposals pursuant to this condition, the pre-construction survey proposals must include, a full sea floor coverage swath-bathymetry survey that meets the requirements of IHO S44ed5 Order 1a, of the Order limits and a buffer outside to inform the identification of any archaeological exclusion zone and post consent monitoring of any such archaeological exclusion zone. The pre-construction survey(s) carried out pursuant to condition 17(2)(a)(ii) ['inform future navigation risk assessments as part of the cable specification and installation plan' – cross-reference Shipping and Navigation] and 17(2)(c) ['a bathymetric survey that meets the requirements of IHO S44ed5 Order 1a of the area within the following coordinates' (coordinates given)] must fulfil the requirements of MGN654 and its supporting 'Hydrographic Guidelines for Offshore Renewable Energy Developer' (as relevant). The undertaker must carry out the surveys specified within the monitoring plan or plans in accordance with that plan or plans, unless otherwise agreed in writing by the MMO in consultation with the relevant statutory nature conservation body. Following completion of a survey carried out pursuant to this condition and prior to construction of the relevant stage, the undertaker must provide a report and full density data of the survey outcomes to the MMO, the relevant statutory nature conservation body, the MCA and UK Hydrographic Office as relevant.
	Post-construction survey Subject to receipt of specific proposals the post-construction survey plan or plans must include, in outline, a bathymetric survey to monitor the effectiveness of archaeological exclusion zones. The data will be analysed by an accredited archaeologist as defined in the marine written scheme of archaeological investigation required under condition 13(2) [included in pre-construction requirements section below].
	Pre-construction requirements Subject to condition 13(3) ['Pre-construction archaeological investigations and pre-commencement material operations which involve intrusive seabed works must only take place in accordance with a written scheme of investigation specific to the relevant pre-construction activities (which must accord with the details set out in the outline marine written scheme of investigation) which has been submitted to and approved by the MMO in consultation with the statutory historic body.'], the licensed activities or any relevant stage of those activities must not commence unless no later than six months prior to the commencement of the relevant stage a marine written scheme of archaeological investigation for the stage in construction has been submitted to and approved by the MMO in writing, in accordance with the outline marine written scheme of

Windfarm	Condition/Requirement
	investigation, and in accordance with industry good practice, in consultation with the statutory historic body to include: • details of responsibilities of the undertaker, archaeological consultant and contractor; • a method statement for further site investigation including any specifications for geophysical, geotechnical and diver or remotely operated vehicle investigations; • archaeological analysis of survey data, and timetable for reporting, which is to be submitted to the MMO within six months of any survey being completed; • delivery of any mitigation including, where necessary, identification and modification of archaeological exclusion zones prior to construction; • monitoring of archaeological exclusion zones during and post construction, including provision of a report on such monitoring; • a requirement for the undertaker to ensure that a copy of any agreed archaeological report is deposited with the National Record of the Historic Environment, by submitting a Historic England OASIS ('online access to the index of archaeological investigations') form with a digital copy of the report within six months of completion of construction of the authorised scheme, and to notify the MMO that the OASIS form has been submitted to the National Record of the Historic Environment within two weeks of submission; • a reporting and recording protocol, designed in reference to the Offshore Renewables Protocol for Reporting Archaeological Discoveries as set out by the Crown Estate and reporting of any wreck or wreck material during construction, operation and decommissioning of the authorised scheme; and • a timetable for all further site investigations, which must allow sufficient opportunity to establish a full understanding of the historic environment within the offshore Order limits and the approval of any necessary mitigation required as a result of the further site investigations prior to commencement of licensed activities. Each programme, statement, plan, protocol or scheme required to be approved under [the above condition] shall be submitted for approval at least four months prior to the intended start of construction, except where otherwise stated or unless otherwise agreed in writing by the MMO. The licensed activities shall be carried out in accordance with the approved plans, protocols, statements, schemes and details approved under [the above condition], unless otherwise agreed in writing by the MMO.

Windfarm	Condition/Requirement
	No part of this licence authorises any part of the authorised scheme extending beyond the [approved] detailed design parameters.
Seagreen (Scotland, 2023)	*Pre-construction requirements* The Company must, no later than 6 months prior to the Commencement of the Development, submit a Marine Archaeology Reporting Protocol which sets out what the Company must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Development, in writing, to the Scottish Ministers for their written approval. Such approval may be given only following consultation by the Scottish Ministers with any such advisors as may be required at the discretion of the Scottish Ministers. The Reporting Protocol must be implemented in full, at all times, by the Company. **Reason:** *To ensure any discovery of archaeological interest is properly and correctly reported.*
Moray West (Scotland, 2019)	*Pre-construction requirements* The Company must, no later than six months prior to the Commencement of the Development, submit a Protocol for Archaeological Discoveries ("PAD") and a Written Scheme of Investigation ("WSI") which sets out what the Company must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Development, in writing, to the Scottish Ministers for their written approval. Such approval may be given only following consultation by the Scottish Ministers with Historic Environment Scotland ("HES") and any such advisors as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted. The Reporting Protocol must be implemented in full, at all times, by the Company. The final PAD and WSI must be sent to Aberdeenshire Council for information only.
Beatrice (Scotland, 2014)	*Pre-construction requirements* The Company must, no later than 6 months prior to the Commencement of the Development, submit a Reporting Protocol which sets out what the Company must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Development, in writing, to the Scottish Ministers for their written approval. Such approval may be given only following consultation by the Scottish Ministers with any such advisors as may be required at the discretion of the Scottish Ministers. The Reporting Protocol must be implemented in full, at all times, by the Company.

Windfarm	Condition/Requirement
Buchan (Scotland, floating Wind Farm, 2022)	*Pre-construction requirements* No development shall take place within the development site as outlined in red on the approved location plan until the developer has secured the implementation of a programme of archaeological works in accordance with a written scheme of investigation which has been submitted by the applicant, agreed by the Highland Council Historic Environment Team, and approved by the Planning Authority. Thereafter the developer shall ensure that the programme of archaeological works is fully implemented and that all recording and recovery of archaeological resources within the development site is undertaken to the satisfaction of the Planning Authority in agreement with the Highland Council Historic Environment Team.