

# **Pentland floating offshore wind farm**

## Volume 3: Appendix A.17.1

Marine Archaeology and Cultural Heritage  
Methodology

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## OFFSHORE EIAR (VOLUME 3): TECHNICAL APPENDICES

### APPENDIX 17.1: MARINE ARCHAEOLOGY AND CULTURAL

#### HERITAGE METHODOLOGY

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## **APPENDIX 17.1: ORCA METHODOLOGY**

**The following method statement is as sent to HES and THC in August 2021, which combined offshore and onshore aspects of the project. The PFOWF Project has since been updated to separate out the consent applications for the respective offshore and onshore elements of the PFOWF Project. Associated parameters, names and terminology used to describe the component parts of the PFOWF Project have also subsequently been updated as the EIA has progressed. These changes have not been reflected in this method statement, but have been updated as appropriate in the Offshore EIAR (Volume 2): Chapter 17 Marine Archaeology and Cultural Heritage. These changes in the EIAR have not altered the agreed methodology.**

## PENTLAND FLOATING OFFSHORE WIND FARM

### ORCA METHODOLOGY FOR CONDUCTING MARINE AND ONSHORE HISTORIC ENVIRONMENT IMPACT ASSESSMENTS FOR PENTLAND FLOATING OFFSHORE WIND FARM, DOUNREAY

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This document has been prepared in accordance with ORCA standard operating procedures and Cifa standards	
Updated with Project terminology and minor revisions in light of HES feedback	
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## 1 INTRODUCTION

This method statement is for the provision of marine and onshore historic environment impact assessments for inclusion in overall Onshore and Offshore Environmental Impact Assessment Reports (EIAR) for Pentland Floating Offshore Wind Farm (PFOWF).

The project is a proposal by Highland Wind Ltd to demonstrate a floating offshore wind farm array with an installed capacity of up to 100 MW approximately 6.5-8km off the coast of Dounreay, Caithness. The aim of the project is to test and demonstrate a technology solution for floating offshore wind in Scotland. The project will be located in the previously consented offshore area (Marine Licence Area) for the Dounreay Tri Project, and the export cable will connect the offshore wind farm to the onshore infrastructure adjacent to the Dounreay Nuclear Facility.

## 2 SCOPE OF WORK

The fact that the revised PFOWF proposal lies almost totally within the same Marine Licence Area and onshore area as the original offshore and onshore Environmental Statement (ES) supporting the original Dounreay Tri application means that the work for this revised EIA and EIAR will be based on assessment work that has already been conducted as part of the original application with new assessment work conducted as appropriate to ensure the revised PFOWF development proposal is fully assessed.

## 3 METHODOLOGY

### 3.1 Legislation, Policy and Guidance

ORCA will use legislation and standard guidance to inform our approach to the evaluation of historic environment assets, the identification of potential risks, impacts, their significance and proposed mitigation, including:

- The Historic Environment Policy Statement for Scotland (HEPS) 2019;
- Historic Environment Scotland Designation Policy and Selection Guidance 2019;
- Historic Environment Scotland's Managing Change in the Historic Environment guidance series, especially the guidance on Setting (2016);
- Scottish Planning Policy (SPP), revised in 2020, with the companion Planning Advice Note (PAN 2/2011): Planning and Archaeology;
- Scotland's National Marine Plan: A Single Framework for Managing Our Seas (2015);
- The Chartered Institute for Archaeologists (CIfA) Codes, Standards and Guidelines (<http://www.archaeologists.net/codes/ifa>);
- Plets, R., Dix, J. and Bates, R. (2013) Marine Geophysics Data Acquisition, Processing and Interpretation: Guidance Notes. Swindon: English Heritage Publishing;
- The Crown Estate (2014) Model clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects, Wessex Archaeology Ltd (Ref 73340.05) for The Crown Estate (currently under revision);
- Wessex Archaeology. (2011). Assessing Boats and Ships 1860-1950. Archaeological Desk-Based Assessment. Salisbury: Wessex Archaeology;

- COWRIE Ltd's Historic Environment Guidance for the Offshore Renewable Energy Sector (2007), by Wessex Archaeology Ltd;
- COWRIE Ltd's Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (2008) by Oxford Archaeology & George Lambrick Archaeology and Heritage;
- SNH [now NatureScot] Visual Representation of Wind Farms Guidance, v2.2 (2017);
- Gribble, J & Leather, S for EMU Ltd Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (GEOARCH-9) commissioned by COWRIE Ltd;
- The Scottish Executive's Scottish Marine Renewables: Strategic Environmental Assessment 2007 (especially sections C10 and C19 on Archaeology and Seascape respectively).
- Historic Environment Scotland and SNH's Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. 2018, v5;
- Highland Council Standards For Archaeological Work (2012), [https://www.highland.gov.uk/downloads/file/1022/standards\\_for\\_archaeological\\_wok](https://www.highland.gov.uk/downloads/file/1022/standards_for_archaeological_wok);
- Highland Historic Environment Strategy Supplementary Planning Guidance 2013 [https://www.highland.gov.uk/downloads/download/727/highland\\_historic\\_environment\\_s\\_strategy](https://www.highland.gov.uk/downloads/download/727/highland_historic_environment_s_strategy);
- The Caithness and Sutherland Local Development Plan (2018) [https://www.highland.gov.uk/info/178/local\\_and\\_statutory\\_development\\_plans/283/caithness\\_and\\_sutherland\\_local\\_development\\_plan](https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/283/caithness_and_sutherland_local_development_plan); and
- The Highland-Wide Local Development Plan (2012) [https://www.highland.gov.uk/info/178/local\\_and\\_statutory\\_development\\_plans/199/highland-wide\\_local\\_development\\_plan](https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan).

### 3.2 Onshore Development Study Area

The study area for archaeology and cultural heritage in relation to direct impacts will comprise the Onshore Study Area, within which will be the development area put forward for planning application.

The study area for archaeology and cultural heritage in relation to indirect, setting and cumulative impacts from the Onshore Development will comprise the Onshore Development Study Area and the area around that to a radius of 5km. It is considered that because the proposed onshore infrastructure that may be built will only be up to 14m high, there will be no significant effects beyond 5km. The focus will be on sites that are within the ZTV, although consideration will also be given to identifying any sites outwith the ZTV that may be affected. In order to keep the size of the assessment reasonable and proportionate, it is proposed that only designated sites and areas, such as Scheduled Monuments and Listed Buildings, will be considered as their settings will be the most sensitive, and can act as proxy for the range of effects on undesignated sites. However, we are happy to consider undesignated historic assets that The Highland Council Historic Environment Team may identify to include in the setting assessment.

### 3.3 Offshore Development Study Area

The Dounreay Tri marine desk-based assessment (DBA) covered the proposed array area and the cable corridor to landfall for the PFOWF Offshore Development Area.

There will be input into marine geophysical and geotechnical survey specifications, to ensure that survey data will be collected that is of sufficient quality for review by a marine archaeologist. It was originally assumed that review of any new more detailed data would occur post-consent as per the original consented Dounreay Trì application. However, this approach has been revised and new marine geophysical survey data will be collected and reviewed as part of the pre-consent EIA process.

The PFOWF proposal comprises additional turbines of a greater height than was considered for the original Dounreay Trì application, therefore it is proposed that the assessment of potential impacts on the setting of onshore assets by the offshore wind farm is fully revised. It is proposed that the study area for this assessment of potential impacts on the setting of onshore assets will focus on sites that are within the ZTV, within 30km of the offshore development boundary (it was 10km in the original successful Dounreay Trì application), although consideration will also be given to identifying any sites within 30km that are outwith the ZTV that may be affected. Similarly, a radius of 30km is suggested in order to capture wind farms that may contribute to a cumulative impact.

In order to keep the size of the assessment reasonable and proportionate, it is proposed that a selection of designated sites and areas, such as Scheduled Monuments and Listed Buildings, will be considered rather than every such site and area, which can act as proxy for the range of effects on other designated and undesignated sites. However, we are happy to include in the setting assessment any specific designated assets that Historic Environment Scotland (HES) identify, and undesignated historic assets that The Highland Council Historic Environment Team (THC HET) may identify.

### **3.4 Baseline Data Sources**

#### **3.4.1 Desk-based studies, walkover surveys and site visits for setting**

In 2015 the Orkney Research Centre for Archaeology (ORCA) undertook a DBA and walkover survey for the previously consented Dounreay Trì Project ([Microsoft Word - Dounreay Tri Demo - ES - Appendix Contents and Cover Sheets \(marine.gov.scot\)](#)), which covered the PFOWF Onshore Development Study Area. Therefore, the findings from this study will be used and reiterated for the PFOWF Project. It is considered that no new DBA study or walkover survey will be required, except for a check of the online NRHE and Highlands HER for any new additions.

Similarly, the Dounreay Trì marine DBA covered the proposed PFOWF Offshore Development Area ([Microsoft Word - Dounreay Tri Demo - ES - Appendix Contents and Cover Sheets \(marine.gov.scot\)](#)). Therefore, the findings from this study will be used and reiterated for the PFOWF Project. It is considered that no new DBA study is required, except for a check of the online NRHE and Highlands HER for any new additions.

The analysis of the potential impact on the setting of historic environment assets will include the identification of sites to be assessed using The National Record of the Historic Environment via the Canmore and Pastmap online databases (<https://canmore.org.uk/>; <https://pastmap.org.uk/>); Statutory lists, registers and designated areas, including List of Scheduled Monuments, Listed Buildings, Inventories of Gardens & Designed Landscapes and Historic Battlefields, Designated Wrecks, Historic Marine Protected Areas and local authority Conservation Areas; any sites specifically identified by HES and THC HET. The description of baseline settings will use the same sources, satellite imagery, information from any visits to particular sites for setting analysis, and the use of visualisations and wirelines provided by the appointed SLVIA consultants. Setting definitions will be based on Historic Environment Scotland's Managing Change in the Historic Environment, and



Historic Environment Scotland and SNH's Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. 2018, v5.

### 3.4.2 Marine Geophysical Surveys

The Dounreay Tri marine baseline report included a review of multi-beam echo sounder (MBES) bathymetry data collected by the Marine Scotland Science vessel, the MRV *Scotia* in 2014. The survey data was gridded and reviewed at 4m rather than the preferable 2m resolution. There were also un-surveyed areas in the dataset, to the east and inshore of the Site. Despite these limitations, including the absence of sidescan sonar and magnetometry datasets, it was concluded that this data review combined with the data sources consulted for the marine DBA were sufficient for an adequate baseline assessment on which to base an impact assessment that had a post-consent commitment to collect more marine survey data for review.

For PFOWF, new more detailed marine geophysical survey data will be collected and reviewed during the EIA process, prior to application. The new geophysical surveys include: Multi-beam echo sounder (MBES) bathymetry data; Sidescan sonar (SSS) data; Magnetometer (MAG) data; Sub-Bottom Profile data; and Video footage and stills, which will only be reviewed if required for clarifications of targets identified in the above data. These surveys will be conducted to appropriate professional standards for archaeological review (as outlined in Plets, R., Dix, J., & Bates, R. 2013 *Marine Geophysics Data Acquisition, Processing and Interpretation: Guidance Notes*. Swindon: English Heritage Publishing). Review of these datasets will be the means by which risk and potential impact is reduced or eliminated, especially in relation to any significant maritime losses in the general area that have not been located.

### 3.4.3 Marine Geotechnical Surveys

The only geotechnical data available for review for the Dounreay Tri marine baseline report were the MBES survey data and dropcam images showing what sediments were on the surface of the seabed. Without further marine geophysical (sub-bottom profile) data and/or coring, it was not possible to ascertain how thick the sediments are, and thus it is not possible to tell how the substrate might affect the preservation of any cultural heritage remains, or if there is potential for remains or palaeolandscape deposits to be buried below the seabed surface.

Therefore, for the PFOWF Project, there will be a review of the SBP data taken for the Project. It is uncertain if any geotechnical surveys (borehole, Cone Penetrometer Tests and vibrocores) will be undertaken on the seabed. If they are, core logs will be reviewed in order to investigate the archaeological and palaeoenvironmental potential of the sediments present

## 3.5 Importance of Assets

The historic environment assets identified in the DBAs, walkover survey and marine geophysical datasets will be assigned a value so that any impact upon them can be evaluated. The level of an asset's importance reflects the level of potential sensitivity or constraint, modified by the application of standard mitigation measures. In line with good practice, a precautionary level of importance will be assigned until proven otherwise (e.g. it may prove that a wreck considered to be of high importance has completely disintegrated). It should be noted that a site that has not been statutorily designated can still be of high importance. Table 1 summarises the criteria that will be used to grade the importance of the cultural heritage assets identified.

The determination of the heritage value of historic environment assets is based on statutory designation and/or professional judgement against the characteristics and criteria expressed in:

- The Historic Environment Policy Statement for Scotland (HEPS) 2019, including the Annexes;
- Historic Environment Scotland Designation Policy and Selection Guidance 2019;
- Historic Environment Scotland’s Managing Change in the Historic Environment guidance series;
- English Heritage (2012) Ships and Boats: Prehistory to Present. Designation Selection Guide. Swindon: English Heritage;
- Wessex Archaeology (2011) Assessing Boats and Ships 1860-1913, 1914-1938, 1914-1938. Archaeological Desk-Based Assessment in 3 volumes. Salisbury: Wessex Archaeology; and
- The Chartered Institute for Archaeologists (CIfA) Codes, Standards and Guidelines (<http://www.archaeologists.net/codes/ifa>).

Table 1: Importance Criteria

Importance of asset	Cultural heritage value
High (H)	<ul style="list-style-type: none"> <li>• World Heritage Sites</li> <li>• Scheduled Monuments and sites proposed for scheduling</li> <li>• Category A Listed Buildings</li> <li>• Inventoried Gardens and Designed Landscapes</li> <li>• Interconnected groups of B-Listed buildings</li> <li>• Outstanding Conservation Areas</li> <li>• Historic Battlefields</li> <li>• Historic Marine Protected Areas and Designated Wrecks</li> <li>• Aircraft lost on military service</li> <li>• Undesignated wrecks, archaeological sites, areas and buildings of national and international importance (identified in the HER) due to association, rarity, intrinsic value, loss of life and/or retaining archaeological, structural, architectural, decorative or other physical remains to the extent that it makes a significant contribution to our understanding or appreciation of the past</li> </ul>
Medium (M)	<ul style="list-style-type: none"> <li>• Category B and Category C(S) Listed Buildings</li> <li>• Burial Grounds</li> <li>• Protected heritage landscapes</li> <li>• Conservation Areas</li> <li>• Undesignated archaeological sites, areas, buildings, wrecks and cargos of equivalent regional importance (identified in the HER), or of high local significance, due to association, rarity, intrinsic value, loss of life, and/or retaining archaeological, structural, architectural, decorative or other physical remains to the extent that it makes a significant contribution to our understanding or appreciation of the past.</li> </ul>
Low (L)	<ul style="list-style-type: none"> <li>• Cultural heritage assets the physical remains of which contribute little to our understanding or appreciation of the past.</li> <li>• Cultural heritage assets of local value or interest for education or cultural appreciation</li> <li>• Undesignated archaeological sites, areas, buildings, wrecks and cargos of equivalent local importance (identified in the HER) due to limited intrinsic, contextual or associative characteristics, or that are still common.</li> <li>• Unlisted historic buildings and settlements with local characteristics.</li> </ul>
Negligible (N)	<ul style="list-style-type: none"> <li>• Sites of former archaeological features, lifted or salvaged wrecks</li> <li>• Unlisted buildings of little historic or architectural interest</li> <li>• Sites or features the physical remains of which make a negligible contribution to our understanding or appreciation of the past.</li> <li>• Single findspots</li> <li>• Sites of little or no known heritage importance</li> </ul>

The potential for marine geophysical anomalies to be anthropogenic is outlined in Table 2. Levels of geophysical potential do not imply a historical value to the anomalies – an anomaly may be anthropogenic but not be of historical importance.

*Table 2: Level of Geophysical Potential of marine geophysical anomalies*

Level of geophysical potential	Description
High	Contact/Anomaly appears anthropogenic (atypical in its context); or there is identifiable cultural material; or it is in the area of a known archaeological site, or another contact/anomaly identified to be of high potential
Low	Contact/Anomaly is likely to be a natural formation such as a sand dune, boulder or bedrock formation. It could also be a processing error of the geophysical data.

### 3.6 Assessment of Impacts: Magnitude

The impact assessment will be conducted under the Design Envelope approach, assessing the maximum potential adverse effects on the historic environment over the Project area within defined parameters. This will allow flexibility of design approach if required, and ensure that the project as it may be constructed has been properly assessed.

Potential effects or impacts of the proposed Project will be identified, including direct, indirect, cumulative and in-combination impacts, and where appropriate, potential permanent, temporary, positive and negative effects. Residual impacts and issues will also be assessed. The magnitude of any identified effects on historic environment assets caused by the development proposals will be determined using the summaries of example criteria in Tables 3 and 4 below.

Table 3: Example criteria for the assessment of impacts on onshore historic assets

Magnitude of Effect	Direct Impacts: Onshore	Indirect Impacts: Onshore
High	Works would result in the complete loss of the site, or the loss of an area, features or evidence fundamental to the historic character and integrity of the site, which would result in the complete loss of physical integrity.	The removal of, or a fundamental and irreversible change to, the relationship between a heritage asset and its relevant setting. Major change that removes or prevents appreciation, understanding or experience of a heritage asset and its key characteristics, or permanent change to or removal of surroundings of a less sensitive asset. A noticeable change to a key relationship between a heritage asset and a highly sensitive, valued or historically relevant setting over a wide area or an intensive change to a less sensitive or valued asset or setting over a limited area.
Medium	Works would result in the loss of an important part of the site or some important features and evidence, but not areas or features fundamental to its historic character and integrity. The integrity of the site would be affected, but key physical relationships would not be lost.	Noticeable change to a non-key relationship between a heritage asset and its relevant setting. A heritage asset and setting that is tolerant of moderate levels of change. Small changes to the relationship between a heritage asset and its setting over a wide area or noticeable change over a limited area.
Low	Works would not affect the main features of the site. The historic integrity of the site would not be significantly affected.	Minor changes to the relationship between a heritage asset and its setting over a wide area or minor changes over a limited area. A heritage asset and setting that is considered tolerant of change.
Negligible	Works would be confined to a relatively small, peripheral and/or unimportant part of the site. The integrity of the site, or the quality of the surviving evidence would not be affected.	Changes to that cannot be discerned or perceived in relation to the heritage asset or environment.
Unknown	Groundbreaking works over features that have not been fully interpreted would reduce the chance of interpretation in the future. In the event of significant features this would constitute impact of high magnitude; for sites of lesser significance it is less problematical. Nevertheless, it remains an issue where features have not been or could not be interpreted.	Changes to a setting, where it is uncertain how these contribute to our understanding, appreciation or experience of the site because the feature or asset itself could not or has not been understood or interpreted.
Positive	An enhancement to the baseline condition of the asset.	

Table 4: Example criteria for the assessment of impacts on marine historic assets

Magnitude of Effect	Direct Impacts: Marine	Indirect Impacts: Marine
High	Works would result in the complete loss of an asset, or the loss of an area, features or evidence fundamental to the historic character and integrity of the site, which would result in the complete loss of physical integrity.	The removal of, or a fundamental and irreversible change to, the relationship between a marine heritage asset or environment and a historically relevant seabed context. Major change that removes or prevents appreciation of characteristics key to a heritage asset, or permanent change to or removal of surroundings of a less sensitive asset or seabed context. A noticeable change to a key relationship between a marine heritage asset or environment and a highly sensitive, valued or historically relevant seabed context over a wide area or an intensive change to a less sensitive or valued asset or seabed context over a limited area.
Medium	Works would result in the loss of an important part of the site or some important features and evidence, but not areas or features fundamental to its historic character and integrity. The integrity of the site would be affected, but key physical relationships would not be lost.	Noticeable change to a non-key relationship between a marine heritage asset or environment and a historically relevant seabed context. A heritage asset and setting that is tolerant of moderate levels of change. Small changes to the relationship between a heritage asset and a historically relevant seabed context over a wide area or noticeable change over a limited area.
Low	Works would not affect the main features of the site. The historic integrity of the site would not be significantly affected.	Minor changes to the relationship between a heritage asset or environment and a historically relevant seabed context over a wide area or minor changes over a limited area. A heritage asset and setting that is considered tolerant of change.
Negligible	Works would be confined to a relatively small, peripheral and/or unimportant part of the site. The integrity of the site, or the quality of the surviving evidence would not be affected.	Changes to a historically relevant seabed context that cannot be discerned or perceived in relation to the heritage asset or environment.
Unknown	Groundbreaking works over features that have not been fully interpreted would reduce the chance of interpretation in the future. In the event of significant features this would constitute impact of high magnitude; for sites of lesser significance it is less problematical. Nevertheless, it remains an issue where features have not been or could not be interpreted.	Changes to a seabed context, where it is uncertain how these contribute to our understanding of the site because the feature or asset itself could not or has not been understood or interpreted.

Magnitude of Effect	Direct Impacts: Marine	Indirect Impacts: Marine
Positive	An enhancement to the baseline condition of the asset.	An enhancement to the seabed context of a heritage asset or environment. An enhancement to preservation conditions of a heritage asset or environment.

### 3.7 Assessment of Impacts: Significance

The significance of any potential adverse impacts from the Project on historic environment assets will be determined by comparing the magnitude of the effect with the cultural heritage importance or sensitivity of each historic environment asset as shown in Table 5 below.

The significance of any potential adverse impacts from the development proposals on marine cultural heritage will be determined by comparing the magnitude of the effect with the archaeological importance/sensitivity of each area, site or monument.

Table 5: Assessment of Impact Significance

Asset Importance or Sensitivity	Magnitude of Effect					
	High	Medium	Low	Negligible	Uncertain	Positive
High	Major	Major	Moderate	Minor	Uncertain/ Major	Positive
Medium	Major	Moderate	Minor	Minor	Uncertain/ Moderate	Positive
Low	Moderate	Minor	Minor	Negligible	Uncertain/ Minor	Positive
Negligible	Minor	Negligible	Negligible	Negligible	Uncertain/ Negligible	Positive
Uncertain	Uncertain/ Major	Uncertain/ Moderate	Uncertain/ Minor	Uncertain/ Negligible	Uncertain/ Negligible	Positive

Table 6: Definitions for Significance of impact

Consequence	Significance	
<b>Positive</b>	Positive – to be encouraged	Positive
<b>Major</b>	Highly significant and requires immediate action. May be intolerable risk or significance	Significant impact under EIA Regulations
<b>Moderate</b>	Significant – requires additional control measures and/or management	
<b>Minor</b>	Not significant – however may require some management to ensure remains within acceptable levels	Insignificant impact under EIA Regulations
<b>Negligible</b>	Not Significant	

### 3.8 Management and mitigation strategies

Mitigation and/or management strategies to eliminate or reduce any adverse impacts to an insignificant level or offsetting impacts that cannot be reduced to such an extent will be suggested and developed in consultation with the clients and statutory authorities. Potential key issues will be identified early in the process to allow time for redesign or for strategies to be developed. It is assumed that the primary embedded design mitigation for direct impacts for the Project will be avoidance of any identified historic assets and marine geophysical anomalies/contacts.

The management and mitigation measures suggested below will result in the avoidance, reduction, remedying and offsetting of any impacts on cultural heritage by the proposed development. It should be noted that most of those in Section 3.8.2 are rarely required due to the implementation of standard mitigations as outlined in Section **Error! Reference source not found.**

#### 3.8.1 Standard mitigation measures

In general terms, it is preferable to manage the presence of cultural heritage sites by designing, routing cables and locating construction footprints to avoid them. To enable this, or where this is not possible, various strategies can be put in place. The mitigation and management measures outlined below will result in the avoidance, reduction or offsetting of any potential impacts on cultural heritage by the project and can be embedded into a project design.

##### *Strategy 1: Baseline characterisation.*

An appropriate level of baseline characterisation will be required as the basis for a robust EIA, and for the statutory authorities to be satisfied that they have adequate information on which to base an informed decision. The baseline studies should include a desk-based assessment and the analysis of walkover surveys, marine geophysical and geotechnical surveys, and site visits, conducted to appropriate professional standards (CIfA Standards and Guidance 2014 and as revised; Gribble and Leather 2011; reconnaissance level geophysical survey as in Plets et al 2013). The results of the baseline studies will lead to implementation of strategies 2 to 5, as appropriate.

##### *Strategy 2: Avoidance.*

This strategy is the primary embedded mitigation for the Project, especially (but not only) if it is easy to avoid the site, with no or little impact on the works, or if the site is of high importance. An alternative mitigation strategy will be suggested where possible if avoidance is not feasible within the proposed development scheme, such as Strategies 9 or 11 for example.

##### *Strategy 3: Geophysical or other targeted remote survey.*

In the event of the identification of significant archaeology, or the need to further explore the nature of identified marine anthropogenic contacts/anomalies, targeted onshore geophysical or marine high resolution remote survey, including use of a remote operated vehicle (ROV), may be recommended in order to identify or record sites, their contexts and their extent. The results of these surveys may lead to the implementation of further mitigation strategies.

##### *Strategy 4: Sampling.*

If sampling works (e.g. vibrocores, cone penetrometer tests, grab samples, auger samples, geotechnical pits) have been undertaken to inform the Project design, the sample logs will be assessed in order to identify the potential for paleoenvironmental deposits to survive. Provision should be made for collecting and keeping spare cores, and for their analysis, so that material is

available if it is shown that significant subsurface palaeolandscapes are to be damaged or destroyed. It is recognised that geotechnical pits for engineering purposes may be part of pre-construction activities and a Strategies 6 or 7 may be recommended if this is the case.

*Strategy 5: Protocols for Archaeological Discoveries (PADs).*

Any recommendation for the instatement of a marine or terrestrial Protocol for Archaeological Discoveries (PAD) where another archaeological scheme of works such as an Intrusive Evaluation or Watching Brief is not in place, will include identification of responsibilities, lines of reporting and communication, provision for stopping works, the application of exclusion zones, artefact conservation, monitoring, recording and so on. Ny PAD will conform to professional standards and guidelines, such as The Crown Estate (2014) Protocol for Archaeological Discoveries: Offshore Renewables Projects, prepared by Wessex Archaeology Ltd for The Crown Estate [03-PAD Offshore Renewables Crown Estate \(wessexarch.co.uk\)](https://www.wessexarch.co.uk).

*Strategy 6: Intrusive archaeological assessment.*

This response will be recommended for all sites with high or unknown archaeological potential prior to any intrusive works. An intrusive assessment would groundtruth geophysical survey results and assess the nature, extent and preservation of archaeological remains. The findings of the intrusive assessment may require the upgrading of fieldwork to Strategy 9.

*Strategy 7: Archaeological Watching brief.*

This response will be recommended while ground-breaking construction works are happening if there is a potential for but no conclusive proof of archaeological remains. The works will allow opportunity for salvage excavation. The findings of the watching brief may require the upgrading of fieldwork to Strategy 9.

### **3.8.2 Contingency mitigation measures**

It should be noted that most, if any, of these measures will **not** be needed by a project if Strategies 1-5 above have been embedded into the project design, with Strategies 6 and 7 as safeguards.

*Strategy 8: Detailed structure or wreck survey and salvage.*

Plans/elevations at a scale of 1:10-1:200 will be made of maritime structures (e.g. piers, fish traps) with a full photographic record prior to destruction. Wrecks should be recorded in an appropriate manner by specialists in marine archaeology. Attempts will be made to retrieve and conserve representative examples of the fabric. In addition, Strategies 5, 6 and/or 7, 8 and 9 may be implemented.

*Strategy 9: Full archaeological excavation.*

This level of mitigation may be deemed necessary as a result of evidence gathered by other levels and should be conducted by specialists in marine or onshore archaeology to appropriate professional standards (CIfA). Provision should be made for the examination and possible conservation of any artifacts recovered. Specialist samples will be taken from key deposits and fabric. Plans/elevations at a scale 1:10 and/or 1:20 with a full photographic record. Provision should be made for post-excavation work bringing the results together in a report of publication standard in accordance with HES and other professional guidelines.

*Strategy 10: Further documentary research and archiving.*



This response includes further detailed examination of unusual archival sources that would not routinely be consulted during the EIA process. It also allows for copying of documents considered relevant, which then may be archived with relevant bodies, such as HES,, the local SMR/HER, the NRHE, the Receiver of Wreck, UKHO, MCA and MEDIN, as appropriate.

*Strategy 11: Re-Design.* If there are significant impacts on setting resulting in the reduction of the importance of an historic asset, it may be that it is recommended to reduce the number, height or layout the proposed turbines. If there are significant direct impacts then a similar response may be required if other strategies are not appropriate or provide satisfactory mitigations.

*Strategy 12: Other recommendations.* These could include recommendations for tidal current surveys, detailed sampling, procedures concerning anchoring, seabed disturbance, type of mechanical excavator and so on. The particular type of suggested strategy will be detailed where the recommendation is made.

### 3.9 EIAR Chapter

ORCA will produce separate onshore and offshore EIAR chapters in which all findings can be presented. Each EIAR chapter will include, if relevant:

- Methodology;
- Scoping opinions / Consultation responses;
- Baseline review
- Images (viewpoints, photomontages and wireframes) supplied by the SVLIA consultant to support the setting assessment;
- Impact assessment of any identified impacts, including direct, indirect, setting and cumulative, during construction, operations / maintenance and decommissioning phases;
- Mitigation and management strategies; and
- Map figures.

### 3.10 Reporting and Archiving

The work and the reports will be executed in compliance with and / or cognisance of all relevant legislation, guidance and standards (Section 3.1) as appropriate.

Reporting will be in line with the requirements stipulated by the Client and statutory authorities, in a format to be agreed with the Client. A short report, with the Client's permission, will be issued to OASIS and Discovery and Excavation Scotland (DES).<sup>1</sup> This is usually done after the Project has achieved planning permission and the data is no longer commercially sensitive. As an automatic planning condition, The Highlands Council also requires a digital shapefile of the survey area to be supplied to their Historic Environment Team and a selection of the information gathered to be

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<sup>1</sup> This reporting is a condition, and simply captures the fact that a historic environment survey has been undertaken in a certain area, with submission of the data that goes to make up the baseline reports, thus adding to and updating the Historic Environment Record for the area. The Client's development project design, engineering details, device details, the impact assessment, mitigation strategies and ES are NOT included in the report to OASIS. This report generates a summary in the printed annual journal of Archaeology Scotland (DES), which acts as a comprehensive, up-to-date guide to archaeological work being undertaken across Scotland. See <http://oasis.ac.uk/scotland/>

submitted directly to the HET for inclusion in the Historic Environment Record. This will also be supplied to HES for addition to the NRHE.

Ownership of any records or research material relating to this project, including the final report and any data produced as a result of the Project lies with the Client, with the assumption of fair use by ORCA and SULA Diving for non-commercially sensitive historic environment information.

A safe copy of the supplied data will be kept as a back-up in its original format at ORCA. If it is permissible such raw data will be included in the digital archive of the finished project. A digital archive will be created from the GIS project with the data saved in appropriate, stable formats such as shapefiles, TIFFS, JPEGs and JGWs, TFWs. Figures that have been produced will be saved as PDFs for inclusion in the digital archive as well as for use by stakeholders and Client organisations.

#### **4 STAKEHOLDERS AND CONSULTATION**

We suggest that the following historic environment stakeholders are sent consultation letters to gain feedback on any key issues, and to comment on this Method Statement:

- Marine Scotland (MS-LOT);
- Historic Environment Scotland;
- The Highlands Council Planning Authority;
- The Highlands Council Historic Environment Team;
- Orkney Islands Council; and the
- Orkney Islands Council Archaeologist.