



Visual Impact Provision (VIP), Snowdonia Proposed marine works (pylon removal)

*Marine archaeological written scheme of investigation
and protocol for archaeological discoveries*

for

Intertek

on behalf of

National Grid

Project number: CO191202

Report number: 191202.1

January 2020

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prepared by date	Ryan Killion, Marine Archaeologist January 2020
checked by date	Dr Michael Walsh, Lead Marine Consultant January 2020
approved by signed date	Dr Michael Walsh, Lead Marine Consultant January 2020
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SUMMARY

Project name: Visual Impact Provision (VIP), Snowdonia
Location: Gwynedd
NGR: 261019 337855

Coracle Archaeology was commissioned by Intertek on behalf of National Grid to produce a written scheme of investigation (WSI) and a protocol for archaeological discoveries (PAD) for marine archaeology in relation to the Proposed Marine Works (henceforth 'the Works') which form part of the construction works of the Visual Impact Provision (VIP), Snowdonia Project. This WSI and PAD have been prepared in support of the marine licence application for the Works.

The marine archaeological desk-based assessment (DBA) (Cotswold Archaeology 2017a) for the VIP Snowdonia Project, identified one designated historic asset within the marine environment area of the Search Area for Permanent and Temporary Works, the Grade II listed building, Pont Briwet. This historic asset is cited for reference only as it is a terrestrial historic asset, and therefore beyond the scope of this report. There is one undesignated historic asset recorded in the National Monuments Record for Wales within the marine parts of the search area for permanent and temporary works, comprising the wreck of an amphibious vehicle. Very little is known about this site and it is unclear if it still survives.

The Historic Environment Record (HER) records evidence for human activity within the area surrounding the Dwyrdd Estuary from the prehistoric period until present. It is considered, therefore, that there is some potential for buried archaeology in the vicinity of the works to remove the pylons and the associated temporary trackways.

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GLOSSARY

AONB - Area of Outstanding Natural Beauty

BGS – British Geological Survey

CD – Chart Datum

Cadw - the Welsh Government's historic environment service working for an accessible and well protected historic environment for Wales

Client - Intertek on behalf of National Grid

Archaeological consultant - Coracle Archaeology who compiled this document

Historic assets - Elements of the historic environment that have local, regional or national significance, such as listed buildings or war memorials

DBA - Desk-based assessment

Designated wreck - A protection placed on historic wrecks so they are not put at risk from unauthorised access, undisciplined activities or investigation, in accordance with the Protection of Wrecks Act 1973

Fauna - Animals both invertebrates and vertebrates

Flint - Form of quartz mineral (chert) used to make tools in prehistoric societies

GAPS - Gwynedd Archaeological Planning Service

GAT – Gwynedd Archaeological Trust

Geophysical survey - A non-intrusive investigative survey using methods, including sidescan sonar, magnetometer, echo-sounding and sub-bottom profiling, to detect or measure features on and below the seabed

Geotechnical survey - An intrusive survey method that penetrates the seabed recovering material samples for analysis

HER – Historic Environment Record

Lithic - Stone tool that may be associated with prehistoric cultures

Marine Environment Area – Area within the Search Area for Temporary and Permanent Works as agreed with Natural Resources Wales bounded by the mean high-water springs at the landward extent.

Mesolithic - Archaeological period of time of past cultures approximately 9,000 – 4,000BC

MHWS - Mean High Water Springs, highest average tide

NMRW – National Monuments Record for Wales

OS – Ordnance Survey

PAD - A Protocol for Archaeological Discoveries sets out the procedures that must be followed in the event that archaeological discoveries are made either on the seabed or on the deck of working vessels and identifies the personnel with responsibility for ensuring that the PAD is followed

Palaeo-environmental - Prehistoric environmental conditions

Peat - An organic material formed by decayed vegetation matter that can preserve important environmental and archaeological evidence

PMRA 1986 - Protection of Military Remains Act 1986

PWA 1973 - Protection of Wrecks Act 1973

RCAHMW - The Royal Commission on the Ancient Historic Monuments for Wales takes a leading national role as the originator, curator and supplier of authoritative cultural heritage information for individual, corporate and governmental decision makers, researchers, and the general public

Receiver of Wreck (RoW) - The Receiver of Wreck is the wreck administration within the Maritime and Coastguard Agency (MCA) / UK Hydrographic Office (UKHO) which has become a centralised function, dealing with all reports of wrecks from around the UK and Northern Ireland. It is based in Southampton, with assistance from Coastguard personnel around the coast

Receptor - Any environmental or other defined feature that is sensitive to, or has the potential to be affected by, an impact

Relevant local and national authorities – the relevant local and national authorities are the Gwynedd Archaeological Planning Service and the Royal Commission on the Ancient Historic Monuments for Wales (RCAHMW) respectively

SAC - Special Area of Conservation

SSSI - Site of Special Scientific Interest

Marine environment study area – a 1km buffer around the proposed marine works area used to gather data to provide sufficient contextual information about the site and its environs from which to assess known and potential impacts on the heritage resource

The Crown Estate (TCE) - the body responsible for managing the seabed and foreshore in England, Wales and Northern Ireland, including offshore energy, aggregates, and cables and pipelines

UKHO - United Kingdom Hydrographic Office

VIP - Visual Impact Provision

WSI - A written scheme of investigation sets out the respective responsibilities of the Developer, the Contractor, and the Archaeological Consultant prior to and during installation, and creates formal lines of communication between the parties and relevant stakeholders

1. INTRODUCTION

Outline

- 1.1. Coracle Archaeology was commissioned by Intertek on behalf of National Grid to produce a written scheme of investigation (WSI) and a protocol for archaeological discoveries (PAD) for marine archaeology encountered during the Works which form part of the construction phase of the Snowdonia Visual Impact Provision (VIP) Project. This WSI and PAD has been prepared in support of a marine licence application for the Proposed Marine Works (Pylon removal).
- 1.2. The composition of the WSI and PAD have been guided by the *Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment* (Chartered Institute for Archaeologists (CIfA) 2014); *Planning Policy Wales* (Welsh Government 2016); *Conservation Principles* (Cadw 2011); *Model Clauses for Archaeological Written Schemes of Investigation* (The Crown Estate & Wessex Archaeology 2010); *Protocol for Archaeological Discoveries* (The Crown Estate & Wessex Archaeology 2014); and (COWRIE & EMU 2011).
- 1.3. An earlier version of the WSI prepared for proposed ground investigation works by Cotswold Archaeology (2017b) has been reviewed previously by the Gwynedd Archaeological Planning Service.

Project overview

- 1.4. The VIP Snowdonia Project is a stakeholder-driven project to mitigate the visual impact of existing electricity infrastructure in nationally protected landscapes in Great Britain. For National Grid, which is the transmission owner in England and Wales, this means considering the effects of existing infrastructure on the visual amenity and landscapes of National Parks and Areas of Outstanding Natural Beauty (AONBs).
- 1.5. The aim of the Snowdonia VIP Project (hereafter referred to as the Proposed Project) is to relocate a section of the overhead line, OHL 4ZC underground (hereafter referred to as the VIP subsection) within, and adjacent to, Snowdonia National Park.
- 1.6. The VIP subsection is approximately 3km in length and runs from National Grid's existing Garth Sealing End Compound (SEC) near Minffordd (to the east of Porthmadog) across the Dwyryd Estuary where it enters the western edge of the Snowdonia National Park. It then continues past the small settlement of Clifor.

1.7. The Works which form part of the construction phase of the Proposed Project, include all project activities which occur within the marine environment. The marine environment is defined as the area below mean high water springs (MHWS). The boundary of the Marine Environment Area within the wider Project Area has been agreed in consultation with Natural Resources Wales (NRW) and is shown in Figure 1.

1.8. The Works which are the focus of this WSI, include the following:

- removal and dismantling of two pylons and their foundations (4ZC030R and 4ZC031) and the associated temporary access tracks to these locations;
- removal of the foundations of the previously dismantled pylon 4ZC030; and
- the temporary access to enable the dismantling of pylon 4ZC032 (although the pylon itself is within the terrestrial environment) (see Figure 1).

1.9. The Works, which are the subject of this WSI, include only the removal of the marine pylons from the saltmarsh, and the foundations of the removed pylon in the estuary channel. This will be accessed via a temporary stone platform constructed from the shore. No vessels will be involved in the works and most excavation works will be undertaken on the saltmarsh.

Location and landscape context

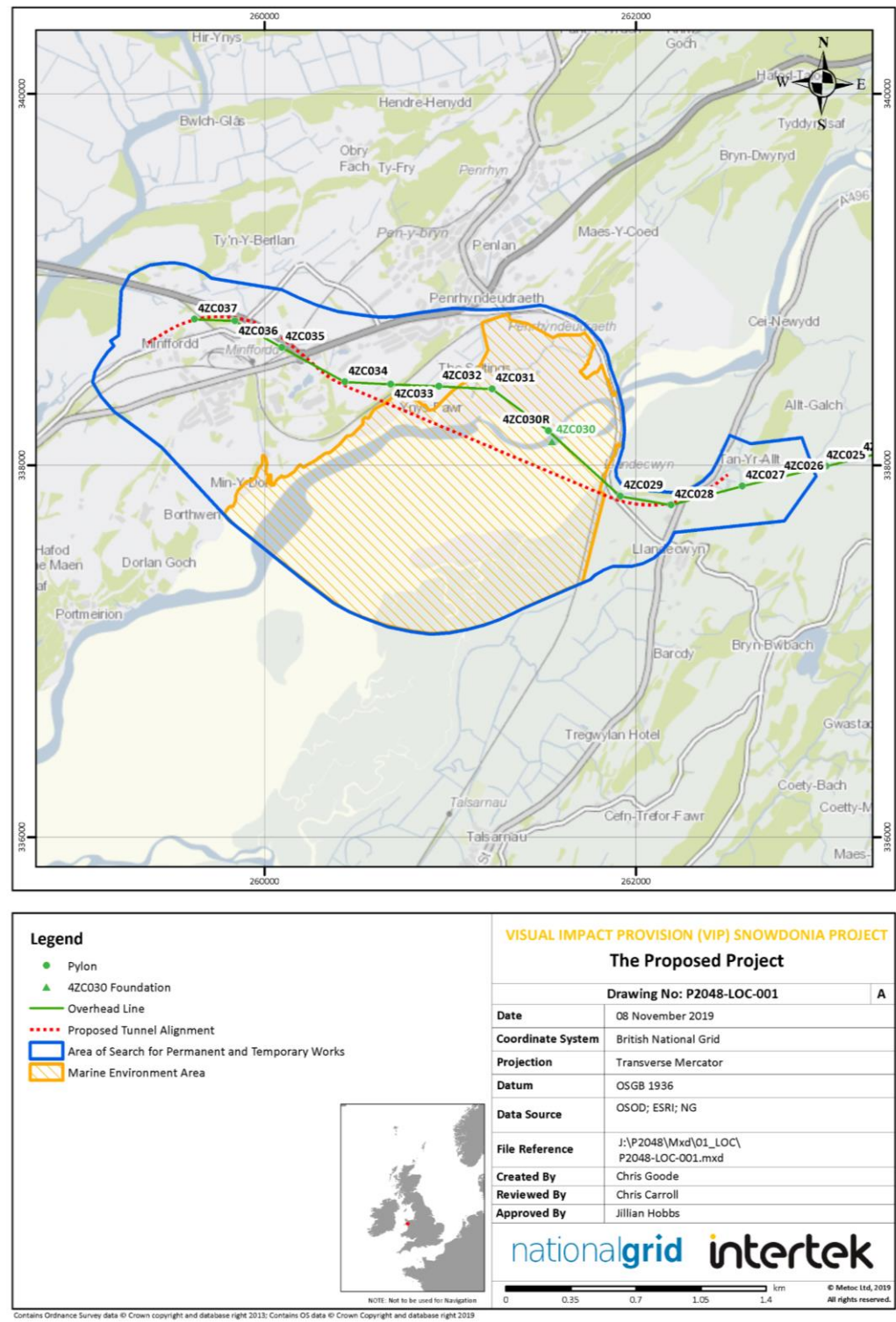
1.10. The Works boundary is located within the Marine Environment Area (Figure 1) on the west coast of Wales at the edge of the Snowdonia National Park, on the part of the Dwyryd Estuary between Penrhyndeudraeth to the north and Talsarnau to the south, including areas of saltmarsh which remain exposed at high tide. This area of sand flats immediately south of the Penrhyndeudraeth peninsula is also referred to as Traeth Bach (Little Beach).

1.11. The superficial geology of the Site comprises tidal flat deposits composed of clay, silt and sand; these overlie bedrock geology of the Ffestiniog Flags Formation, composed of mudstone, siltstone and sandstone (British Geological Survey 2016).

The Marine Environment Area lies within the Tremadog Bay and Dwyryd Estuary Marine Character Area (MCA 14) (Natural Resources Wales 2015). This characterises the Dwyryd Estuary as an extensive intertidal area with a meandering channel running through it which continues inland. There are also extensive salt marshes, sand flats,

mud and dune systems, with the tidal island of Ynys Giffan forming a prominent feature (Natural Resources Wales 2015).

Figure 1 Location overview



Scope and objectives

- 1.12. The marine archaeological WSI and PAD are based on guidelines covering WSIs and PADs, and the results of the archaeological interpretation of geotechnical and geophysical survey data based on appropriate guidelines (The Crown Estate & Wessex Archaeology 2010; 2014; COWRIE & EMU 2011; Plets *et al.* 2013).
- 1.13. This marine archaeological WSI outlines the cultural heritage and archaeological scope of works for the Works. The WSI clearly establishes the mitigation procedures that must be followed in order to avoid damage to historic assets, while the PAD clearly sets out the protocols and procedures that must be followed in the event that any unexpected archaeological discoveries are made whilst undertaking this work.
- 1.14. The Archaeological Consultant will liaise with the Contractor prior to the Works to ensure that any archaeological discoveries encountered during the works are reviewed, recorded, sampled and reported in accordance with PAD guidance (The Crown Estate & Wessex Archaeology 2014).
- 1.15. This WSI and PAD are intended to mitigate risks to potential unidentified marine archaeology and cultural heritage that may result from the Works. With reference to the *Model Clauses for Written Schemes of Investigation* (The Crown Estate & Wessex Archaeology 2010), the main objectives of this WSI and PAD are:
- to set out the respective responsibilities of National Grid, the pylon removal Contractor, and the Archaeological Consultant prior to and during these activities, to include contact details and formal lines of communication between the parties and with archaeological curators;
 - to ensure that, in the event that unexpected archaeological discoveries are made, any further geophysical and geotechnical investigations are subject to archaeological input, review, recording and sampling;
 - to propose measures for mitigating effects upon any archaeological material that may be encountered during the operations associated with these investigations; and

- to establish the reporting, publication, outreach, training, conservation and archiving requirements for the marine archaeological works undertaken in the course of these investigations.

1.16. National Grid is responsible for the implementation of this WSI and PAD.

2. ARCHAEOLOGICAL BACKGROUND

Summary of designated historic assets

- 2.1. There are no World Heritage sites, Scheduled Monuments, Protected Wreck sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas within the Marine Environment Area.
- 2.2. The southern part of the Marine Environment Area extends into the boundary between the Ardudwy Landscape of Outstanding Historic Interest to the east, and the Aberglaslyn Landscape of Outstanding Historic Interest to the west but is considered beyond the scope of this work.
- 2.3. The Pont Briwet railway bridge is twice listed as a Grade II listed building, on either side of the Dwyrdd, at both Penrhyndeudraeth and at Talsarnau. This is located within the northern limit of the Marine Environment Area boundary but is considered to be beyond the scope of this work.

Summary of non-designated and potential historic assets

- 2.4. A sword found near Abergafren, north of the north western boundary of the Marine Environment Area, provides evidence for Bronze Age activity in the area. There is also a wreck recorded by the Royal Commission on the Ancient and Historical Monuments for Wales (RCAHMW) National Monuments Record for Wales (NMRW), although this is located c. 200m from the south side of Penrhyndeudraeth toll bridge (Cotswold Archaeology 2017a: Appendix A) and therefore well beyond the Works. The wreck is described as an amphibious vehicle, although there is limited additional information, and it is uncertain whether the asset survives.
- 2.5. Owing to changes in coastal morphology it is difficult to determine what activities might have been undertaken in the Marine Environment Area at different periods. It is likely that activities would have included a combination of marine, intertidal and terrestrial elements, ranging from fishing to land management. Peat deposits identified during the

investigation of terrestrial sites in nearby Penrhyndeudraeth (Hyder Consulting, 2013) suggest deforestation events during the Bronze Age, in addition to evidence for palaeo-dendritic systems (Hyder Consulting, 2013). Additional information is needed, however, to determine whether this affected habitation patterns. Due to the identification of peats in Traeth Mawr, to the north of Penrhyndeudraeth, it is likely that buried peat deposits could be present within the Site.

Prehistoric

- 2.6. There is some evidence for prehistoric activity within the Marine Environment Area around Traeth Bach. If present within the Marine Environment Area, artefactual material could include fish traps, log boats, hooks or even evidence of terrestrial habitation depending on coastal morphology. The potential for the preservation of evidence relating to these activities is higher in the marine environment than it would be for terrestrial sites. This material would most likely be present in the historical intertidal zone, although there is limited evidence at present to indicate how this relates to the modern intertidal zone. The potential for encountering this material is thought to be low. If buried archaeological material from this period is identified it would have high evidential value.

Roman

- 2.7. Any evidence of Roman maritime activity within the Dwyrdd Estuary could include ships' timbers, artefacts relating to cargoes, or evidence of terrestrial habitation including construction along the historic waterfront. Very few Roman wrecks have been identified around the UK so the potential for encountering Roman material within the Marine Environment Area is very low. If buried archaeological material from this period is identified it would have high evidential value.

Medieval

- 2.8. Buried archaeological material dating from the medieval period is most likely to be associated with terrestrial activities such as land management. As with Traeth Mawr to the north there may be the potential to encounter medieval crossing points (Hyder Consulting, 2013). It is unclear what form these would take but may include infrastructure related to ferries, or crossing points which could be walked at low tide and may have been marked. The potential for buried archaeological material from the

medieval period is thought to be low. If buried archaeological material from this period is identified it would have medium to high evidential value.

Post-medieval and modern

- 2.9. From the post-medieval to modern periods there was an increase in boat-building and coastal trade, primarily linked to slate quarrying. This can be seen in the Marine Environment Area in the slate quay to the east, and the slate boat to the south. There are also references to ferries operating in Traeth Bach, one of which is reported to have sunk in the area (Gewefan gymunedol: Talsarnau, n.d.). It may be that there are other small vessels similar to the slate-carrying boat, or their cargoes, buried in the sands of Traeth Bach.
- 2.10. There is also evidence from historic mapping and aerial photographs of activity within the saltmarshes on the north and south sides of the channel. This is evidenced by depictions of channels within the saltmarshes and possible evidence for managing the northern edge of the channel in an Admiralty chart from 1889. There are also possible channels and trackways shown in RAF aerial photographs from 1946 and Ordnance Survey (OS) aerial photographs from 1971. The RAF aerial photographs also show possible debris within the Marine Environment Area (see Cotswold Archaeology 2017a: Figure 4). It is therefore considered that there is a medium to high potential for buried archaeological material from these periods within the Site. This archaeological material may be of low to medium evidential value.

3. AIMS AND OBJECTIVES

- 3.1. The aim of this WSI is to reduce the potential risks of impact on archaeological and cultural heritage assets from the Works, and to set out clearly the procedures that will be followed in order to avoid impacts and to protect such assets.
- 3.2. The aim of an Archaeological Exclusion Zone (AEZ) is to exclude all activities within the exclusion zone thereby protecting archaeological and potential archaeological assets from accidental damage. The potential risks to historic assets will be mitigated through the use of site-specific AEZs which specify the extent of each exclusion zone so as to avoid all known and potential cultural heritage receptors.
- 3.3. The objectives of the WSI, with reference to the Model Clauses for Written Schemes of Investigation (The Crown Estate & Wessex Archaeology, 2010), are:

- to set out the scope of works of the proposed project;
- to propose measures for mitigating effects upon any archaeological material that may be encountered during project operations;
- to identify and establish the position and extent of any AEZs;
- to implement a protocol for the unexpected discovery of archaeological finds; and
- to produce an integrated archive for the project work which will include all project data associated with archaeology and cultural heritage, to comply with the ClfA's *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (2014).

4. METHODOLOGY

4.1. The archaeological assessment of the areas affected by the Works, including assessment of project-specific survey datasets, has been completed (Cotswold Archaeology 2017a,b&c) in accordance with professional standards and guidance (e.g. ClfA 2014a&b, Plets *et al* 2013).

AEZs

4.2. Known historic assets and geophysical anomalies of high, medium and low archaeological potential which may be affected by the Works have been identified in the DBA (Cotswold Archaeology 2017a) and in the archaeological assessment of geophysical survey data (Cotswold Archaeology 2017c). Where appropriate these will be protected by the imposition of an AEZ around each asset considered at risk.

4.3. AEZs will apply to any activities that may disturb the seabed, within which all development-related activities will be prohibited. Their locations and extent will be agreed with curatorial authorities in advance. The location and conditions of the AEZs will be conveyed to all teams involved in any such works. The location, extent and number of AEZs will be monitored and may be revised throughout the project as new evidence comes to light.

Location and extent of AEZs

4.4. Based on the evidence currently available from the Marine Archaeological DBA (Cotswold Archaeology 2017a) and marine geophysical survey data (Cotswold Archaeology 2017c), an AEZ of 100m radius is recommended around only one known

asset (Figure 2). The suggested extent of the AEZ is the radius of a circle centred on the given location (261000E; 338000N). The extent of the AEZ is based not only on the perceived archaeological potential of the asset, but also on its extent, if known.

Monitoring of AEZs

- 4.5. The effectiveness of any AEZ will be periodically monitored by the **Archaeological Consultant** in consultation with the **Site Champion** (see 4.11 below). If deemed necessary by concerns raised by the **Site Champion**, such as one or more incursions into an AEZ or repeated finds of archaeological material without the established AEZ, this situation may be re-evaluated by periodic visits to the site by the **Archaeological Consultant**.
- 4.6. No operations that disturb the seabed will be undertaken within an AEZ. If it becomes apparent that intrusive activities have taken place within an AEZ, the party responsible will obtain advice from the **Archaeological Consultant** in accordance with their obligations with respect to the AEZ and the detail of the project-specific WSI.
- 4.7. In the event that there is any incursion into an AEZ, the incursion will be fully investigated by the **Archaeological Consultant**, which may include further geophysical, remotely-operated vehicle (ROV) or diver survey, to determine if any identifiable heritage asset has been impacted, damaged or destroyed. The results of any investigation will be fully reported in a Technical Report, which will be submitted to the **Relevant Local and National Authorities** within two months of the investigations.

- 4.8. If alterations to AEZs are deemed necessary, an archaeological report will be prepared which will include recommendations regarding amendment of the extent, removal and/or creation of new AEZs. Any proposed alterations to agreed AEZs will be submitted, for approval prior to change, to **Relevant Local and National Authorities**.

Establishing new AEZs

- 4.9. In the event that an unexpected archaeological discovery is made during the course of the works, on plant machinery, or a structure encountered on the seabed, all works will cease in the vicinity of the discovery and a temporary exclusion zone (TEZ) will be established. The TEZ will exclude all intrusive works in the vicinity of the find until further investigations have been concluded. Project-related work can, however, continue elsewhere.
- 4.10. At the earliest opportunity, any plant and / or machinery should be examined for archaeological material. The occurrence will be recorded in the daily progress report and a preliminary record should be completed, including the location of the find, together with photographs and / or sketches of the find(s). Any finds should be stored in seawater (or in water from the saltmarsh if readily available) in a suitable container without removal of any material or marine growths.
- 4.11. All related documentation should then be sent to the archaeological consultant who will provide advice on best practice. If deemed necessary, the archaeological consultant will notify, and will seek the advice of, the **Relevant Local and National Authorities**. In the event that the finds are found to be of significant archaeological interest, prior to the recommencement of work in the area, further on-site investigations may be required, which may include a site visit by the **Archaeological Consultant**.
- 4.12. Following consultation, the archaeological consultant will advise on the status of the TEZ which will be either:
- converted into a permanent AEZ;
 - revised or relocated; or
 - removed completely.
- 4.13. The outcome will be conveyed to all works crews and site plans will be updated accordingly.

Reporting and deliverables

- 4.14. On completion of the Works, if deemed necessary, a report may be compiled on the effectiveness of the AEZs, any alterations or additions to them, and the results of monitoring.
- 4.15. Reporting activities may include the results of archaeological assessment of serendipitous discoveries during works that impact the seabed / saltmarsh, and the effectiveness, and implementation, of new exclusion zones. On completion of these works, an archaeological summary report may also be prepared to synthesise the results of any reports noted above that may arise throughout the course of the works. If a final archaeological report is deemed necessary, it will be submitted to the **Relevant Local and National Authorities** within two months of the work and will address the following themes:
- Maritime and saltmarsh sites and finds; and
 - Palaeo-environmental and submerged prehistoric archaeology.
- 4.16. Reference to all archaeological assessment work will be made in any summary report which will consolidate the key results of the archaeological assessment undertaken upon completion of any works that disturb the seabed. Should a summary report be required, it will be delivered to the **Relevant Local and National Authorities**, and if relevant, to the Ministry of Defence (MoD) and the Receiver of Wreck (RoW), for consultation within two months of the completion of the works. This refers solely to summary reports; unexpected discoveries will be reported as appropriate at the time of discovery in accordance with the terms of the PAD (below).
- 4.17. Depending on outcomes, for example the discovery of unexpected archaeology, or possible incursions into AEZs, each element of work may give rise to one or more reports, the provision of which will be the responsibility of the **Developer** through their appointed **Archaeological Consultant**. Any reports will be delivered to the **Relevant Local and National Authorities** within two months.

5. PROTOCOL FOR ARCHAEOLOGICAL DISCOVERIES

5.1. The protocol for archaeological discoveries (PAD) sets out best practice in the reporting of chance finds of archaeological interest, that may be discovered in the course of the development, based on the PAD implemented through the Crown Estate for offshore wind developments (The Crown Estate & Wessex Archaeology 2014). The principles that are set out here are intended to address archaeological mitigation measures identified during the previous archaeological assessments of the development and any further cultural heritage assets that may be identified during the works.

5.2. The objectives of the PAD are:

- to set out the respective responsibilities of the **Developer**, their **Contractors** (TBC), and the **Archaeological Consultant** (Coracle Archaeology) prior to and during any works that disturb the seabed / saltmarsh, to include contact details and formal lines of communication between the parties and with archaeological curators;
- to clearly set out the protocols and procedures that must be followed in the event of any unexpected archaeological discoveries; and
- to ensure that, in the event of unexpected archaeological discoveries being made, appropriate archaeological input, review and recording is undertaken.

5.3. The responsibility for implementing this PAD rests with the Developer. This must include the engagement of the **Archaeological Consultant** to provide briefings to all relevant project contractors (and sub-contractors) in the use of the PAD and its implications.

Types of find

5.4. 'Finds' are considered here to mean all forms of artefact that can be found on the seabed. An artefact is any item that must have been made, modified, used or transported by humans, i.e. their presence on the seabed is 'artificial' or 'cultural' rather than 'natural'.

5.5. For legal purposes, finds from the seabed fall into two categories. 'Wreck' has a specific legal definition broadly encompassing all sorts of materials that come to be on the seabed as a direct result of once being aboard or part of a vessel. Statutory law relating

to 'wreck' is set out principally in the Merchant Shipping Act 1995, applicable to territorial waters out to twelve nautical miles. The common law relating to wreck is to be found in legal cases and commentaries. All other finds are referred to as 'non-wreck'. 'Non-wreck' includes things such as prehistoric flint artefacts that were lost on land that has since been inundated by rising sea level, or artefacts that have been eroded from sites on the shore. The law applicable to 'non-wreck' is largely common law, to be found in legal cases and commentaries.

Potential archaeologically significant deposits

- 5.6. It is possible that during the Works a range of archaeological and palaeo-environmental materials may be recovered. Palaeo-environmental materials may include waterlogged organics ranging from samples of deposits of peat to large fragments of wood from submerged forests. These deposits and materials are important as they offer an opportunity to reconstruct former terrestrial (peat) environments through the analysis of microfossil (e.g. pollen and spores) and macrofossil (e.g. seeds and insect analysis) evidence. Waterlogged wood from the remains of trees (e.g. submerged forests) offer a unique opportunity to analyse the original woodland from thousands of years ago through analyses such as tree species identification and dendrochronology (the study of tree-rings). The importance of such deposits and materials for palaeo-environmental study is well recognised (English Heritage 2004a, 2007).
- 5.7. Materials of a more artefactual and hence archaeological nature may also be recovered including lithic artefacts (e.g. flint tools), pottery fragments, or possibly even ship or boat timbers and structures. The recovery and subsequent analysis of such items can identify previously unknown archaeological sites such as shipwrecks or prehistoric occupation sites. The latter are of particular interest in areas of drowned landscapes (former terrestrial areas now submerged by relative sea-level rise) with sampling of this nature providing a rare opportunity to recover materials from, and hence discover, such sites.
- 5.8. Faunal and human bone may also be found during the Works. Any recovered bone fragments (burnt and unburnt) can potentially provide information regarding populations that inhabited the area in the past. The analysis of human bone (osteo-archaeology) can provide details of sex, age and any trauma suffered by the individual. Isotopic analysis of bone, and in particular teeth, can also provide information on the

diet and movement of the individual during their lifetime. Any human bone recovered will be recorded in accordance with English Heritage (2004b) guidelines. Animal bone can also be analysed for information on the species present and possibly evidence for butchery or gnawing, which may provide information regarding how they died and/or how their remains were used. Any animal bone recovered will also be recorded in accordance with Historic England guidelines (Baker & Worley 2019).

- 5.9. If encountered, a report will synthesise the results from any material recovered during the Works. The geo-archaeological assessment of any palaeo-environmental evidence recovered (including sedimentological and pollen data) will enable the reconstruction of former landscapes and will therefore provide an environmental context for any archaeological materials recovered. This data will also provide information regarding changes to relative sea-level from this area, which can then be compared and contrasted with other regional studies. Radiocarbon dating can be used to determine the age of organic deposits within the samples, and enable an accurate comparison to be made with existing sea-level curves and other regional studies.

Archaeological input

- 5.10. A consideration of archaeological objectives will be included as part of these works. Consultation will be held between the **Archaeological Consultant**, and the Contractor undertaking the Works in order to ensure that archaeological objectives will be included and that relevant samples will be retained for geo-archaeological analysis.
- 5.11. Prior to commencement of the Works the **Archaeological Consultant** will brief key construction staff fully on the nature and range of archaeological deposits and materials that might be encountered, and how to record and store samples. It is anticipated that the upper deposits will have the highest potential for archaeological material, archaeologically significant palaeo-environmental and sedimentological deposits. Particular attention should therefore be paid to retaining any potentially archaeologically-significant deposits for review by a geo-archaeologist.

Circumstances of discovery

- 5.12. This PAD addresses finds of archaeological interest made in the following circumstances:

- Specifically, discoveries made during the Works;

- Generally, discoveries on the seabed or in the saltmarshes during seabed inspections and investigations, seabed clearance or project installation;
- An anomaly that has been encountered on the seabed or in the salt marshes such as possible wreck or cultural heritage features identified during geophysical, geotechnical, remotely-operated vehicle (ROV) or diver surveys; and
- A find of archaeological interest made during the course of the Works, for example the exposure or recovery wreck or objects.

Terms and roles

- 5.13. The **Developer** will draw the attention of the **Contractor** to the potential for archaeological material to be found in the course of the Works, and will inform them of the possible importance of such finds. Key operational staff will be briefed on the operation of the PAD prior to the commencement of the Works.
- 5.14. This PAD anticipates discoveries being made by the **Contractor**, who reports to the **Site Champion** (as the Works are not offshore a **Nominated Contact** is not required as both roles can be fulfilled by one person). The **Site Champion** will then liaise with the appointed **Archaeological Consultant** to provide details of a reported discovery. The **Archaeological Consultant** will assess the nature of the appropriate action to be taken, and whether to contact the **Relevant Authority**, in this case GAPS for the estuarine / riverine / coastal / intertidal (on behalf of LPA / NRW) and RCAHMW for inshore / offshore at a national level. The **Archaeological Consultant** will also brief the **Site Champion** on the types of archaeological finds and features that may be encountered. The responsibilities for each role are outlined below.

Site Champion

- 5.15. The **Site Champion** will be the contractor's site-based point of contact for all communications regarding archaeological discoveries. The **Site Champion** will be issued with a copy of this document.

- 5.16. The **Site Champion** will liaise with both the Contractor and the Developer to act as a first point of contact for staff in respect of the implementation of the PAD during the Works. The **Site Champion** will be issued with a series of preliminary record sheets and flow charts (see Appendix A) setting out the actions to be taken in the event that an archaeological discovery is made during the Works.

Archaeological consultant

- 5.17. The **Archaeological Consultant** will be the initial point of contact for the **Site Champion**. They shall:

- Brief the **Site Champion** on the nature of archaeological finds and features and appropriate measures for interim conservation and safe storage;
- Advise on the identification of finds and features and, if possible, the character of their seabed / saltmarsh locations;
- Advise on material conservation of any recovered finds;
- Agree appropriate actions to be taken; and
- Where appropriate, pass on all details and records associated with any discoveries to the **Relevant Local and National Authorities**.

Relevant Local and National Authorities

- 5.18. Cadw is the statutory body for archaeology and heritage in Wales including marine archaeology in territorial waters adjacent to the Welsh coast up to the mean high water mark and out to 200 nautical miles in UK waters. Cadw have discharged this responsibility to GAPS for the estuarine / riverine / coastal / intertidal and RCAHMW for inshore / offshore at a national level. In the event of an unexpected discovery of a find of archaeological significance, the **Archaeological Consultant** may consider it necessary to inform the **Relevant Local and National Authorities**, GAPS and RCAHMW respectively. Should this be necessary, GAPS and RCAHMW will:

- Liaise with other relevant archaeological authorities;
- Advise on proposals to further evaluate any finds; and
- Advise on proposals to mitigate the effects of work activities upon any finds.

Actions following discoveries on the seabed and in the saltmarsh

- 5.19. The following presents the actions to be taken in the event of an archaeological discovery during the Works. The preliminary record sheets and flow charts illustrating the actions to be followed are presented in Appendix A.

Actions by the Contractor

- 5.20. If a find, anomaly or structure has been encountered in the course of the Works, the **Contractor** shall inform the **Site Champion**. The **Site Champion** will examine any archaeological material and will, as soon as possible after it has been discovered, inspect the works to see if any archaeological material or structures remain *in situ*.

Actions by the Site Champion

- 5.21. Where it is possible to identify the location from which the find originated, the **Site Champion** will impose a temporary exclusion zone (TEZ) in the vicinity of the discovery within which pylon removal activities will cease until further investigations have been concluded. The works can continue in an alternative location while the feedback and advice of the **Archaeological Consultant** is sought.
- 5.22. The **Site Champion** shall record the occurrence as soon as possible in the Daily Progress Report or site log together with the time and the exact location and depth of the find. Additionally, the **Site Champion** shall ensure that the location of the TEZ is notified to all works staff, and is marked on navigational software, site drawings and Works plans / drawings. The **Site Champion** shall compile a Preliminary Record of the discovery.
- 5.23. The **Site Champion** shall inform the **Archaeological Consultant** of the occurrence as soon as possible and pass on all available information, including a copy of the Preliminary Record and copies of any photographs, drawings or other relevant records made. If any finds have been recovered, the **Site Champion** shall arrange for them to be stored in seawater in a suitable clean container, which should be covered. Any rust, concretion or marine growth should not be removed. The flow charts in Appendix A present the procedures to be followed in the event of a discovery.
- 5.24. Once informed of a find by the **Site Champion**, the **Archaeological Consultant** will confirm that all the details set out in the Preliminary Record are comprehensive and correct. The **Site Champion** shall ensure that any find is appropriately assessed and

documented by the **Archaeological Consultant** and if deemed necessary reported to the **Relevant Authority**.

5.25. The **Site Champion** is:

Name.....

Position.....

Address.....

.....

Telephone.....

Email address.....

Contact the Archaeological Consultant

5.26. The **Site Champion** will approach the **Archaeological Consultant** who will offer advice both on the nature of any discoveries and on appropriate actions to be taken.

5.27. The **Archaeological Consultant** is:

Michael Walsh
Lead Archaeologist

Coracle Archaeology
Unit 1, 42 Corton
Warminster
Wiltshire
BA12 0SZ

07737 825276
michael.walsh@coracle.co.uk

5.28. The **Archaeological Consultant** will discuss and agree the appropriate action to be taken, will process all records, and if deemed necessary will provide a summary report for any discoveries.

Contact the Relevant Local and National Authorities

5.29. In the event that the **Archaeological Consultant** considers it necessary, the **Relevant Local and National Authorities** will be contacted by the **Archaeological**

Consultant for further advice. All available information relating to the circumstances of the occurrence, including a copy of the Preliminary Record and copies of any photographs, drawings or other records that have been made will be passed on to the **Relevant Local and National Authorities**.

5.30. The contacts at the **Relevant Local and National Authorities** are:

Jenny Emmett
Gwynedd Archaeological
Planning Service
Craig Beuno
Garth Road
Bangor
LL57 2RT

Deanna Groom
RCAHMW
Ffordd Penglais
Penglais Road
Aberystwyth
SY23 3BU

01248 370926
jenny.emmett@heneb.co.uk

01970 621217
deanna.groom@rcahmw.gov.uk

Advise other teams working on the site

5.31. In the event that a find is considered to be of possible archaeological significance, a temporary exclusion zone (TEZ) may be established. This will protect the historic asset identified while its significance is fully assessed.

5.32. Where a TEZ has been imposed, the **Site Champion** shall inform other teams working in the area. Other teams shall be advised by the **Site Champion** to keep a particular watch for anomalies and finds.

Establishing new archaeological exclusion zones

5.33. Once a TEZ has been established and the significance of the historic asset it protects determined, it may be necessary to maintain this exclusion zone. If the historic asset is shown to be of archaeological significance the TEZ may be converted into a new AEZ. This decision will be taken by the **Archaeological Consultant** in consultation with the **Relevant Local and National Authorities**.

Altering AEZs

5.34. If archaeological material is discovered during the course of the Works, then AEZs may be altered (enlarged, reduced, moved or removed) as a result. Any alteration will be defined by the **Archaeological Consultant** in consultation with the **Relevant Local and National Authorities**, and will be issued to each works vessel by the **Site Champion**.

Finds recovered within the UK twelve nautical mile limit

- 5.35. The **Site Champion** shall make any recovered finds available for inspection by the **Relevant Local and National Authorities**. If the find is, or appears to be 'wreck', the **Site Champion** shall as soon as possible give notice that a find has been recovered to the **Receiver of Wreck** in accordance with Section 236(1) of the Merchant Shipping Act 1995. This is a legal requirement. The **Receiver of Wreck** can be contacted as follows:

Receiver of Wreck
Bay 1/05
Spring Place
105 Commercial Road
SOUTHAMPTON
SO15 1EG

Telephone: 023 8032 9474
Fax: 023 8032 9477

PAD reporting and archiving

- 5.36. In the event that archaeological discoveries are made as a result of the PAD which the **Archaeological Consultant** considers require reporting, the scope of these reports will be agreed with the **Relevant Local and National Authorities**. Individual summary reports will be prepared for each discovery of archaeological interest, which will be compiled into a single summary report at the end of the PAD. If necessary, any archaeological reports produced as a result of this WSI & PAD will be sent for review to the **Relevant Local and National Authorities** prior to finalisation.
- 5.37. Similarly, any summary reports produced as a result of the agreed WSI, or through implementation of the PAD, will be sent as draft reports for agreement. It is intended that summary reports will be produced promptly, and will be completed within two weeks of receipt of data, to inform the developing understanding of the archaeological record in the project area and the possible need for AEZs.
- 5.38. The **Developer** will be responsible for ensuring that copies of any archaeological assessment or summary reports are deposited with the Gwynedd Archaeological Trust (GAT) Historic Environment Record (HER) along with a digital copy of the report.
- 5.39. Reporting activities may include the results of archaeological assessment of serendipitous discoveries during the Works, and the effectiveness of existing and

implementation of new exclusion zones. On completion of the Works an archaeological summary report may also be prepared to synthesise the results of any reports noted above that may arise throughout the course of the Works. If a final archaeological report is deemed necessary, it will address the following themes:

- Maritime and saltmarsh sites and finds; and
- Palaeo-environmental and submerged prehistoric archaeology.

5.40. Reference to all archaeological assessment work will be made in any summary report which will consolidate the key results of the archaeological assessment undertaken upon completion of the Works. If required, the summary report will be delivered to the **Relevant Local and National Authorities** for consultation within three months of the completion of the works.

5.41. Any samples, finds or objects of cultural heritage interest that may be recovered during the Works will be handled and stored in the appropriate manner under the guidance of the **Archaeological Consultant**, in consultation with the curators and staff from the receiving institution. All subsequent decisions regarding the handling, transport and storage of retained finds will be agreed with the relevant authority and the relevant staff from the allocated receiving institution.

5.42. Depending on outcomes, each element of work may give rise to one or more reports, the provision of which will be the responsibility of the **Developer** through their appointed **Archaeological Consultant**.

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APPENDIX A

PAD procedures to be followed in the event of a discovery

Preliminary record - discoveries on the seabed / on board / in the inter-tidal zone / on land

Company name:
Vessel/Team name:
Site/sea area name:
Date:
Time of compiling information:
Name of compiler (Site Champion):
Name of finder (if different to above):
Time at which discovery was encountered:
Vessel position at time when anomaly was encountered:
a) Latitude
b) Longitude
c) Datum (if different from WGS84)
Original position of the anomaly on the seabed, if known:
Notes on likely accuracy of original position stated above:
a) How accurate is the position?
b) Is the position the original position or has the material been moved by operations?
c) Details of circumstances and activity that lead to the discovery
Description of the find/anomaly:

Apparent size/extent of the anomaly:
Details of any find(s) recovered:
Details of photographs, drawings or other records made of the find(s) (e.g. location figure):
Details of treatment or storage of find(s):
Date and time Site Champion informed:
General notes:
If discovered on the seabed:
a) Derived from: e.g. Obstacle Avoidance Sonar, Cable Tensiometer?
b) Apparent size/extent of anomaly (length, width, height above seabed)
c) Extent of deviation/route development
Signed: _____ Date: _____